California State Nonroad Engine Pollution Control Standards; Small Off-Road Engines Regulations

Decision Document

United States Environmental Protection Agency

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EPA-420-R-24-026
December 2024

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On May 23, 2023, the Environmental Protection Agency (EPA) published a *Federal Register* notice announcing receipt of the California Air Resources Board's (CARB's) authorization request for amendments adopted in 2016 and 2021 applicable to small off-road engines (SORE) regulations.[1] The notice for comment on this authorization request indicated that the request would be open for public comment until July 28, 2023. The Docket ID No. for the authorization is EPA-HQ-OAR-2023-0151. EPA also held a public hearing on the authorization request on June 27, 2023, and the transcript of that hearing is included in the docket. In this Decision Document, EPA is taking final action to authorize CARB's 2016 and 2021 Amendments to the SORE regulations, pursuant to section 209(e) of the Clean Air Act (CAA).[2] EPA is also providing notice of the availability of this Decision Document in the *Federal Register.*

[1] 88 FR 33143 (May 23, 2023). For purposes of this Decision Document, EP A is using the term "SORE" to include all types of small offroad engines and equipment. Engines and equipment that meet zero-emission performance standards are referred to as "ZEE" to denote zero-emission equipment while engines and equipment that meet non-zero-emission performance standards (non-ZEE) are referred to as spark-ignition SORE.
[2] This Decision Document can be found in the public docket at regulations.gov at EPA-HQ-OAR-2023-0151.

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I. Background

CARB first adopted emission standards and associated test procedures for small off-road engines (SORE) in 1990.[3] CARB subsequently amended the SORE regulations a number of times and EPA granted authorizations for CARB to enforce the SORE regulations and subsequent amendments.[4]

[3] SORE are defined by CARB as off-road 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. SORE 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. The vast majority of SORE 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 is known as SORE equipment.

[4] 60 FR 37440 (July 20, 1995); 65 FR 69763 (November 20, 2000); 68 FR 65702 (November 21, 2003); 71 FR 75536 (December 15, 2006); 75 FR 8056 (February 23, 2010); 80 FR 26041 (May 6, 2015); 80 FR 76971 (December 11, 2015).

On December 20, 2022, CARB submitted a new authorization request to EPA for its amendments to the SORE regulation adopted in 2016 (2016 SORE Amendments) and in 2021 (2021 SORE Amendments).[5]

CARB notes that its 2016 SORE 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 the applicable federal requirements. CARB also notes 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. The 2016 Amendments do not increase the stringency of the

[5] CARB's SORE Authorization Request (SORE Authorization Support Document), EPA–HQ–OAR–2023–0151-0003 at 3. 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. 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 added sections 2408.2 and 2754.3 and repealed preexisting section 2768. The 2021 Amendments additionally included several amendments to the exhaust and evaporative emissions test procedures-please see Updated Informative Digest for the 2021 Amendments, pp. 1-4.

preexisting SORE evaporative emission standards but will ensure that manufacturers will more fully comply with those standards.[6]

CARB notes that its 2021 SORE Amendments primarily establish exhaust and evaporative emission standards and associated test procedures for 2024 and subsequent model engines and equipment that are significantly more stringent than preexisting exhaust and evaporative emission standards and associated test procedures. The 2021 Amendments establish SORE emission standards in two phases. First, the exhaust emission standards for most 2024 and subsequent model year (MY) SORE is zero (0.00 grams per kilowatt-hour) for hydrocarbons (HC) and oxides of nitrogen (NOx). Under the 2021 SORE Amendments, carbon monoxide (CO) emission standards for MY 2024 and later engines are more stringent than the existing CARB emission standards for some displacement categories, but they are not zero. The evaporative emission standards for most 2024 and subsequent MY SORE are 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. 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 these latter categories of engines are more stringent than the pre-existing emission standards starting in MY 2024 but are not zero. The second phase of the emissions standards will be implemented beginning in MY 2028, when the exhaust and evaporative emission standards for engines used in pressure washers with displacements greater than or equal to 225 cc and portable generators will be aligned with the zero emission standards for other categories of SORE.[7]

[6] SORE Authorization Support Document at 7–14.
[7] SORE Authorization Support Document at 14-20.

A. Clean Air Act Nonroad Engine and Vehicle Authorizations

CAA section 209(e)(1) permanently preempts any state, or political subdivision thereof, from adopting or attempting to enforce any standard or other requirement relating to the control of emissions for certain new nonroad engines or vehicles.[8] For all other nonroad engines (including ''non-new'' engines), states generally are preempted from adopting and enforcing standards and other requirements relating to the control of emissions, except that CAA section 209(e)(2)(A) requires EPA, after notice and opportunity for public hearing, to authorize California to adopt and enforce such regulations unless EPA makes one of three enumerated findings. Specifically, EPA must deny authorization if the Administrator finds that (1) California's protectiveness determination (i.e., that California standards will be, in the aggregate, as protective of public health and welfare as applicable federal standards) is arbitrary and capricious, (2) California does not need such standards to meet compelling and extraordinary conditions, or (3) the California standards and accompanying enforcement procedures are not consistent with CAA section 209.

On July 20, 1994, EPA promulgated a rule (the 1994 rule) interpreting the three criteria set forth in CAA section 209(e)(2)(A) that EPA must consider before granting any California authorization request for nonroad engine or vehicle emission standards.[9] EPA revised these regulations in 1997.[10]

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[8] States are expressly preempted from adopting or attempting to enforce any standard or other requirement relating to the control of emissions from new nonroad engines which are used in construction equipment or vehicles or used in farm equipment or vehicles and which are smaller than 175 horsepower. Such express preemption under CAA section 209(e)(1) also applies to new locomotives or new engines used in locomotives.

[9] *See* ''Air Pollution Control; Preemption of State Regulation for Nonroad Engine and Vehicle Standards,'' 59 FR 36969 (July 20, 1994).

[10] *See* ''Control of Air Pollution: Emission Standards for New Nonroad Compression-Ignition Engines at or Above 37 Kilowatts; Preemption of State Regulation for Nonroad Engine and Vehicle Standards; Amendments to Rules,'' 62 FR 67733 (December 30, 1997). The applicable regulations are now found in 40 CFR part 1074, subpart B, Part 1074.

As stated in the preamble to the 1994 rule, EPA historically has interpreted the consistency inquiry under the third criterion, outlined above and set forth in CAA section 209(e)(2)(A)(iii), to require that California standards and enforcement procedures be consistent with CAA section 209(a), section 209(e)(1), and section 209(b)(1)(C).[11] In order 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. To be consistent with section 209(e)(1), California's nonroad standards and enforcement procedures must not attempt to regulate engine categories that are permanently preempted from state regulation. To determine consistency with section 209(b)(1)(C), EPA typically reviews nonroad authorization requests under the same "consistency" criteria that are applied to motor vehicle waiver requests under CAA section 209(b)(1)(C). That provision provides that the Administrator shall not grant California a motor vehicle waiver if the Administrator finds that California ''standards and accompanying enforcement procedures are not consistent with section 202(a)'' of the Act. Previous decisions granting waivers and authorizations have noted that state standards and enforcement procedures will be found to be inconsistent with CAA section 202(a) if (1) there is inadequate lead time to permit the development of the necessary technology, giving appropriate consideration to the cost of compliance within that time, or (2) the federal and state testing procedures impose inconsistent certification requirements.

In light of the similar language of CAA sections 209(b) and 209(e)(2)(A), EPA has reviewed California's requests for authorization of nonroad vehicle or engine standards under section 209(e)(2)(A) using the same principles that it has historically applied in reviewing requests for waivers of preemption for new motor vehicle or new motor vehicle engine standards

[11] *See supra* note 12. EPA has interpreted CAA section 209(b)(1)(C) in the context of section 209(b) motor vehicle waivers.

under section 209(b).[12] These principles include, among other things, that EPA should limit its inquiry to the three specific authorization criteria identified in section 209(e)(2)(A),[13] and that EPA should give substantial deference to the policy judgments California has made in adopting its regulations. In previous waiver decisions, EPA explained that Congress intended EPA's review of California's decision-making be narrow. EPA has rejected arguments that are not specified in the statute as grounds for denying a waiver:

> The law makes it clear that the waiver requests cannot be denied unless the specific findings designated in the statute can properly be made. The issue of whether a proposed California requirement is likely to result in only marginal improvement in California air quality not commensurate with its costs or is otherwise an arguably unwise exercise of regulatory power is not legally pertinent to my decision under section 209, so long as the California requirement is consistent with section 202(a) and is more stringent than applicable Federal requirements in the sense that it may result in some further reduction in air pollution in California.[14]

This principle of narrow EPA review has been upheld by the U.S. Court of Appeals for the District of Columbia Circuit.[15] Thus, EPA's consideration of all the evidence submitted concerning an authorization decision is circumscribed by its relevance to those questions that may be considered under CAA section 209(e)(2)(A).

[12] *See Engine Manufacturers Association v. EPA*, 88 F.3d 1075, 1087 (D.C. Cir. 1996): ". . . EPA was within the bounds of permissible construction in analogizing § 209(e) on nonroad sources to § 209(a) on motor vehicles."
[13] *See supra* note 12, at 36983.
[14] "Waiver of Application of Clean Air Act to California State Standards," 36 FR 17458 (Aug. 31, 1971). Note that the more stringent standard expressed here, in 1971, was superseded by the 1977 amendments to CAA section 209, which established that California must determine that its standards are, in the aggregate, at least as protective of public health and welfare as applicable Federal standards. In the 1990 amendments to CAA section 209, Congress established section 209(e) and similar language in section 209(e)(1)(i) pertaining to California's nonroad emission standards which California must determine to be, in the aggregate, at least as protective of public health and welfare as applicable federal standards.
[15] See, e.g., *Motor and Equip. Mfrs Assoc. v. EPA*, 627 F.2d 1095 (D.C. Cir. 1979) *("MEMA I")*.

B. Deference to California

In previous waiver decisions, EPA has recognized that the intent of Congress in creating a limited review based on the CAA section 209(b)(1) criteria was to ensure that the federal government did not second-guess state policy choices. This has led EPA to state:

> It is worth noting * * * I would feel constrained to approve a California approach to the problem which I might also feel unable to adopt at the federal level in my own capacity as a regulator. The whole approach of the Clean Air Act is to force the development of new types of emission control technology where that is needed by compelling the industry to ''catch up'' to some degree with newly promulgated standards. Such an approach * * * may be attended with costs, in the shaped of reduced product offering, or price or fuel economy penalties, and by risks that a wider number of vehicle classes may not be able to complete their development work in time. Since a balancing of these risks and costs against the potential benefits from reduced emissions is a central policy decision for any regulatory agency under the statutory scheme outlined above, I believe I am required to give very substantial deference to California's judgments on this score.[16]

EPA has stated that the text, structure, and history of the California waiver provision clearly indicate both a congressional intent and appropriate EPA practice of leaving the decision on ''ambiguous and controversial matters of public policy'' to California's judgment.[17]

The House Committee Report explained that as part of the 1977 amendments to the CAA, where Congress had the opportunity to restrict the waiver provision, it elected instead to explain California's flexibility to adopt a complete program of motor vehicle emission controls. The amendment is intended to ratify and strengthen the California waiver provision and to affirm the underlying intent of that provision, i.e., to afford California the broadest possible discretion in selecting the best means to protect the health of its citizens and the public welfare.[18]

[16] 40 FR 23103–23104 (May 28, 1975); see also LEV I Decision Document at 64 (58 FR 4166 (January 13, 1993)).
[17] 40 FR 23104; 58 FR 4166.
[18] *MEMA I*, 627 F.2d at 1110 (citing H.R. Rep. No. 294, 95 Cong., 1st Sess. 301–02 (1977)).

C. Burden and Standard of Proof

As the U.S. Court of Appeals for the D.C. Circuit has made clear in *MEMA I*, opponents of a waiver request by California bear the burden of showing that the statutory criteria for a denial of the request have been met:

> [T]he language of the statute and its legislative history indicate that California's regulations, and California's determinations that they must comply with the statute, when presented to the Administrator are presumed to satisfy the waiver requirements and that the burden of proving otherwise is on whoever attacks them. California must present its regulations and findings at the hearing and thereafter the parties opposing the waiver request bear the burden of persuading the Administrator that the waiver request should be denied.[19]

The Administrator's burden, on the other hand, is to make a reasonable evaluation of the information in the record in coming to the waiver decision. As the court in *MEMA I* stated: ''here, too, if the Administrator ignores evidence demonstrating that the waiver should not be granted, or if he seeks to overcome that evidence with unsupported assumptions of his own, he runs the risk of having his waiver decision set aside as 'arbitrary and capricious.' ''[20] Therefore, the Administrator's burden is to act ''reasonably.''[21]

With regard to the standard of proof, the court in *MEMA I* explained that the Administrator's role in a CAA section 209 proceeding is to:

> [. . .] consider all evidence that passes the threshold test of materiality and * * * thereafter assess such material evidence against a standard of proof to determine whether the parties favoring a denial of the waiver have shown that the factual circumstances exist in which Congress intended a denial of the waiver.[22]

In that decision, the court considered the standards of proof under CAA section 209 for the two findings related to granting a waiver for an ''accompanying enforcement procedure.'' Those findings involve: (1) Whether the enforcement procedures impact California's prior

[19] *MEMA I*, 627 F.2d at 1121.
[20] *Id.* at 1126.
[21] *Id.*
[22] *Id.* at 1122.

protectiveness determination for the associated standards, and (2) whether the procedures are consistent with CAA section 202(a). The principles set forth by the court, however, are similarly applicable to an EPA review of a request for a waiver of preemption for a standard. The court instructed that ''the standard of proof must take account of the nature of the risk of error involved in any given decision, and it therefore varies with the finding involved. We need not decide how this standard operates in every waiver decision.''[23]

With regard to the protectiveness finding, the court upheld the Administrator's position that, to deny a waiver, there must be ''clear and compelling evidence'' to show that proposed enforcement procedures undermine the protectiveness of California's standards.[24] The court noted that this standard of proof also accords with the Congressional intent to provide California with the broadest possible discretion in setting regulations it finds protective of the public health and welfare.[25]

With respect to the consistency finding, the court did not articulate a standard of proof applicable to all proceedings but found that the opponents of the waiver were unable to meet their burden of proof even if the standard were a mere preponderance of the evidence. Although *MEMA I* did not explicitly consider the standards of proof under CAA section 209 concerning a waiver request for ''standards,'' as compared to a waiver request for accompanying enforcement procedures, there is nothing in the opinion to suggest that the court's analysis would not apply with equal force to such determinations. EPA's past waiver decisions have consistently made clear that: ''[E]ven in the two areas concededly reserved for Federal judgment by this legislation—the existence of 'compelling and extraordinary' conditions and whether the

[23] *Id.*
[24] *Id.*
[25] *Id.*

standards are technologically feasible—Congress intended that the standards of EPA review of the State decision to be a narrow one.''[26]

D. EPA's Administrative Process in Consideration of California's Request

On May 23, 2023, EPA published a *Federal Register* notice announcing its receipt of California's authorization request. In that notice, EPA invited public comment on the 2016 Amendments and 2021 Amendments and announced a public hearing.[27]

EPA requested comment on whether California's 2016 SORE Amendments and the 2021 SORE Amendments meet the criteria for a full authorization. Specifically, EPA requested comment on: (a) whether CARB's determination that its standards, in the aggregate, are at least as protective of public health and welfare as applicable federal standards is arbitrary and capricious, (b) whether California needs such standards to meet compelling and extraordinary conditions, and (c) whether California's standards and accompanying enforcement procedures are consistent with CAA section 209. We also requested comment on any safety factors EPA should consider regarding the 2016 and 2021 SORE Amendments.

Following the May 2023 *Federal Register* Notice, a public hearing was held on June 27, 2023. In addition, EPA received written comments from health and environmental organizations, industry, SORE retailers and end users, and individuals, all of which can be found, along with a

[26] See, e.g., ''California State Motor Vehicle Pollution Control Standards; Waiver of Federal Preemption,'' 40 FR 23102 (May 28, 1975), at 23103.
[27] See ''California State Nonroad Engine Pollution Control Standards; Small Off-Road Engines; Request for Authorization; Opportunity for Public Hearing and Comment,'' 88 FR 33143 (May 23, 2023).

transcript of the public hearing including all oral testimonies provided, in the public docket.[28] CARB also submitted supplemental comments to its original authorization request.[29]

II. Response to Comments Regarding the Authorization Criteria

In this section, EPA addresses the comments received with respect to the three authorization criteria.

A. First Authorization Criterion

CAA section 209(e)(2)(A)(i) instructs that EPA cannot grant an authorization if the Agency finds that California was arbitrary and capricious in its determination that its standards will be, in the aggregate, at least as protective of public health and welfare as applicable Federal standards.

EPA's evaluation of this first authorization prong is performed under the construct explained here. CAA section 209(e)(2)(A)(i) requires EPA to grant an authorization unless the Administrator finds that California has been arbitrary and capricious in its determination that its State standards will be, in the aggregate, at least as protective of public health and welfare as applicable Federal standards. EPA may not disregard California's determination unless there is

[28] See Docket ID EPA-HQ-OAR-2023-0151 at www.regulations.gov; Document IDs are: American Lung Association (ALA), EPA-HQ-OAR-2023-0151-0031; Americas Styrenics, EPA-HQ-OAR-2023-0151-0009; Anthony DeRiggi, EPA-HQ-OAR-2023-0151-0015; Briggs & Stratton, EPA-HQ-OAR-2023-0151-0025; California Alliance for Golf (CAG), EPA-HQ-OAR-2023-0151-0010; Coalition for Clean Air, EPA-HQ-OAR-2023-0151-0016; Earth Justice, EPA-HQ-OAR-2023-0151-0023 with supplemental comments in EPA-HQ-OAR-2023-0151-0032; Truck and Engine Manufacturers Association (EMA), EPA-HQ-OAR-2023-0151-0021 with supplemental comments in EPA-HQ-OAR-2023-0151-0034; Golf Course Superintendents Association of America (GCSAA), EPA-HQ-OAR-2023-0151-0008; Jennifer Caldwell, EPA-HQ-OAR-2023-0151-0012 and EPA-HQ-OAR-2023-0151-0013; Jensen & Pilegard, EPA-HQ-OAR-2023-0151-0020; Joseph's Lawnmowers, EPA-HQ-OAR-2023-0151-0029; Kim Alexander, EPA-HQ-OAR-2023-0151-0017; M. Coulter, EPA-HQ-OAR-2023-0151-0014; Miller Farms, EPA-HQ-OAR-2023-0151-0028; Muriel Strand, EPA-HQ-OAR-2023-0151-0018; National Association of Landscape Professionals (NALP), EPA-HQ-OAR-2023-0151-0027; Nancy McKeever, EPA-HQ-OAR-2023-0151-0011; Outdoor Power Equipment Institute (OPEI), EPA-HQ-OAR-2023-0151-0026 with supplemental comments in EPA-HQ-OAR-2023-0151-0033; Portable Generator Manufacturers' Association (PGMA), EPA-HQ-OAR-2023-0151-0030; Steven Spatafore, EPA-HQ-OAR-2023-0151-0019; Stihl, EPA-HQ-OAR-2023-0151-0024.

[29] See CARB Supplemental Comment Letter, EPA-HQ-OAR-2023-0151-0035.

''clear and compelling evidence'' to the contrary.[30] Moreover, "[t]he language of the statute and its legislative history indicate that California's regulations, and California's determination that they comply with the statute, when presented to the Administrator are presumed to satisfy the waiver requirements."[31] Additionally, "the parties opposing the waiver request bear the burden of persuading the Administrator that the waiver request should be denied."[32]

CARB states in their SORE Authorization Support Document that, in adopting the 2016 SORE Amendments, the Board determined that the regulations adopted would not cause California off-road engine emissions standards, in the aggregate, to be less protective of public health and welfare than applicable federal standards. Those findings were reaffirmed by CARB's Executive Officer in formally adopting these amendments on November 17, 2016. CARB notes that EPA had previously determined that CARB's SORE emissions standards and related test procedures were at least as protective of public health and welfare as the federal nonroad emissions standards and test procedures and that the 2016 Amendments do not affect that previous determination. CARB states that the 2016 Amendments did not reduce the stringency of either the preexisting exhaust emissions standards or evaporative emission standards, but instead would ensure that the preexisting SORE evaporative emissions standards would be more effectively enforced.[33]

In the SORE Authorization Support Document regarding the 2021 SORE Amendments, CARB states that the Board had determined that the requirements would 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. CARB notes that the 2021 Amendments

[30] *MEMA I,* 627 F.2d 1095, 1121–22 (D.C. Cir. 1979).
[31] *Id. See also Ford Motor*, 606 F.2d 1293, 1297 (D.C. Cir. 1979).
[32] *MEMA I*, 627 F.2d at 1121.
[33] SORE Authorization Support Document at 23-24.

establish evaporative and exhaust emissions standards that are significantly more stringent than the comparable federal nonroad emissions standards, and test procedures to ensure that fuel tanks on test engines more accurately represent the fuel tanks actually used with production engines. CARB concludes 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.[34]

EPA received comment claiming that CARB's protectiveness determination regarding the 2021 SORE Amendments is arbitrary and capricious because CARB relied on unsupported and unproven or outdated data and assumptions to estimate the rule's technological feasibility, emissions reductions, benefits, and cost of compliance, and also because that CARB, in assessing emission impacts and costs of compliance, ignored life cycle emissions.[35]

In evaluating CARB's authorization request under the first prong, EPA is following its traditional practice, which represents the best reading of the statute. This approach begins by comparing the stringency of the specific standards that CARB has submitted for authorization with the relevant federal standards. If each CARB standard is more stringent than the relevant federal standards, then there is no possibility that the submitted standards could render CARB's nonroad program less protective than the federal program. Given this and EPA's prior findings regarding CARB's protectiveness determinations for its nonroad program, that means CARB's determination that its nonroad program is at least as protective as the federal program is not arbitrary and capricious, and the first authorization criterion is satisfied. If, however, it appears

[34] SORE Authorization Support Document at 30.
[35] OPEI at 46. OPEI states that spark-ignition and electric-powered equipment differ significantly in their power-source design, function, technology, and manufacturing and, for these reasons, life cycle emissions (LCE) must be considered when determining the level of protectiveness of public health and welfare of battery-electric equipment versus spark-ignition SORE and whether the forced transition to battery-electric equipment is at least as protective of public health and welfare as the federal standards.

that any CARB standard may be less stringent than the comparable federal standard, then EPA will further evaluate whether California's standards as a whole are 'in the aggregate" as protective of public health and welfare as applicable federal standards for nonroad vehicles and engines.[36] In that circumstance, even if the standards in question are less stringent than the relevant federal standards, so long as California's nonroad standards, in the aggregate, are more stringent than the federal standards, the first authorization criteria is satisfied.

EPA received no comments regarding whether the 2016 SORE Amendments are less protective of public health and welfare as applicable federal standards.

CARB's 2021 SORE Amendments put into place evaporative organic HC standards of 0.00 grams per test (g/test) for all SORE except portable generator sets and pressure washers. The 0.00 g/test standard is clearly more stringent than EPA requirements for handheld and most non-handheld equipment.[37] Portable generators and pressure washers are subject to evaporative organic HC standards of 0.5/0.6/0.7 g/test for <80/80-225/>225 cc engines respectively (pressure washers are all >225cc). For non-handheld equipment (including portable generators and pressure washers), the EPA standards allow compliance with CARB's diurnal standards as an option. Also, the CARB standards are diurnal+hot soak emissions, which is commonly referred to as sealed housing for evaporative determination, or "SHED" testing. EPA's standards applicable to these engines do not require SHED testing. EPA has non-zero permeation standards for handheld equipment, which are clearly less stringent than CARB's zero emission standard for handheld equipment. Similarly, for exhaust emissions, EPA's handheld standards are non-zero so

[36] EPA also evaluates the first authorization criterion by assessing the numerical stringency of CARB's standard compared to applicable Federal standards. Section 209(b)(2) supports this approach.

[37] In simple terms, handheld equipment is carried by the operator during use and is meant to be used in a variety of orientations, i.e., upside down, sideways, etc. Handheld equipment includes devices such as string trimmers, leaf blowers, and chainsaws. Non-handheld equipment is everything else and includes equipment such as portable generators and push or riding lawn mowers.

less stringent than CARB's 2021 Amendments. EPA's non-handheld standards for class I (<225cc) are 10.0/610 g/kWh for HC+NOx/CO and class II (>225cc) are 8.0/610 g/kWh for HC+NOx/CO. In contrast, CARB's standards for <225cc are 6.0/400, 225-825cc are 3.0/200 and >825cc are 0.80/20.6 which are all more stringent than EPA standards. CARB's pressure washer exhaust standards are the same as their generator standards but apply only to the 225-825 and >825 categories.

Because CARB's standards are zero for most equipment or more stringent than EPA standards for non-handheld equipment in the 2024 through 2027 timeframe, and because those latter standards go to zero for 2028 and later, it is readily apparent that CARB's SORE standards are at least as protective as corresponding federal standards. Therefore, EPA cannot find that CARB was arbitrary and capricious in its protectiveness determination and cannot deny CARB's authorization request based on a finding under CAA section 209(e)(2)(A)(i).

Regarding the comment claiming that CARB's projected emission reductions associated with the control of emissions from the SORE regulations are inaccurate, and that this inaccuracy renders CARB's protectiveness determination arbitrary and capricious, EPA disagrees. Neither this commenter nor any other has submitted information, data, or arguments as to why claimed inaccuracies would render CARB's standards, whether alone or in the aggregate, to be less protective than applicable federal standards. Any emission reductions from California's SORE regulation (including those meeting the zero-emission equipment (ZEE) standards), would support a finding that the State's standards are at least as protective as the federal since as noted above EPA's standards are numerically less stringent, and this would be true whether the State's standards are considered in the aggregate or individually. Commenters' claim that reductions

resulting from the submitted standards may not be as large as estimated by CARB, even if true, would not undermine the State's protectiveness determination.

To the extent comments assert that life cycle emissions, including emissions from stationary sources such as facilities that manufacture equipment subject to the SORE rule, must be considered in the protectiveness determination, EPA disagrees. Emissions from sources other than those regulated by the standards submitted for waiver are outside the scope of the prescribed authorization criteria in CAA section 209(e)(2)(A), including section 209(e)(2)(A)(i). Moreover, the CAA does not require California to conduct a specific kind of public health and welfare analysis, nor does it prescribe a method that California must use to make a protectiveness determination. The text of CAA section 209(e)(2) requires a comparison of State and Federal emission standards and does not suggest that in reviewing the State's determination EPA may deny the waiver based on emissions from sources other than the regulated nonroad engines and vehicles. The CAA's entire structure evidences a clear divide between stationary sources (regulated under Title I) and mobile sources (regulated under Title II). There may be indirect impacts of stationary source regulation on mobile sources and vice versa, and it may be appropriate to consider those impacts in some circumstances, but it would be inappropriate and contrary to the plain text of the CAA to conflate the consideration of indirect impacts, when appropriate, with actually treating stationary source emissions as mobile source emissions.[38] To the extent such impacts and decisions could be relevant to CAA section 209(b)(1)(A),

[38] *Cf. Coal. For Responsible Regul., Inc. v. EPA*, 684 F.3d 102, 128–29 (D.C. Cir. 2012), aff'd in part, rev'd in part sub nom. *Util. Air Regul. Grp. v. EPA*, 573 U.S. 302 (2014), and amended sub nom. Coal. *For Responsible Regul., Inc. v. EPA*, 606 F. App'x 6 (D.C. Cir. 2015) ("EPA was not arbitrary and capricious by not considering stationary-source costs in its analyses.").

commenters failed to adduce sufficient evidence to this argument pertaining to lifecycle emission or other impacts considering California's technical findings relating to these issues.[39]

Accordingly, for the reasons noted above, EPA cannot find that CARB's protectiveness finding is arbitrary and capricious, nor can we deny CARB's request for authorization of its SORE regulations based on this criterion.

B. Second Authorization Criterion

Under CAA section 209(e)(2)(A)(ii), EPA must grant an authorization for California nonroad vehicle and engines standards and accompanying enforcement procedures unless EPA finds that California ''does not need such State standards to meet compelling and extraordinary conditions.'' EPA has traditionally interpreted this provision, consistent with its interpretation of similar language in CAA section 209(b)(1)(B), as requiring consideration of whether conditions in California justify the need for a separate nonroad vehicle and engine program to meet compelling and extraordinary conditions, and not whether any given standard or set of standards is necessary to meet such conditions.[40]

Congress intended to allow California to address its extraordinary environmental conditions and foster its role as a laboratory for control of emissions from nonroad vehicles and engines. The Agency's longstanding practice therefore has been to evaluate CARB's requests with the broad discretion to allow California to select the means it determines best to protect the health and welfare of its citizens in recognition of both the harsh reality of California's air pollution and the importance of California's ability to serve as a pioneer and a laboratory for the

[39] In CARB's Final Statement of Reasons (FSOR), EPA-HQ-OAR-2023-0151-0009, at 333, CARB stated that commenters had not provided evidence that another technology would result in greater life-cycle emission benefits than those that will occur with ZEE. Further, at p. 342 CARB noted that life cycle emissions were beyond the scope of the Proposed Amendments and therefore CARB made no changes based on the commenters request for such an analysis. CARB also noted that the scope of the rulemaking described in the October 2021 45-Day Notice does not include performing life cycle emissions analysis.

[40] *See* e.g., 82 FR 6525 (January 19, 2017); 78 FR 58090 (September 20, 2013).

nation in setting new motor vehicle emission standards and developing control technology.[41] EPA notes that ''the statute does not provide for any probing substantive review of the California standards by federal officials.''[42] As a general matter, EPA has applied the traditional interpretation in the same way for all air pollutants, criteria and GHG pollutants alike.[43] In the SORE Authorization Support Document, CARB stated that 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.[44] 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.[45] 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."[46]

CARB's SORE Authorization Support Document includes a demonstration supporting its conclusion that, with respect to the 2016 SORE Amendments, 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.[47]

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[41] *See*, e.g., S. Rep. No. 403, 90th Cong., 1st Sess. 33 (1967) (The waiver of preemption is for California's ''unique problems and pioneering efforts.''); 113 Cong. Rec. 30950, 32478 (''[T]he State will act as a testing agent for various types of controls and the country as a whole will be the beneficiary of this research.'') (Statement of Sen. Murphy).
[42] *Ford Motor v. EPA*, 606 F.2d 1293, 1300 (D.C. Cir. 1979).
[43] 74 FR at 32763; 76 FR 34693; 79 FR 46256; 81 FR 95982; 88 FR 20688.
[44] SORE Authorization Support Document at 27-29, 31.
[45] *Id*.
[46] *Id*.
[47] *Id,* at 27.

CARB also notes that 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 (NAAQS) for ozone and in Serious non-attainment for the particulate matter (PM) NAAQS.[48]

CARB maintains that even if EPA applies a narrower standards-specific inquiry, the record demonstrates that California "needs" the emissions-related requirements of the 2016 SORE Amendments to reduce criteria emissions in California. As discussed in the Initial Statement of Reasons (ISOR) (Enclosure B), evaporative emissions from spark-ignition SORE equipment are a significant source of reactive organic gas (ROG) and toxic air contaminant (TAC) emissions. ROG emissions contribute to the formation of ground-level ozone, and the nonattainment of NAAQS for ozone in California, including the South Coast and San Joaquin Valley Air Basins, and emissions of TACs such as benzene pose a near-source health risk and contribute to increased morbidity and mortality in California. 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.[49]

With respect to the 2021 SORE Amendments, the SORE Authorization Support Document notes that 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. The federal $PM_{2.5}$ NAAQS also requires action in California to achieve

[48] *Id*.
[49] CARB Initial Statement of Reasons (ISOR), EPA-HQ-OAR-2023-0151-0008.

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. Both NOx and ROG are critical precursors to ozone, and NOx is also a precursor to secondary PM formation.[50]

CARB states that the SORE equipment regulated by the 2021 Amendments are significant sources of harmful air pollutants, especially NOx and ROG. It is especially noteworthy that SORE emit greater amounts of NOx and ROG in California than light-duty passenger cars, both in summer and annually. 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) that are designed to achieve the emissions reductions needed to allow California to attain those NAAQS.[51]

Commenters asserted a number of arguments as to why the CARB regulatory history from the 2016 Amendments, as well as CARB's 2016 State Implementation Plan (SIP), support an argument that CARB had not demonstrated a need for the 2021 Amendments. A commenter asserted that the 2021 Amendments are inconsistent with the targeted reductions in the 2016 SIP, which identified specific strategies and reductions needed to meet federal air quality standards. Commenters asserted (by including the same comments they submitted to CARB during the state rulemaking) that there is no evidence to support the conclusion that the reductions from the 2021 Amendments are needed to address compelling and extraordinary conditions, rendering the 2021 Amendments "arbitrary and capricious and without basis."[52]

[50] SORE Authorization Support Document at 32.
[51] *Id*.
[52] OPEI at Annex C, Comment 3. Commenters also argued that, based on Alternative 2 in CARB's ISOR document released Oct. 12, 2021, Alternative 2 delayed implementation of ZEE until 2026 for most SORE and until 2030 for portable generators, would still allow the state to meet its targeted 2016 SIP Strategy emission reduction goals for SORE.

Further, commenters argued that, according to CARB modeling, the Proposed Rule would result in emissions reductions of 7.4 tpd NOx and 55 tpd ROG by 2031, well in excess of what is needed or technologically feasible to meet the SIP goals.[53]

EPA also received comment that seemed to suggest that CARB has significantly underestimated the rate at which market demand for ZEE products will continue to increase, correspondingly displacing combustion small offroad equipment at a greater rate, and that CARB has thus overestimated the emission reductions from the 2021 Amendments and thus need for such standards.[54]

Another commenter argued that to properly regulate sources such as portable generators, CARB must have more reliable data on which to base estimates of current emissions from these sources.[55]

EPA also received comment that maintained that the 2021 Amendments failed to comprehensively consider alternative solutions to meet federal air quality standards (e.g., consideration of lower emission limits, alternative fuels, alkylate fuels, E-fuels, other synthetic fuels, hydrogen, carbon capture and re-use, and potential ZEE programs).[56] The commenter argued that the 2021 Amendments lack consideration of existing and future technologies that may not only offer the reductions needed to meet federal air quality standards, but also may ultimately result in product life-cycle emission benefits superior to ZEE, including in areas of

[53] *Id*.
[54] OPEI at Annex C, Comment 5.
[55] PGMA at 8. This commenter contended that CARB's reliance on the 2018 Social Sciences Research Center ("SSRC") at California State University, Fullerton Survey ("SSRC Survey") has led to a serious overestimation of the emissions associated with portable generators and thus a faulty premise on which the phase out to zero emissions is based.
[56] Stihl at 3.

greenhouse gas reductions and related climate change benefits through product life cycle analysis.[57]

EPA notes that in addition to the information contained in CARB's SORE Authorization Support Document, the California rulemaking records (submitted to EPA as part of the authorization request) contain CARB's responses to comments that were similarly raised during the state rulemaking.

For example, within CARB's ISOR for its 2021 Amendments rulemaking, CARB stated that the Proposed Amendments were necessary to meet CARB's obligation under California Health and Safety Cost (HSC) section 43018 to "endeavor to achieve the maximum degree of emission reduction possible from vehicular and other mobile sources in order to accomplish the attainment of the state standards at the earliest practicable date." Replacing sales of internal combustion engines in both on-road and off-road applications with zero-emission technology is necessary to attain ambient air quality standards and protect the health and welfare of all California residents.[58]

CARB also noted that its 2016 SIP included a measure estimated to reduce statewide NOx and ROG emissions from SORE by 4 and 36 tons per day, respectively, in 2031. The 2021 Amendments would exceed those expected emission reductions to help California attain $PM_{2.5}$ and ozone NAAQS.[59] Nothing in the waiver criteria precludes CARB from achieving additional emissions reductions than it has previously identified, so long as it continues to meet the waiver criteria.

[57] OPEI at Annex C, Comment 6. Note that OPEI's Annex C was OPEI's comments to California in response to the SORE ISOR and the ISOR's request for comment. OPEI included those comments in their submittal to EPA under the title Annex C.
[58] ISOR at ES-2.
[59] *Id.* at ES-3.

In CARB's FSOR, with respect to inventory modeling done by CARB, CARB stated that they disagree with commenter assertions that the SORE2020 emissions inventory model overestimates SORE emissions. As discussed in section IV.A.14 of the FSOR, CARB notes that the SORE2020 emissions inventory model is based on the best available data. CARB states that comparison of the final activity estimates used in the SORE2020 emissions inventory model to the U.S.EPA NONROAD model and past models developed by CARB, as well as lawn and garden surveys do not indicate any overestimation of annual usage or emissions by the SORE2020 emissions inventory. Even if emissions were overestimated in the inventory, CARB maintains that it would not mitigate the need for maximum emission reductions from SORE (achieving emission standards of zero is feasible for SORE, regardless of the SORE emissions inventory).[60]

With respect to the need for California's standards to meet compelling and extraordinary conditions, EPA continues to apply the traditional interpretation of the waiver provision. As stated above and similar to the SAFE 1 Reconsideration decision, EPA continues to believe the best way to interpret this provision is to determine whether California continues to have compelling and extraordinary conditions giving rise to a need for its own new motor vehicle emission program.[61] As explained below, EPA believes there continues to be ample factual support for this conclusion. EPA finds that California has demonstrated that it needs its 2016 and 2021 SORE amendments as part of its nonroad emission program to address compelling and extraordinary conditions.

The validity of the traditional interpretation was thoroughly considered in the SAFE 1 Reconsideration decision. EPA reviewed this issue in some detail in both EPA's 2008 GHG

[60] FSOR at 330.
[61] 87 FR 14332 (March 14, 2022).

waiver denial and subsequent 2009 GHG waiver decision, the 2013 ACC I waiver, and the 2023 HD ACT waiver.[62] These actions present a longstanding and generally consistent (with the rare exceptions as noted above) record of EPA's reasoned support for the traditional interpretation.

EPA notes that each of the regulations in the authorization request (the 2016 and the 2021 SORE Amendments) from CARB is clearly designed to address emissions of criteria pollutants and will have that effect.[63] As such, these standards are not categorically different than all prior standards addressing criteria emissions that EPA has found to satisfy the CAA section 209(e)(2)(A)(ii) inquiry.

EPA notes that 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 ($PM_{2.5}$). 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. Four areas in California are in nonattainment with the NAAQS for $PM_{2.5}$. California's

[62] 74 FR 32744 (July 8, 2009) (GHG waiver for CARB's first light-duty GHG standards); 78 FR 2211 (January 8, 2013) (ACC I waiver); 87 FR 14332 (March 14, 2022) (SAFE 1 reconsideration and reinstatement of ACC I waiver for ZEV and GHG); 88 FR 20688 (April 6, 2023) (Heavy-Duty Advanced Clean Truck waiver).

[63] *See* SORE Authorization Support Document at 32-33 ("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. The federal PM NAAQS also requires action in California for attainment, with a deadline of 2024 for the 35 micrograms per cubic meter (ug/m3) 24-hour standard and 2025 for the 12 ug/m3 annual standard. 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 SORE regulated by the 2021 Amendments are significant sources of harmful air pollutants, especially NOx and ROG. It is especially noteworthy that SORE emit greater amounts of NOx and ROG in California than light-duty passenger cars, both in summer and annually. California needs to achieve significant reductions of NOx, PM2.5 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 particulate matter (PM2.5), and 13.8 million metric tons of carbon dioxide (CO2) from 2023 to 2043. 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.")

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.[64] 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.

Based on a review of the authorization record, the opponents have not demonstrated that California no longer has a need for its nonroad emission program, including its SORE regulations (2016 and 2021 SORE Amendments). California continues to experience some of the worst air quality in the country (measured by the NAAQS status of number of areas within California) as well as localized public health effects. The record here, as presented by CARB, is plainly based on the compelling and extraordinary conditions in California and the corresponding need for CARB's nonroad emission program.

CARB's Board Resolutions and its authorization request plainly set forth its basis to demonstrate the need for its nonroad emission program to meet compelling and extraordinary conditions under the second authorization criterion. Further, EPA does not evaluate the record before it under CAA section 209(e)(2)(A), including whether there is a need for "such standards" to meet compelling and extraordinary conditions in California, based on other possible policy choices that California may choose or claims that CARB's modeling of emission reductions associated with the SORE Amendments are inaccurate.[65] Regardless, the record demonstrates

[64] https://www3.epa.gov/airquality/greenbook/ancl.html#CA, last consulted November 30, 2024, located at EPA-HQ-OAR-2023-0152.

[65] To the extent CARB's program in the aggregate requires less emissions reductions than the Federal program, then it would not qualify for authorization under the first prong. However, as we explain in the first prong discussion, this is not the case, and EPA finds that CARB's protectiveness finding is not arbitrary and capricious.

that emission reductions will occur due to the SORE Amendments and that such reductions, as part of CARB's nonroad emission program, are needed to meet compelling and extraordinary conditions.[66]

CARB has repeatedly demonstrated the need for its nonroad engines and vehicles emissions program to address compelling and extraordinary conditions throughout the state of California, including in its nonattainment areas. The opponents of the authorization have not demonstrated that California does not need its nonroad emissions program to meet compelling and extraordinary conditions. Therefore, I determine that I cannot deny the authorization requests under CAA section 209(e)(2)(A)(ii) based on EPA's traditional interpretation of the criterion. In addition, in the event that the need for CARB's SORE Amendments is to be independently evaluated, the opponents of the authorization have not demonstrated that California does not need the SORE Amendments to meet compelling and extraordinary conditions. As noted above, there continues to be compelling and extraordinary conditions in California that are giving rise to serious air quality issues throughout the state. The SORE Amendments, based on information in the record, will achieve emission reductions associated with evaporative emissions and the 2021

[66] EPA has on several occasions noted, responding to assertions that California's standards must be evaluated in the context of actions that have been or could be taken by states adopting California standards, that the plain text of CAA section 209 as well as the legislative history of the section limit EPA's consideration of the California standards to the state of California and do not extend to other states. *See e.g.,* 78 FR 2112, 2132 (January 9, 2013). Similarly, "[t]he law makes it clear that the waiver requests cannot be denied unless the specific findings designated in the statute can properly be made. 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 my decision under section 209, so long as the *California requirement is consistent with section 202(a)* and is more stringent than applicable Federal requirements in the sense that it may result in some further reduction in air pollution in California. The law makes it clear that the waiver requests cannot be denied unless the specific findings designated in the statute can properly be made. 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 my decision under section 209, so long as the California requirement is consistent with section 202(a) and is more stringent than applicable Federal requirements in the sense that it may result in some further reduction in air pollution in California." (emphasis added), 78 FR at 2115.

Amendments will reduce statewide emissions of criteria pollutants that are designed to help mitigate the serious air quality conditions.[67] Therefore, I determine that I cannot deny the authorization requests under CAA section 209(e)(2)(A)(ii), under an alternative interpretation that requires an assessment of each CARB standard within this second criterion.[68]

C. Third Authorization Criterion

CAA section 209(e)(2)(A)(iii) instructs that EPA cannot grant an authorization if California's standards and enforcement procedures are not consistent with "this section." As noted above, EPA's 1994 rule sets forth, among other things, regulations providing the criteria, as found in CAA section 209(e)(2)(A), which EPA must consider before granting any California authorization request for new nonroad engine or vehicle emission standards.[69] EPA has traditionally interpreted the CAA section 209(e)(2)(A)(iii) ''consistency'' inquiry to require that California standards and enforcement procedures be consistent with CAA section 209(a), section 209(e)(1), and section 209(b)(1)(C) (as EPA has interpreted that subsection in the context of section 209(b) motor vehicle waivers).[70]

1. Consistency with CAA Section 209(a)

To be consistent with CAA section 209(a), California's 2016 and 2021 SORE Amendments must not apply to new motor vehicles or new motor vehicle engines. This is the case here. California's SORE Amendments expressly apply only to nonroad engines and do not apply to motor vehicles or engines used in motor vehicles as defined by CAA section 216(2).[71] We did not receive any comments on California's consistency with CAA section 209(a).

[67] SORE Authorization Support Document at 2.
[68] EPA does not believe the alternative interpretation is correct here but nevertheless provides its analysis and conclusion under this interpretation.
[69] *See* 40 CFR part 1074.
[70] 59 FR 36982–83.
[71] The regulated vehicles are not ''self-propelled vehicles designed for transporting persons or property on a street or highway.'' CAA section 216(2).

Therefore, EPA cannot deny California's request on the basis that California's SORE Amendments are not consistent with CAA section 209(a).

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

To be consistent with CAA section 209(e)(1), California's 2016 and 2021 SORE Amendments must not affect new farm or construction equipment or vehicles that are below 175 horsepower, or new locomotives or new engines used in locomotives. CARB notes that its SORE Amendments do not affect such permanently preempted vehicles or engines. EPA did not receive any comments regarding California's consistency with CAA section 209(e)(1). Therefore, EPA cannot deny California's request on the basis that California's SORE Amendments are not consistent with CAA section 209(e)(1).[72]

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

a. Historical Context

As explained above, EPA has historically interpreted the CAA section 209(e)(2)(A)(iii) consistency requirement to mean that California's standards must be consistent with CAA section 209(b)(1)(C) and therefore consistent with CAA section 202(a). EPA has interpreted consistency with CAA section 202(a) using a two-pronged test: (1) whether there is sufficient lead time to permit the development of technology necessary to meet the standards and other requirements, giving appropriate consideration to the cost of compliance in the time frame provided, and (2) whether the California and Federal test procedures are sufficiently compatible to permit manufacturers to meet both the state and Federal test requirements with one test vehicle or

[72] EPA notes that 40 CFR, Part 1074, section 1074.10(a) codifies the prohibition in CAA section 209(e)(1) and provides that state and localities are preempted from adopting and enforcing standards or other requirements relating to the control of emissions from new engines smaller than 175 horsepower that are primarily used in farm or construction equipment or vehicles, as defined in Part 1074. 40 CFR 1074.5 provides definitions of the terms used in 40 CFR 1074.10(a). EPA anticipates that CARB will implement its SORE regulations consistent with these federal regulatory provisions.

engine.[73] We often refer to the first element by the shorthand of "technological feasibility". The scope of EPA's review of whether California's action is consistent with CAA section 202(a) is narrow. The determination is limited to whether those opposed to the authorization have met their burden of establishing that California's standards are technologically infeasible, or that California's test procedures impose requirements inconsistent with the Federal test procedures.[74]

Under CAA section 209(b)(1)(C), EPA must grant California's waiver (or authorization) request unless the Agency finds that California standards and accompanying enforcement procedures are ''not consistent'' with CAA section 202(a). CAA section 202(a)(2) specifies that standards are to ''take effect after such period as the Administrator finds necessary to permit the development and application of the requisite technology, giving appropriate consideration to the cost of compliance within such period.''

EPA has long limited its evaluation of whether California's standards are consistent with CAA section 202(a) to determining if: (1) There is inadequate lead time to permit the development of the necessary technology giving appropriate consideration to the cost of compliance within that time period; or whether (2) California and Federal test procedures are incompatible so that a single vehicle could not be subjected to both tests. EPA has also explained that ''the import of section 209(b) is not that California and Federal standards be identical, but that the Administrator not grant a waiver of Federal preemption where compliance with the California standards is not technologically feasible within available lead time.'' Further, EPA's review is limited to the record on feasibility of the technology. Therefore, EPA's review is narrow and does not extend to, for example, whether the regulations under review are the most effective, whether the technology incentivized by California's regulations are the best policy choice,

[73] *See* 61 FR 53371, 53372 (Oct. 11, 1996).
[74] *MEMA I*, 627, F.2d at 1126.

whether EPA has the authority under the CAA to set such standards (versus California's sovereign authority to set its standards), or whether better choices should be evaluated. The Administrator has thus long explained that "questions concerning the effectiveness of the available technology are also within the category outside my permissible scope of inquiry," under CAA section 209(b)(1)(C).[75]

California's accompanying enforcement procedures would also be inconsistent with CAA section 202(a) if the Federal and California test procedures conflicted, i.e., if manufacturers would be unable to meet both the California and Federal test requirements with the same test vehicle.

In determining whether there is inadequate lead time to permit the development of technology, EPA considers whether adequate technology is presently available or already in existence and in use. If technology is not presently available, EPA will consider whether California has provided adequate lead time for the development and application of necessary technology prior to the effective date of the standards for which a waiver is being sought.

Additionally, the D.C. Circuit has held that "[i]n the waiver context, section 202(a) relates in relevant part to technological feasibility and to federal certification requirements. 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. The federal certification component ensures that the Federal and California test procedures do not impose

[75] 41 FR 44209, 44210 (October 7, 1976); 47 FR 7306, 7310 (February 18, 1982) ("I am not empowered under the Act to consider the effectiveness of California's regulations, since Congress intended that California should be the judge of 'the best means to protect the health of its citizens and the public welfare.'" (Internal citations omitted)).

inconsistent certification requirements. Neither the Court nor the agency has ever interpreted compliance with section 202(a) to require more.''[76]

Regarding the costs portion of the technology feasibility analysis, when cost is at issue EPA evaluates the cost of developing and implementing control technology in the actual time provided by the California regulations. The D.C. Circuit has stated that compliance cost ''relates to the timing of a particular emission control regulation.''[77] The Court, in *MEMA I*, opined that CAA section 202's cost of compliance concern, juxtaposed as it is with the requirement that the Administrator provide the requisite lead time to allow technological developments, refers to the economic costs of motor vehicle emission standards and accompanying enforcement procedures.[78]

b. 2016 SORE Amendments

CARB notes in their authorization request that 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. CARB also notes that 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, CARB states that engine manufacturers have been submitting certification applications consistent with the 2016 Amendments since their effective date in 2018. Consequently, CARB concludes that the 2016 Amendments do not require

[76] *Motor Equipment Manufacturers Association v. Nichols (MEMA II)* 143 F.3d 449 (D.C. Cir 1998).
[77] *MEMA I* at 111.
[78] *Id. See* S. Rep. No. 192, 89th Cong., 1st Sess. 5–8 (1965); H.R. Rep. No. 728 90th Cong., 1st Sess. 23 (1967), reprinted in U.S. Code Cong. & Admin. News 1967, p. 1938. It relates to the timing of a particular emission control regulation rather than to its social implications.

the development or utilization of new technology and accordingly present no issue of technical feasibility or lead times.[79]

Regarding the costs of the 2016 Amendments, CARB notes that 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, as they primarily only entail incremental costs for additional testing. Installation and operation costs of SHEDs were fully accounted for in the 2003 SORE Amendments. CARB estimated that the maximum increase in price for SORE sold in California associated with the 2016 Amendments would be $2.72 per unit.[80]

Regarding consistency of test procedures, CARB argued in their authorization request that 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.[81]

As explained above, EPA has historically applied a consistency test under CAA section 202(a) that calls for the Administrator to first review whether adequate technology already exists, and if it does not, whether there is adequate time to develop and apply the technology before the standards go into effect. After a review of the record including comments received in this proceeding, EPA has determined that there is no basis on which to conclude that these

[79] SORE Authorization Support Document at 25.
[80] *Id.* at 25-26.
[81] *Id.* at 26.

regulations are inconsistent with CAA section 202(a). As noted above, CARB's authorization request indicated that control technology either presently exists or is in use.[82] Therefore, because manufacturers have submitted certification applications for engines meeting the requirements of the 2016 Amendments and there is nothing in the record to support a finding otherwise, opponents of the authorization have not met their burden of proof to demonstrate technological infeasibility.

Therefore, based on the record before us, the opponents of the 2016 SORE Amendments authorization have not met their requisite burden of proof to demonstrate that such requirements are inconsistent with CAA section 202(a). Further, CARB projected the costs associated with the 2016 Amendments to be low and we see nothing in the record from the regulated industry that provides a countering estimate. Lastly, EPA concurs with CARB that a single engine can be used to demonstrate compliance with both CARB and federal requirements. Thus, EPA cannot deny CARB's 2016 SORE Amendments authorization request on this basis and therefore I cannot deny the authorization request based on the third authorization criterion.

c. 2021 SORE Amendments

i. Technology

In the authorization request, CARB states that the 2021 Amendments present no issues regarding technical feasibility because the required technology already exists. CARB concluded in the rulemaking record for the 2021 Amendments that zero-emissions equipment (ZEE) was at that time already available for most SORE equipment categories, including lawn and garden

[82] *See* SORE Authorization Support Document at page 25 where CARB states, "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."

equipment and utility equipment, for both residential and professional use. CARB noted the availability of at least 35 brands of zero-emission lawn mowers, with several brands directed at professional users. CARB also noted that 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.[83]

CARB also noted that 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, 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.[84]

CARB noted that the 2021 Amendments provide manufacturers of generators additional time to comply with the zero-emission standards. While zero-emission generators are currently available, CARB also noted that 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. CARB stated that these interim emission standards are technically feasible, since manufacturers have already certified SORE capable of powering generators to these emissions levels. With regard to the emissions standards for 2028 and subsequent MY generators, CARB noted these standards present no issues of technical

[83] SORE Authorization Support Document at 34-35.
[84] *Id.*

feasibility since they provide manufacturers over five years to implement currently available compliance technology into their products.[85]

CARB notes that 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. CARB notes that 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.[86]

CARB concludes that the 2021 Amendments are consistent with CAA 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.[87]

EPA received comments from opponents of the authorization that question the availability of the emission control technology necessary to meet the SORE requirements. A commenter noted that most of the electric equipment sold are for residential use. This commenter argued that, even with the increases in quantity and variety of electrification of outdoor power equipment, there is currently no one-size-fits-all transition approach for the full range of small spark-ignited engine powered equipment and use cases. This commenter asserted that despite the

[85] *Id.* at 35. Note that ZEE portable generators do not actually generate electricity as do spark-ignition SORE portable generators. However, ZEE portable generators store power and can deliver that power analogous to the use-case of a spark-ignition SORE portable generator.
[86] *Id* at 35.
[87] *Id* at 35.

progress in product availability, battery-electric powered equipment technical feasibility and cost challenges remain for some SORE equipment configuration and users, and that this is especially the case for landscape and construction professionals, emergency responders, and large landowners who demand steady performance and long run times.[88]

The same commenter argued that there is no proof that zero-emissions SORE and SORE-powered equipment are technologically feasible and suggested that there are no CARB or EPA SORE or SORE-powered equipment certified to zero-emissions limits.[89] This commenter also questioned the run time of leaf blowers running on batteries versus gas-powered units, and that CARB has provided no analysis of the availability of handheld blowers for professional use.[90]

Commenters also argued that CARB has not made any demonstration proving that ZEE are both available and capable of performing equivalently to the gasoline engine-powered equipment currently on the market.[91] Another commenter asserted that a key component of technological feasibility is establishing what the baseline technology can do today under the existing regulations and then determining whether the technology that can meet the new standards can also function in substantially the same manner.[92] A commenter claimed that from a macro level, there is currently not enough electric equipment in the stream of commerce due to supply chain issues and even if the equipment were available the dealerships that play a critical role in assisting in maintaining this equipment are not yet in place.[93] Professional landscapers commented that ZEE is not technically feasible for the landscape industry at this time. They argued that the commercial-grade ZEE currently on the market has significant performance and

[88] OPEI at 3.
[89] OPEI at 7.
[90] OPEI at 26-27.
[91] EMA at 10.
[92] PGMA at 10.
[93] NALP at 2.

cost issues. The commenter claimed that CARB ignored their concerns and failed to properly model the cost and performance hurdles during consideration of the rule. The commenter stated that it is unrealistic to require commercial landscape professionals to utilize equipment reliant on batteries that are optimized to perform between 58°- 68° Fahrenheit when summer heatwaves can bring temperatures that regularly exceed 90° Fahrenheit, and that this goes to the heart of technical feasibility.[94]

With regard to portable generators, commenters argued that the 2021 Amendments will negatively impact public health and welfare because consumers will be unable to operate necessary medical equipment in the event of emergency power outages.[95] Commenters also argued that these amendments will reduce generator and extended power availability during those emergencies.[96] Commenters predicted that, after the 2024 emission requirement changes, costs will increase as high efficiency generators will only be available for purchase in California.[97] A commenter noted that users will then rely on costly wind and/or solar generation, if available, to recharge a designated ZEE generator during emergencies where the electrical power grid is not operational.[98] The commenter argued that portable generators are typically used during emergency situations and require minimal effort for operation. This commenter argued that the best-case scenario is an operator with a ZEE generator fully charged at the beginning of an emergency power outage, consequently the operator will not be able to use the full ZEE generator capacity until electrical power has been restored.[99]

[94] NALP at 1-2.
[95] PGMA at 14-15.
[96] *Id.*
[97] *Id.*
[98] *Id.*
[99] PGMA at 14-15.

Further, commenters stated that the Amendments do not fully appreciate the fact that spark-ignited portable generators are a unique product, used primarily for emergency home backup power, unlike other SORE equipment and zero emission generators, which are used primarily for discretionary activities.[100]

Another commenter argued that ZEE lacks the same performance capabilities as spark-ignition SORE and requires frequent battery changes both of which reduce the productivity and efficiency of a landscape crew in the field. They argued that this reduction in productivity creates operational difficulties for landscape companies at a time when they are already faced with a historic workforce crisis. This commenter stated that landscape companies will have to rely on less efficient equipment that takes more time and requires additional labor to perform the same task in the same amount of time to remain competitive and profitable. The commenter argues that the landscape industry needs additional time to gather the data and resources to begin to make an economically responsible and sustainable transition.[101]

EPA has evaluated the state rulemaking documents that CARB submitted as part of its authorization request along with its Supplemental Comment Letter to determine whether CARB has addressed the issues raised by opponents of the authorization and whether the opponents have met their burden of proof to demonstrate that CARB's 2021 SORE Amendments are technologically infeasible.

In their ISOR,[102] CARB noted that ZEE have been available for many equipment types for decades and that the level of performance, number of brands, and number of equipment options have increased greatly and continue to do so today. Among other things, the record

[100] PGMA at 2, 6.
[101] NALP at 4.
[102] "Public Hearing to Consider Proposed Amendments to the Small Off-Road Engine Regulations: Transition to Zero Emissions," October 12, 2021.

shows that advances in battery technology have caused the price of batteries to fall precipitously and the increased use of brushless electric motors has led to significant increases in the efficiency of equipment using that technology.

In the ISOR, CARB evaluated some of the most popular types of small off-road equipment available in the market for both residential and professional use. CARB acknowledged that the comparison was not comprehensive and did not demonstrate that the spark-ignition SORE equipment and ZEE have identical performance.[103] For both residential and professional equipment analyses, CARB evaluated spark-ignition SORE equipment and their ZEE equivalents in the nine most common types of small off-road equipment. For residential equipment, CARB stated that these covered 98 percent of in-use residential SORE equipment that would be impacted by the rule, and for professional equipment they made up 91 percent of the SORE equipment that would be impacted.[104]

CARB found there to be ZEE counterparts to each of the spark-ignition SORE pieces of equipment they evaluated. CARB acknowledged that the ZEE and spark-ignition SORE equipment they evaluated may have had different run times, but the ZEE run times could be extended with additional batteries. CARB stated that, while additional batteries would increase the cost of the equipment needed to complete a given job, users would likely make back the additional cost through decreased maintenance and fuel costs.[105]

CARB also acknowledged that, while ZEE can perform the same jobs as spark-ignited equipment, there are differences in operator experience despite ZEE having been designed to mimic the user experience of spark-ignition SORE equipment. Noting the timing of battery

[103] *Id.* at 13.
[104] *Id.*
[105] *Id.*, at 15.

charging that needs to be considered, CARB assumed that professional users would purchase sufficient batteries for a typical day of use after overnight charging. CARB noted that users would need sufficient electrical service and outlets to run battery chargers overnight unless recharging was possible at job sites.[106] CARB contrasted the ZEE experience to spark-ignition equipment where users would need to make regular trips to gas stations to fill a portable fuel container which could then be used to transfer gasoline to the equipment all of which can take considerable time.[107] CARB also provided comparisons of equipment lifetimes, warranty periods and maintenance considerations all of which were favorable or similar for ZEE as compared to spark-ignition SORE equipment.[108]

Regarding generators, CARB noted that they are different from other SORE in that their function—to generate electricity—is not done via a motor but instead by converting chemical energy to electrical energy. CARB acknowledged that the run time of a zero-emission generator that does not have solar or wind attachments is determined by the energy storage and loads placed on the generator. As such, longer run times under similar loads require larger energy storage (i.e., more battery capacity) and higher cost.[109] CARB noted that hydrogen fuel cell powered generators have also been introduced in the market and could become more prevalent.[110]

CARB provided several examples of zero-emission generators capable of meeting the needs of users, including residential units capable of powering a refrigerator for 3 to 4 days and a commercial unit capable of storing 80 kilowatt-hours of energy with a rated power output of 11

[106] *Id.* at 17.
[107] *Id*. at 18.
[108] *Id.* at 18-21.
[109] *Id*. at 14-15.
[110] *Id.* at 24.

kilowatts. CARB acknowledged that this latter unit carries a higher price than spark-ignition SORE generators but also pointed to incentive programs such as California's Clean Off-Road Equipment Voucher Incentive Project (CORE). CARB also pointed to some new electric vehicles such as the Ford F-150 Lightning pickup that allows for use of electricity from the vehicle battery pack to power a professional's tools. Further, such vehicles can be used to provide backup power to a home.[111]

However, CARB concluded that more time is needed to transition from gasoline-fueled portable generators to ZEE portable generators. In support of its decision to delay the compliance date, CARB cited: that options currently are limited and often available only at higher costs; that the current supply might not meet future demand; that options for non-grid charging of zero-emission generators are costly; and that the zero-emission generator market needs more time to mature to better meet demand for backup power. Regarding the last of these reasons, CARB points to concerns over public-safety power shutoffs which occur during periods of increased fire danger and the need for increased use of microgrids and transmission line switches that allow for very localized public-safety power shutoffs. For these reasons, CARB delayed compliance for the portable generator ZEE standards until 2028.[112]

In the Final Statement of Reasons and in their May 2024 Supplemental Comment Letter, Exhibit B, CARB stated that the availability, level of performance, number of brands, and number of ZEE options for both residential and professional use have increased greatly and continue to do so today. Battery and electric motor technology has advanced rapidly in recent years, while costs have declined. For the most common types of SORE equipment, there are ZEE equivalents available in the market with similar or better performance characteristics and

[111] *Id*. at 24-25.
[112] *Id.* at 26.

lifetime. Exhibit A provides more example of ZEE available today for both residential and professional users.[113]

Based on the record, EPA finds that the opponents of the authorization have not met their burden of proof regarding their claims that the requisite technology is not available. In their Supplemental Comment Letter to EPA, CARB provided a summary of ZEE available in the market as of April 2024.[114] That list contains numerous examples of ZEE already available in a variety of different types of residential and commercial or professional applications. CARB's demonstration supports the conclusion that requisite technology exists currently. Further, there is no information in the record that demonstrates that an application exists for which such technology could not be used.[115]

Regarding the functionality of SORE and SORE equipment, while commenters argue that the ZEE must first be proven to provide the same functionality as spark-ignition equivalents it is intended to replace, the functionality of such equipment is ultimately based on consumer demand, evolution of ZEE technology, and CARB's policy choices regarding the core function of the equipment. EPA does not believe the statutory requirement that emission control technology be feasible means that a demonstration of absolute equivalency for the end user is required before an authorization may be granted. Feasibility and the criteria for such an evaluation is not based on a defined manner by which a zero-turn lawnmower must be capable of operating non-stop for any set time. The requirement that emission controls be technically

[113]FSOR, at 274. CARB Supplemental Comment Letter, Exhibit B at 11.
[114] CARB Supplemental Comment Letter, Exhibit A.
[115] The California Alliance for Golf (CAG) commented that there are some pieces of equipment for which no ZEE exist. However, Smithco offers an electric bunker rake (see https://smithco.com/product/sand-star-e-48v-ac/, accessed December 6, 2024, and see "Smithco_BunkerRake.pdf" in Docket ID EPA-HQ-OAR-2023-0151). In addition, John Deere offers an electric greens mower (see https://www.deere.com/en/mowers/walk-greens-mowers/225-e-cut-mower/, accessed December 6, 2024, and see "JohnDeere_ElectricGreensMower.pdf" in Docket ID EPA-HQ-OAR-2023-0151). The availability of this equipment appears to contradict CAG's assertion.

feasibility does not foreclose the State from regulating emissions in a way that shifts end users towards a different mode of operation. There are positives and negatives to ZEE when compared to spark-ignition SORE, and CARB has not suggested otherwise. Nevertheless, EPA believes it is CARB's policy choice for the types of products to be available to meet market demand as well as the decision of manufacturers at any given time.

While commenters claim that ZEE does not perform to the same specifications as spark-ignition SORE, these comments do not demonstrate that the technology is not feasible. For example, the need to recharge batteries affects the amount of time necessary to complete a task that will require recharging to complete but does not make the use case infeasible. As we have explained, under EPA's longstanding approach to the third prong, there is a significant distinction between requisite feasibility and the kinds of issues that commenters raise concerning the different characteristics of spark-ignition SORE and ZEE models. We note, moreover, that while spark-ignition SORE equipment may offer what some consumers perceive as superior characteristics in some areas (e.g., lower upfront costs, ability to fuel at gas stations, etc.), ZEEs may offer what other consumers perceive as superior characteristics (e.g., reduced operating and maintenance costs, quieter operation, etc.). The availability of equipment with any particular such characteristic in the California market is not a matter of feasibility, but rather a policy choice reserved to the State.

The test for feasibility under the third prong does not require that there be a currently available ZEE for every possible use case currently served by spark-ignition SORE equipment.[116] Whether any particular product remains available in California is distinct from the

[116] 87 FR 18887, 18892 (May 3, 1984) ("EPA has long held that consistency with section 202(a) does not require that all manufacturers be permitted to sell all motor vehicle models in California. Rather, as discussed below, EPA

question of feasibility. In response to the SORE rule, a manufacturer will determine which product offerings to make available in the California marketplace. These market choices could include offering for sale a limited set of products. Congress left for California—not to EPA—the policy choice that California's standards might result in some reduction of equipment availability for its citizens. In the motor vehicle waiver context, EPA has long held that consistency with CAA section 202(a) does not require that all manufacturers be able to sell all motor vehicle models in California, and EPA has found California standards consistent with section 202(a) in cases where availability of certain models in California was suspended but the "basic market demand" for the class of motor vehicles was satisfied.[117] Here, the "basic market demand" for SORE is clearly met. The record demonstrates that for the most commonly produced types of SORE, ZEE already exist and are being used today. That ZEE for certain specialized use cases may not currently exist, or certain manufacturers may have reduced product offerings in California does not undermine EPA's conclusion as to "basic market demand"—particularly where the evidence indicates that ZEE can be applied to such specialized use cases and many manufacturers who have historically focused on spark-ignition SORE are rapidly developing ZEE products. Indeed, as CARB's submissions and EPA's own research demonstrates, large

has found California standards consistent with section 202(a) in cases where certain models were eliminated but the "basic market demand" was satisfied."). Further, in granting a waiver to California to implement standards more stringent than Federal standards for the 1975 model year, and which would force the introduction of catalyst technology, the Administrator acknowledged: "At these levels, I expect the manufacturers to market a full range of vehicles in California, although there may well be a few models of some manufacturers which do not meet these standards. Any unmarketed models would be expected to be replaced by other models of the same manufacturer, or by vehicles sold by other manufacturers. In this way, competitive pressure is likely to be forced for clean air." 38 FR 10317 (April 26,1973).

[117] 88 FR 20711 n.207; 49 FR 18892 (without deciding whether the "basic demand" test applies in the California waiver case, concluding that the test was met and thus the waiver cannot be denied based on feasibility, and also collecting early authorities including 38 FR 10317, 41 FR 442099, 44213, and *International Harvester v. Ruckelshaus*, 478 F 2d. 615, 640 (D.C. Cir. 1979) ("We are inclined to agree with the Administrator that as long as feasible technology permits the demand for new passenger automobiles to be generally met, the basic requirements of the Act would be satisfied, even though this might occasion fewer models and a more limited choice of engine types. The driving preferences of hot rodders are not to outweigh the goal of a clean environment.")).

numbers of new ZEE products, produced by diverse manufacturers, have appeared in the period since CARB first proposed the 2021 Amendments.

Returning to the issue of performance, EPA finds that the opponents of the authorization have not met their burden of proof to show a lack of technical feasibility. In the SORE rule, California has effectively made a policy choice that effects a change in the sale of new equipment and will, over time, shift end users from spark-ignition SORE to ZEE. Operationally, ZEE differs in significant respects from spark-ignition SORE. The State's evaluation of this performance is both reasonable and reasonably explained. ZEE is in some ways operationally superior to spark-ignition SORE: electric motors generally have very good power characteristics and have better efficiency relative to gasoline powered engines. Electric motors also have limitations on duration of operation that are not typically presented by spark-ignition SORE. EPA believes that the primary concern of many commenters is energy capacity of ZEE relative to spark-ignition SORE and the expectation that a certain level of battery capacity will be required to provide the same operational run time as the spark-ignition SORE being replaced. To the extent this aspect of performance presents cost issues, this is discussed below. One commenter expressed concerns over batteries optimized to operate in limited temperature ranges but provided no evidence that user experiences with battery life were directly correlated to temperature ranges and not to improper storage, charging behavior or other possible causes.

Regarding the SORE standards applicable to portable generators and pressure washers for the 2024 through 2027 model years, a number of engines are certified to those standards as of March 2024,[118] including engines intended for use in both portable generators and pressure washers that meet the 2024 through 2027 standards without use of credits. This demonstrates that

[118] CARB Supplemental Comment Letter, Exhibit C.

the standards are feasible. Responding to commenters critical of the State's decision to adopt interim standards, we note that it remains CARB's policy choice to require these interim standards in advance of ZEE standards in 2028.

An important consideration in the authorization decision is that many comments from the makers of equipment did not claim infeasibility surrounding the technology. Instead, they expressed concern about the lead time available to provide a full suite of ZEE products to fill the needs of the user base. The issue of lead time is discussed below.

ii. Lead Time

Commenters argued that CARB's 2021 Amendments were not consistent with CAA section 202(a) in that insufficient lead time had been provided by CARB. One commenter noted that while a given manufacturer may be able to implement the ZEE transition for more than one product line at a time, a reasonable timeline for converting all of a manufacturers' covered product lines from spark-ignition to ZEE is 6-8 years transition, not the one full model year that CARB provided.[119] The commenter argued that CARB filed its authorization request on December 20, 2022, just days before certain of the SORE Amendments were scheduled to take effect.[120] Further, this commenter argued that the actual timeline that manufacturers need to convert non-handheld products to ZEE is more than two years per product-line. The commenter maintained that CARB has no real-world data, and no actual technical testing or data quantification, to support the mandated near-immediate and wholesale transition to ZEE.[121] A commenter argued that the Amendments do not provide adequate lead time for manufacturers to redesign SORE to meet the model year 2024 zero-emissions limits, or further reduce emissions

[119] EMA at 9.
[120] *Ibid* at 1.
[121] EMA at 3.

and optimize the use of credits in response to the new standards, and/or meet reduced limits for portable generator and pressure washer applications. As a result, this commenter claimed that engine and equipment manufacturers will be forced out of the California market for model year 2024.[122]

A commenter argued that CARB' s proposed "Transition to Zero Emissions" amendments are based on an infeasible timeline that is divorced from the reality of the state of technology.[123]

EPA has considered comments received in the context of CARB's authorization request, the state rulemaking record, and the Supplemental Comment Letter from CARB. In the Initial Statement of Reasons, CARB noted that ZEE have been available for many equipment types for decades, and the number of equipment options have increased greatly and continue to do so. Recent developments—including brushless electric motors and falling battery prices—have led to a significant increase in ZEE product development over the last several years. CARB acknowledged that residential ZEE is more prevalent than professional ZEE and that ZEE is more prevalent in some equipment types (e.g., residential lawn and garden, corded pressure washers) than in others (professional lawn and garden, portable generators).[124] CARB's well-researched and documented findings support the conclusion that the transition from spark-ignition SORE to ZEE has been ongoing and robust for some time. While some manufacturers may have chosen to continue to focus production on spark-ignition SORE products, other manufacturers are more advanced in their transition to ZEE, while other manufacturers produce ZEE products exclusively. Overall, the record supports the conclusion that no additional lead time is necessary for a large majority of ZEE products that serve the functions historically

[122] OPEI at 8.
[123] Briggs & Stratton at 2.
[124] "Public Hearing to Consider Proposed Amendments to the Small Off-Road Engine Regulations: Transition to Zero Emissions," October 12, 2021, at 11-13.

fulfilled by spark-ignition SORE products because such products already exist and are being sold, often in large numbers. And while product availability is still catching up for some of the specialized products, the technology for such products also exists and is present in the market.

In the Final Statement of Reasons and in their May 2024 Supplemental Comment Letter, Exhibit B, CARB stated that CAA section 209(e)(2)(A) does not impose a two-year lead time requirement on California's adoption of emission standards and other emission-related requirements for new off-road engines. Nevertheless, CARB notes the regulation provides sufficient lead time for generators and pressure washers, as required by CAA section 202(a). The technological feasibility of the SORE regulations does not depend on manufacturers having already produced ZEE versions of every type of equipment that use spark-ignition SORE. Just as SORE manufacturers install similar engines in many equipment types, manufacturers may install similar zero-emission power units that use the same batteries in many equipment types without the need to develop new technology. Engines certified in 2021 for sale or lease for use or operation in California already exhibit emissions below the model year (MY) 2024-2027 emission standards. These engines demonstrate the feasibility of the more stringent emission standards. As noted above, EPA's longstanding approach is to calculate lead time from the date the rule is adopted by CARB, not the date the standards take effect.[125] The 2021 SORE amendments were adopted by CARB December 9, 2021, but the standards did not go into effect until MY 2024, allowing a minimum of two full years for compliance. CARB additionally offered manufacturers the opportunity to utilize its limited-term Executive Order (EO) certification option, which allowed them to certify MY 2024 engines to MY 2023 standards.

[125] 88 FR 20711, fn. 208 (April 6, 2023) ("EPA evaluates the lead time associated with CARB's regulation by examining the date of CARB's adoption of the regulation and when manufacturers are required to meet the regulation.").

Unlike regular EOs, these EOs terminate upon published authorization by EPA of the regulation, but they provide an additional buffer time as needed. Finally, generators and pressure washers do not have zero-emission standards until MY 2028, allowing more than six years for manufacturers to comply with zero-emission standards. Manufacturers have already certified pressure washers and generators to the MY 2024 requirements, showing they are capable of meeting the more stringent emission standards. As of March 12, 2024, 48 applications for generators and pressure washers have been certified.[126]

Further, CARB states that the 2021 Amendments do not require manufacturers to convert existing models of SORE equipment to ZEE. CARB's technological feasibility determination was based in part on the existence and cost of ZEE for many types of small off-road equipment. Manufacturers may choose to convert existing models from spark-ignition SORE to ZEE or may introduce new models of ZEE. CARB asserts that manufacturers' decisions to convert models to ZEE therefore does not impact the technological feasibility of the 2021 Amendments.[127]

CARB also provides a list of available ZEE along with power output and expected number of batteries required to fulfill a full day of typical use.[128] While the list of available ZEE does not include a ZEE product to match every currently available SORE product, CARB has noted that where ZEE is not available users of spark-ignition SORE equipment can continue to use that spark-ignition SORE equipment until such time as a ZEE equivalent is available for purchase. EPA notes that the list of ZEE designed and marketed to fulfill a specific purpose continues to expand as manufacturers continue to apply existing technology to fill specific

[126]FSOR at page 375-378. CARB Supplemental Comment Letter, Exhibit B at 1-3.
[127] CARB Supplemental Comment Letter, Exhibit B at 1-3.
[128] CARB Supplemental Comment Letter, Exhibit A.

market needs. Indeed, the number and range of ZEE products has already expanded significantly in the time since CARB first proposed the 2021 Amendments.[129]

EPA's assessment of lead time is based on factors such as the current state of emission control technology, how much time may be needed to adapt existing technologies into product lines, the general amount of time between the adoption of the state regulation and when the regulated party needs to comply in order to introduce its product(s), and the products currently in the marketplace, as well as whether the opponents of the authorization have met their burden of proof to demonstrate that inadequate lead time was provided by CARB's regulations. EPA notes that CARB adopted the 2021 Amendments in December 2021 and requested authorization from EPA in December 2022. Commenter claims of having only one year of lead time are based on the premise that lead time should be measured from the date of approval by the State Office of Administrative Law (OAL). However, EPA has for decades measured lead time from the date of adoption by CARB as it is CARB, not OAL, that makes policy decisions and determines the substance of rules. Regarding this comment, we note again that ZEE has been replacing spark-ignition SORE in the marketplace, most especially in the residential marketplace, for many years. Examining the presence and evolution of SORE products in the marketplace demonstrates that development and application of requisite technology began long before CARB's adoption of the 2021 Amendments, and undermines commenters' claim of insufficient lead time to develop and apply such technologies. Some makers of equipment may have continued to focus on spark-ignition SORE, possibly as a business decision directed primarily at markets outside of California. EPA observes that many of the makers of ZEE, in particular those that have been making ZEE for five to 10 years, are not the traditional makers of SORE. For example,

[129] CARB Supplemental Comment Letter, in particular Exhibit A and CARB's 2023 Implementation Review: 2021 Amendments to the Small Off-Road Engine Regulations, August 30, 2024.

Greenworks and EGo have been making battery powered lawnmowers for years and companies like EcoFlow, Jackery, and Goal Zero are prominent in the portable battery power storage market. In contrast, Honda, a traditional leader in SORE lawnmowers, has announced its first battery powered lawnmowers for launch in 2025.[130] Briggs & Stratton, another longtime leader in SORE lawnmower engines, has a website showcasing its battery powered lawnmowers,[131] but also has a website directed at helping purchasers choose the right lawnmower.[132] Similarly, Honda, a longtime leader in SORE portable generators, does not appear to offer a portable battery powered storage unit, and while Briggs & Stratton offers battery storage systems for home backup, they are not portable. While different manufacturers may have different strategies for ZEE and spark-ignition SORE sales, EPA evaluates lead time based on the availability of requisite technology overall, not whether every single manufacturer can continue to sell all its existing products at the same volumes. With regard to the SORE Amendments, the record demonstrates that requisite technology exists and is being applied. The record also shows that manufacturers are expanding capacity, and that CARB is reasonable in its projection that market demand will be met as SORE products are replaced. This is an area in which the statutory

[130] See https://powerequipment.honda.com/lawn-mowers/battery-powered-lawn-mowers, accessed December 2, 2024, Honda_ElectricMowersIn2025.pdf contained in Docket ID EPA-HQ-OAR-2023-0151. Note Honda's promotional claim that, "In Honda internal field testing, the torque/power of Honda's battery-powered HRC-BE model outperformed not only the competition's gas- and battery powered models, but also Honda's gas-powered HRC lawn mower." Honda's HRC is Honda's commercial line of push lawnmowers.

[131] See https://www.briggsandstratton.com/na/en_us/innovations/push-mowers/82li-series.html#:~:text=We've%20got%20what%20you,efficient%20and%20enjoyable%20mowing%20experience, accessed December 2, 2024, BriggsStratton_82LiSeriesLawnmower.pdf contained in Docket ID EPA-HQ-OAR-2023-0151.

[132] See https://www.briggsandstratton.com/na/en_us/buying-guides/lawn-mowers/choosing-a-lawn-mower.html#push-lawn-mowers, accessed December 2, 2024, under the heading "Gas vs. Battery-Powered Push Mowers," BriggsStratton_ChoosingALawnmower.pdf contained in Docket ID EPA-HQ-OAR-2023-0151.

scheme contemplates that EPA give an appropriate measure of deference to CARB's policy choices. [133]

EPA acknowledges that while some manufacturers are currently marketing a range of ZEE products, others will need additional time to bring products to market should they choose to do so. As noted, EPA's longstanding approach is to measure lead time from when CARB adopts a given regulation which, in this case, was December 9, 2021.[134] Therefore, more than two years of lead time have been provided. CARB has issued Executive Orders allowing for the sale of SORE meeting the prior standards until such time as EPA issues an authorization. We conclude that CARB has provided sufficient lead time to manufacturers that chose to develop and apply requisite technology.

We acknowledge that some manufacturers and their trade groups claim that additional time is needed to redesign existing gasoline products into ZEE products. CARB, however, asserts that the lead time it provided is sufficient. Even were EPA to credit the allegations of these commenters (e.g., that 6-8 years of lead time is necessary for some firms to convert certain gasoline-fueled products to ZEE products), we would not be able to deny the waiver for lack of lead time. The industry as a whole is already producing numerous ZEE models across a diverse range of residential and commercial applications, and ZEE have existed for years. The fact that certain companies have chosen to focus their efforts on spark-ignition SORE does not mean there

[133] EPA recognizes that CARB may make different policy choices based on the air quality and other conditions within the State, and that EPA does not play the role of second-guessing such choices. It also follows that, in response to the SORE regulations, a manufacturer will determine which product offerings to make available in the California marketplace during the transition to and for showing compliance with the new standards. These market choices could include offering for sale a limited set of products. Given the statutory scheme, the EPA Administrator is to give very substantial deference to California's judgments. See also *International Harvester v. Ruckelshaus*, 478 F 2d. 615, 640 (D.C. Cir. 1979) ("We are inclined to agree with the Administrator that as long as feasible technology permits the demand for new passenger automobiles to be generally met, the basic requirements of the Act would be satisfied, even though this might occasion fewer models and a more limited choice of engine types. The driving preferences of hot rodders are not to outweigh the goal of a clean environment.").

[134] CARB Supplemental Comment Letter, Exhibit B at 11.

is insufficient lead time for California's standards; it simply means those companies have made the business decision to focus their efforts on gasoline-fueled products, which continue to have a market in other states. Put differently, where the technology is available and already in commercial production, the fact that certain companies remain technological laggards does not compel EPA to deny the State's authorization request. Nothing in the third statutory criteria limits the State to anti-backsliding standards that can be achieved by every single firm; rather, the authorization provision unambiguously allows the State to adopt technology-forcing standards and to require all manufacturers selling into its market to meet the standards of the technological leaders. Moreover, this is not a case where the State's standards are achievable only by one or two firms with the vast majority of the market precluded from entry; rather, the record demonstrates that a broad swath of firms representing a significant portion of industry are already producing compliant ZEE. By contrast, were EPA to accept the commenters' reading, that would invert the purpose of the authorization provision, through which Congress intended to give California the broadest discretion in addressing its air pollution challenges and in serving as a laboratory of experimentation for the nation.

As noted, EPA evaluates the lead time associated with CARB's regulation by examining the date of CARB's adoption of the regulation and when manufacturers are required to meet the regulation. EPA is guided both by the amount of lead time provided and by the principles set forth in cases such as *International Harvester* and *NRDC*.[135] The lead time here is between the

[135] *Natural Resources Defense Council v. EPA* (*NRDC*), 655 F.2d 318, 331 (D.C. Cir. 1981). ("Given this time frame [a 1980 decision on 1985 model year standards]; we feel that there is substantial room for deference to the EPA's expertise in projecting the likely course of development. The essential question in this case is the pace of that development, and absent a revolution in the study of industry, defense of such a projection can never possess the inescapable logic of a mathematical deduction. We think that the EPA will have demonstrated the reasonableness of its basis for projection if it answers any theoretical objections to the [projected control technology], identifies the major steps necessary in refinement of the technology, and offers plausible reasons for believing that each of those steps can be completed in the time available.").

CARB Board's adoption of the 2021 SORE Amendments and the compliance implementation for the 2024 model year (recognizing that manufacturers may choose to certify earlier in 2023 for the 2024 model year). EPA finds that no evidence in the record that industry as a whole, as measured by product in the marketplace, are unable to comply with CARB's requirements that commence with the 2024 model year and with the 2028 model year. That is, while some manufacturers may have chosen to focus their business on spark-ignition SORE as opposed to ZEE, many other companies are producing ZEE, such that the industry as a whole is already producing numerous ZEE models across diverse residential and commercial applications. With respect to the 2028 model year requirements, CARB has provided a reasonable explanation for how such standards can be met. Therefore, based on the record before EPA, the authorization cannot be denied based on a lack of adequate lead time under the consistency with CAA section 202(a) criterion.

iii. Costs

Similar to the comments received on feasibility and lead time, many comments received that purport to address the cost of compliance with the 2021 SORE Amendments regulations are beyond the scope of EPA's evaluation under the third authorization prong regarding consistency with CAA section 202(a). EPA has historically interpreted section 202(a) to allow consideration of only costs of compliance with the standards, and this continues to be the best reading of the statute. Since the SORE regulations directly regulate manufacturers of small nonroad equipment and engines, the relevant costs under the third prong are the costs of compliance for such manufacturers, *i.e.*, costs that pertain to the manufacturers' development and application of requisite technology to comply with the emission standards. In deciding whether to grant an authorization, EPA generally does not consider costs borne by other, unregulated parties such as

consumer costs (including purchase cost, maintenance and repair costs, fueling costs, and other costs of ownership), cost of charging infrastructure, or other costs.[136] Our position on comments addressing these consumer and other costs is the same as for the related comments on feasibility and lead time: while these comments are beyond the scope of factors EPA is authorized to consider under the third prong, we have nonetheless evaluated them and find them factually unpersuasive.

As discussed above, EPA has considered the factual record and found it to be supportive of a finding that the SORE Amendments are technologically feasible within the lead time provided. Giving appropriate consideration to cost, EPA finds the record to support a conclusion that costs are not excessive. EPA further finds that commenters have not carried their burden to undermine this conclusion. EPA notes that its duty under this section of the CAA simply to consider the costs associated with CARB's regulations, even if such costs are not insignificant. EPA believes that CARB has sufficiently considered costs and EPA has properly reviewed CARB's rule and its consideration of costs were reasonable and were reasonably explained.[137]

CARB's authorization request presents a thorough examination of costs. CARB's analysis does not cite direct costs to manufacturers. Rather, CARB bases its cost analysis on retail prices for marketed products. While EPA received many comments regarding costs, no commenter presented actual data on manufacturer costs that were significantly different from the

[136] *See, e.g.*, *MEMA I*, 627 F.2d, at 1117-18 ("Section 209's reference to "public health and welfare" refers only to the impacts associated with air pollution, as opposed to the social costs of pollution control."); *id.* at 1118 ("Similarly, there is no indication that Congress intended section 202's "cost of compliance" consideration to embody "social costs" of the type petitioners advance.").

[137] *See ATA v EPA,* 600 F.3d 624, 629 (D.C. Cir. 2010) ("In approving the California TRU rule, EPA adequately considered those costs. EPA explained that businesses can comply with the TRU rule for about $2,000 to $5,000 per unit. J.A. 584. EPA also determined that the phased implementation of the rule would help minimize its cost. Although the costs of the TRU rule are not insignificant, EPA's duty under this portion of the statute is simply to consider those costs. It did so here. EPA's conclusion — namely that California's rule was consistent with § 7521(a)(2) — was reasonable and reasonably explained.").

retail costs that CARB relied on, or otherwise demonstrated why considering manufacturing costs in lieu of retail costs would result in such greater costs as to render CARB's consideration of costs unreasonable. Given this and on the assumption that CARB used the best information available to it, EPA believes this is a reasonable alternative method for CARB to estimate costs to the regulated entities, i.e., the manufacturers.

As for costs of the 2021 Amendments, CARB notes that it had appropriately considered compliance costs, acknowledging that incremental costs of new commercial grade ZEE could range from a savings of $165 for a snow blower to an increase of $9,828 for a riding lawn mower as compared to spark-ignition SORE equipment. For residential equipment, CARB estimated that new ZEE could range from a savings of $43 for a pressure washer to an increase of $1,309 for a ZEE generator as compared to spark-ignition SORE equipment.[138]

One commenter stated that CARB simply assumed that since ZEE technology is already on the market in some cases, there will be "minimal" transition costs for manufacturers in all other cases. The commenter claimed that in making that blanket assumption, however, CARB completely ignored the cost and time needed to transition current gasoline-fueled product to ZEE, even when current battery technology exists. In that regard, the commenter alleged that the actual timeline that manufacturers need to convert non-handheld products to ZEE is more than two years per product-line. Thus, according to the commenter, CARB has no real-world data, and no actual technical testing or data quantification, to support the mandated near-immediate and wholesale transition to ZEE.[139]

Commenters also argued that CARB's assessment of technological feasibility with respect to the 2021 Amendments had underestimated the total cost of ownership (TCO) of ZEE

[138] SORE Authorization Support Document at 35-36.
[139] EMA at 3.

by underestimating upfront costs, which could be up to twice CARB's estimate, and underestimating operational costs, which could be up to three times CARB's estimate.[140]

One commenter argued that it is important to compare the run times of generators to establish similar functionality and costs. The commenter compared a spark-ignited and ZEE generator and stated that the spark-ignited generator can last longer on a single tank of fuel than the ZEE generator can last on an initial charge. Further, the commenter argued that the ZEE generator is dependent on additional costly battery storage to maximize power availability and the spark-ignited generator can be easily refueled by gasoline or propane. With regard to costs, the commenter stated that the ZEE generator requires costly accessories such as solar panels, to serve as a recharging method during emergencies.[141]

A commenter expressed concerns regarding the prospect of future reductions in costs, noting that in 2010 the price of storing a kilowatt-hour of electricity was $1,000. In 2021, it was projected to be $131 and in 2030 it is projected to be $70. Thus, the cost to store a kilowatt-hour of electricity is anticipated to drop by $930 between 2010 and 2030. The commenter notes that the cost to store a kilowatt-hour of electricity had already dropped $869 or 93% of the total expected drop in price that CARB had been projecting. Therefore, while there may be some incremental cost reductions to store electricity over the next nine years, the overwhelming majority of cost reductions has already occurred.[142] Another commenter stated that since 2021, rather than decline, they have seen battery cell costs go up more than 50%.[143]

[140] *Id.* at 13.
[141] PGMA at 11.
[142] PGMA at 13-14.
[143] Briggs & Stratton at 7.

Another commenter[144] also expressed concerns regarding the cost impacts of battery storage required for extended use. This commenter asserted that commercial-grade handheld electronic leaf blowers have significant cost implications for the landscape industry. The commenter stated that one popular manufacturer's electric leaf blower retails for approximately $350 - $400, similar to the same manufacturer's gas-powered unit. However, according to the commenter, to use this electric leaf blower for an entire workday requires the purchase of additional batteries and chargers, thus driving the up-front cost to exceed $3,000.[145]

EPA also received comment regarding the costs of larger SORE equipment. A commenter noted that commercial gas-powered riding mowers range from $8,000-$11,000 while the few commercial riding ZEE mowers available with 4-5 hour runtime range from $16,000 to $21,000 or more. The commenter stated that these are significant up-front investments for landscape professionals, most of whom are sole-proprietor (single-employee) businesses.[146]

Additionally, this commenter claimed that batteries remain a significant barrier for the transition to occur based on cost, amount needed, how they are charged, and how they are disposed. Run time for the batteries varies by equipment. For a ride-on mower, the commenter states that the run time for a battery is somewhere between 4 and 6 hours, while for handheld equipment that run time is somewhere between 10 and 30 minutes per battery. The commenter argued that switching batteries frequently reduces productivity and efficiency for the landscape crew and that batteries typically need to be replaced every 300-500 charge cycles (at optimal temperature) which would mean that they would likely need to be replaced at least twice and maybe even three times during the product's life cycle.[147]

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[144] NALP at 3-4.
[145] *Id*.
[146] *Id.*
[147] *Id.*

Other commenters argued that the requirements will be detrimental to businesses that sell to and maintain SORE for end users.[148]

Similar to EPA's approach for evaluating whether emission technology exists or whether lead time is sufficient to develop such technology, EPA examines the record, including CARB's state rulemaking record, when evaluating whether the costs of CARB's regulations (in terms of the costs of the emission control technology) as applied to manufacturers (as the regulated party within CARB's SORE regulations) is excessive.[149] Within the ISOR, CARB pointed to a survey of residential SORE purchasers which found that cost was the top response when deciding between gasoline-powered equipment and ZEE, followed by power and time to refuel/recharge.[150] That same survey also included professional respondents. CARB notes that for landscapers, the top three considerations when making purchases were performance, run-time and cost. CARB acknowledged that the average purchase price of professional ZEE, including sufficient batteries for an eight-hour workday, is higher than for SORE stating that the upfront cost is a barrier to transforming the population of lawn and garden equipment in the professional market to ZEE. CARB noted that ZEE often have a lower total cost of ownership over the equipment lifetime and that decreasing battery prices may result in lower prices for ZEE. [151]

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[148] Jensen & Pilegard; Joseph's Lawnmowers; Miller Farms Nursery.

[149] EPA further explains its analysis of cost considerations below. It is noted that CAA section 202's cost of compliance relates to the timing of particular emission control regulation. *See*, e.g., *MEMA I*, 627 F.2d at 1118 ("Section 202's "cost of compliance" concern, juxtaposed as it is with the requirement that the Administrator provide the requisite lead time to allow technological developments, refers to the economic costs of motor vehicle emission standards and accompanying enforcement procedures. *See* S. Rep. No. 192, 89th Cong., 1st Sess. 5-8 (1965); H.R. Rep. No. 728, 90th Cong., 1st Sess. 23 (1967), U.S. Code Cong. Admin. News 1967, p. 1938. It relates to the timing of a particular emission control regulation rather than to its social implications. Congress wanted to avoid undue economic disruption in the automotive manufacturing industry and also sought to avoid doubling or tripling the cost of motor vehicles to purchasers. It therefore requires that emission regulations be technologically feasible within economic parameters. Therein lies the intent of the "cost of compliance" requirement.")

[150] "Public Hearing to Consider Proposed Amendments to the Small Off-Road Engine Regulations: Transition to Zero Emissions," October 12, 2021, at 22.

[151] *Id*.

CARB's ISOR provides several comparisons of the upfront cost of spark-ignition SORE versus comparable ZEE. Further, CARB conducted an analysis of costs likely to be incurred by both residential and professional equipment users in both the baseline, or no-action, scenario and a scenario with the 2021 Amendments in place.[152] As noted, CARB based this analysis not on internal estimates of costs to manufacturers and instead used actual prices paid by purchasers. CARB's estimated prices for residential and professional equipment are shown in Table 1 and Table 2, respectively.

Table 1 Current upfront price of residential-grade spark-ignition SORE equipment and ZEE and the incremental cost to opt for ZEE over spark-ignition SORE *

Type of Equipment	Spark-ignition SORE equipment price	ZEE price	Incremental cost over Baseline Scenario
Chainsaw	$156.24	$594.58	$438.34
Generator Set	$861.49	$2,169.95	$1,308.46
Lawn Mower	$303.79	$432.92	$129.13
Leaf Blower/Vacuum	$161.67	$324.42	$162.75
Pressure Washer	$400.37	$356.97	-$43.40
Pump < 2 hp	$243.15	$268.00	$24.85
Riding Mower	$2,633.60	$3,253.92	$620.32
Snow Blower	$432.72	$433.99	$1.27
Trimmer/Edger/Brush Cutter	$165.03	$215.92	$50.89

*Table C-3 of CARB's SRIA Appendix I at page 40; 2019 dollars including sales tax.

Table 2 Current upfront price of professional-grade spark-ignition SORE equipment and ZEE and the incremental cost to opt for ZEE over spark-ignition SORE *

Type of Equipment	Spark-ignition SORE equipment price	ZEE price	Incremental cost over Baseline Scenario
Chainsaw	$390.55	$694.37	$303.82
Generator Set	$5,304.57	$6,943.89	$1,639.32
Lawn Mower	$1,409.42	$1,030.71	-$378.71
Leaf Blower/Vacuum	$477.39	$1,746.77	$1,269.38
Pressure Washer	$1,170.82	$3,036.92/$9,980.81 **	$1,866.10/$8,809.99 **
Pump < 2 hp	$454.62	$594.58	$139.96
Riding Mower	$11,337.17	$21,156.42	$9,819.25
Snow Blower	$1,626.42	$1,461.50	-$164.92
Trimmer/Edger/Brush Cutter	$368.85	$867.83	$498.98

*Table C-4 of CARB's SRIA Appendix I at page 40; 2019 dollars including sales tax.
**Corded/Cordless versions.

[152] "Amendments to the Small Off-Road Engine Exhaust and Evaporative Emission Regulations: Standardized Regulatory Impact Assessment (SRIA)," Appendix I, Section C, September 20, 2021.

The ISOR analysis stated that, for residential-grade equipment, the median price of the top ten most popular models of a given type of equipment was used as an estimate of the cost. For residential ZEE, the analysis assumed that all new ZEE purchased would be cordless rather than corded. Residents who already own corded equipment were assumed to continue to use corded equipment. Residential-grade ZEE frequently come packaged with enough batteries for average use. The analysis assumes equipment prices (in 2019 dollars) will remain constant over the regulatory horizon, except as described for ZEE battery prices.

The ISOR analysis also used the median price of popular models as an estimate of the cost of professional-grade equipment. This equipment is owned by landscapers, non-landscaping businesses, and government entities, collectively referred to as professional users. Professional-grade equipment costs include enough batteries for ZEE to operate for the relevant portion of a full eight-hour workday. All professional-grade ZEE were assumed to be cordless except for some pressure washers. Some professional users were assumed to purchase residential-grade equipment based on the typical amount of annual use. Generators that are currently available and that meet the MY 2024 emission standards in the proposed amendments were used to estimate the price of generators for MYs 2024 through 2027.

The ISOR analysis presented 2021 and 2030 calendar year ZEE prices as shown in Table 3 and Table 4 for residential and professional ZEE, respectively. CARB noted that the estimated ZEE price decreases between 2021 and 2030 range from 2.2 percent for the professional-grade chainsaw, to 7.1 percent for the residential-grade pressure washer based on the decreasing costs of lithium-ion batteries. The residential riding mower used a lead-acid battery, so no price

reduction was applied. Similarly, no price reduction was applied to the professional corded pressure washer, which has no battery.

Table 3 Current and projected prices of residential-grade ZEE based on decreasing battery cost calculations (including sales tax) [*]

Type of Equipment	2021 ZEE price	2030 ZEE price
Chainsaw	$594.58	$567.64
Generator Set	$2,169.95	$2,069.61
Lawn Mower	$432.92	$405.12
Leaf Blower/Vacuum	$324.42	$305.88
Pressure Washer	$356.97	$331.55
Pump < 2 hp	$268.00	$256.08
Riding Mower	$3,253.92	$3,253.92
Snow Blower	$433.99	$418.10
Trimmer/Edger/Brush Cutter	$215.92	$209.30

[*]Table C-5 of CARB's SRIA Appendix I at page 40; 2019 dollars including sales tax.

Table 4 Current and projected prices of professional-grade ZEE based on decreasing battery cost calculations (including sales tax) [*]

Type of Equipment	2021 ZEE price	2030 ZEE price
Chainsaw	$694.37	$679.34
Generator Set	$6,943.89	$6,542.55
Lawn Mower	$1,030.71	$984.96
Leaf Blower/Vacuum	$1,746.77	$1,670.79
Pressure Washer	$3,036.92/$9,980.81[**]	$3,036.92/$9,579.46 [**]
Pump < 2 hp	$594.58	$579.09
Riding Mower	$21,156.42	$20,266.89
Snow Blower	$1,461.50	$1,366.19
Trimmer/Edger/Brush Cutter	$867.83	$843.05

[*]Table C-6 of CARB's SRIA Appendix I at page 40; 2019 dollars including sales tax.
[**]Corded/Cordless versions.

Regarding snow blowers, CARB noted that the Proposed Amendments would not require snow blowers to transition to ZEE since they are not required to certify to the HC+NOx standards of 0.00 g/kWh and instead are required to certify only to the CO standards which were not changed. However, CARB assumed that snow blowers would transition to ZEE given their similar costs and the fact that owners of other forms of ZEE would realize that the batteries

would work in a new ZEE snow blower thereby saving some cost on their next snow blower purchase.[153]

Regarding generators, CARB estimated that only 14 percent of residential generators and 11 percent of non-landscaping business-owned generators are ZEE. These percentages are much lower than for other forms of equipment. CARB noted that zero-emission generators are relatively newer to the market and would need more time to gain market share. CARB noted that this is one of the reasons that generators are provided more time prior to the full transition to ZEE. CARB also projected that available credit banks would be used to allow for 6.3 percent of generators to remain at current (pre-Proposed Amendment) emission levels with the remainder meeting the 2024-2027 proposed standards.

Regarding pressure washers, CARB estimated that 67 percent of residential pressure washers were already ZEE but that 98 percent of those were corded. For non-landscaping professional pressure washers, the ZEE percentage was estimated at 45 percent with 93 percent being corded. To be conservative, CARB used the cordless ZEE as the representative cost for residential pressure washers given the trajectory in the market. In the professional market, CARB assumed a mix of cordless and corded pressure washers when calculating costs due to the high cost of professional cordless pressure washers matched with their relatively low use times (CARB estimated that 72 percent of professional pressure washers are used less than once per week). Given such infrequent use, CARB acknowledged that a typical professional user would not break even within the lifetime of the equipment making corded pressure washers more attractive.[154]

[153] "Amendments to the Small Off-Road Engine Exhaust and Evaporative Emission Regulations: Standardized Regulatory Impact Assessment (SRIA)," Appendix I, Section C, September 20, 2021, at 43.
[154] *Id.* at 44.

Regarding the 2016 evaporative emission amendments, CARB estimated the per unit costs at $2.72.[155]

Regarding concerns expressed by some landscapers regarding electrical service upgrades needed to accommodate battery charging, CARB has stated that the 2021 Amendments do not require anyone to make upgrades in electrical service, and much of the ZEE is charged through 15- and 20-amp circuits that are readily available.[156]

CARB also noted that while the acquisition costs for ZEE may often be higher than for equipment in the small offroad category powered by combustion engines, the overall projected costs for ZEE will often be lower because of the lower operational costs. Based on the prices and analyses used in the SRIA (Appendix I of the ISOR), professional users (non-landscaping businesses, landscapers, and government entities) were expected to experience cost-savings from purchasing ZEE in most SORE categories within five years.[157]

EPA finds that CARB's responses are reasonable, and that CARB has reasonably considered the costs of development and application of requisite technology. Commenters have not shown specifically how CARB's extensive consideration of costs was inappropriate or unreasonable. In its authorization request as well as its state rulemaking record, CARB included reasonable consideration of the costs for regulated manufacturers, as well as non-regulated entities.

As explained above, EPA has traditionally applied a consistency test under CAA section 202(a) that calls for the Administrator to first review whether adequate technology already exists. If technology is not presently available, EPA will consider whether California has provided

[155] SORE Authorization Support Document, at 25.
[156] CARB Supplemental Comment Letter at 12.
[157] *Id.* at 7.

adequate lead time for the development and application of the necessary technology prior to the date of the effective date (or implementation date of the model year effected by the standards) for which a waiver or authorization is sought.[158] After a review of the record, information, and comments received in this proceeding, EPA has determined that the opponents of the authorization request for CARB's 2016 and 2021 Amendments have not demonstrated that these amendments are inconsistent with CAA section 202(a). As noted above, CARB's authorization request indicated that control technology either presently exists or is in use. CARB has identified a number of existing technologies that can be used to comply with the amendments, has demonstrated a thorough consideration of costs, and has announced plans to annually review implementation.[159]

Consistency with CAA section 202(a) requires that EPA give consideration to the costs associated with CARB's regulations. For the reasons set forth below, and based on the record before EPA, I cannot find that the incremental costs associated with the manufacture of products meeting the 2021 Amendments is excessive.

Importantly, most of the comments we received regarding costs are beyond the scope of EPA's authorization decision. EPA traditionally has followed the best reading of the statute by only considering costs to the regulated party, in this case, the manufacturers of SORE, not the

[158] 88 FR 20688, 20705 and 20709 (fn.195).

[159] The governing board of CARB has directed CARB staff to review annually the status of the implementation of the proposed amendments and to conduct a technological review in the 2025 to 2026 timeframe to assess the progress towards the MY 2028 zero-emission standards for portable generators and any other engine or equipment category that may be newly subject to the MY 2028 zero-emission standards (see https://ww2.arb.ca.gov/sites/default/files/barcu/board/res/2021/res21-28.pdf "Be it further resolved that the Board directs CARB staff to review annually the status of the implementation of the proposed amendments and to conduct a technological review in the 2025 to 2026 timeframe to assess the progress towards the MY 2028 zero-emission standards for portable generators and any other engine or equipment category that may be newly subject to the MY 2028 zero-emission standards.). In fact, CARB staff has already conducted a review and published their findings in August 2024 (see https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2021/sore21/2023implreview.pdf). EPA intends to follow closely these reviews and any needed follow up by the CARB Board.

users of SORE. To the extent it is relevant, EPA has evaluated CARB's consideration of cost-related concerns raised by users of SORE and concludes that CARB has reasonably considered these costs.

The cost concerns raised by certain manufacturers centered on what they characterized as an inadequate lead time and the costs that would result from making the transition in such a short timeframe. In response to these concerns, EPA notes that battery powered equipment has been in the marketplace for more than 10 years. As CARB noted in its Supplemental Comment Letter, many products meeting the 2021 Amendments are now in the marketplace. EPA cannot deny a waiver for a claimed lack of lead time to develop and implement requisite technology in a situation such as this where the technology has been available for an extended period of time, and where there is ample evidence in the record that such technology is available in the market and that basic market demand is being met.

Some of the price differences shown in Tables 1 and 2 are large either in terms of absolute scale (actual dollars) or in terms of multiple increases (e.g., two or three times greater for ZEE relative to spark-ignition SORE). A limited set of products exhibit both characteristics. For example, the commercial ZEE riding lawn mower is nearly twice the price and costs $9,800 more than the spark-ignition SORE riding mower. Similarly, the commercial battery powered pressure washer is roughly eight times the price and costs roughly $8,800 more than the spark-ignition SORE pressure washer. Importantly, a corded electric pressure washer is much less expensive than the battery powered version. The ZEE residential generator set is more than twice the price and costs roughly $1,300 more than the spark-ignition SORE generator set.

EPA is guided by the principles set forth in *MEMA I* in terms of evaluating whether the costs for manufacturers is consistent with the requirements in CAA section 202(a) as applied to

California. Therefore, in evaluating whether the incremental costs to comply with the 2021 Amendments are excessive, EPA examines the record before it. In this case, manufacturers' comments have primarily focused on the need for additional lead time (which EPA has addressed above), as opposed to submitted evidence to the record that reflects the costs for compliance with the regulations is excessive or results in an undue burden. As noted previously, the evidence in the record demonstrates the current ability to produce compliant product and introduce it into the marketplace and there is no evidence that market demand is not being met. EPA also notes that while there are few examples where it may appear that there has been a doubling or tripling of the retail price of SORE equipment,[160] the commenters have not submitted actual data regarding the cost to manufacturers or other information to the record to explain how such costs are excessive or may create an undue burden on the regulated manufacturers, or otherwise demonstrate how the market demand for such products will not be met. Therefore, based on the record before us, the burden of proof by the opponents of the waiver has not been met and EPA cannot deny the authorization request based on a finding that the SORE Amendments result in an excessive cost for the regulated party or that such costs are not consistent with section 202(a).

As noted, in evaluating whether costs have been adequately considered, EPA is limited to consideration of costs to the regulated entity, which in the case of the SORE rule is the manufacturers. However, in the case of this authorization request, the extent to which ZEE is present in the market and being taken up by users can serve as circumstantial evidence that granting the authorization will not cause "undue economic disruption."[161] The record shows that

[160] We note that while *MEMA I* mentioned a "doubling or tripling" of purchase price as a concern (627 F.2d, at 1118), this was in reference to the consumer costs of motor vehicles. The court in *MEMA I* did not imply, and EPA believes there is no reason to infer either from that court decision or from the statute or legislative history, that this should be a presumptive standard applicable to nonroad equipment, much of which retails at a fraction of the cost of a motor vehicle. See https://www.kbb.com/car-advice/when-will-car-prices-drop/, accessed on December 5, 2024 (noting that the average transaction price of a light-duty vehicle in October 2024 of approximately $48,600).
[161] *MEMA I,* 627 F.2d, at 1118.

ZEE often costs more at initial retail prices than similar spark-ignition SORE and, in the case of commercial end users, the operating costs associated with the necessary batteries may be significant. However, in the residential SORE applications, it appears that ZEE is becoming the industry norm with more ZEE offerings outnumbering spark-ignition SORE at typical big-box stores.[162] There is no evidence in the record to refute that residential end users are finding that ZEE meets their needs and provides benefits to them that make potential increased purchase costs worthwhile. Those benefits may include lower fuel costs, lower repair and maintenance costs, and overall improved ease of use (no pull starters, no priming, etc.).

With regard to commercial users, EPA finds that CARB has presented reasonable evidence that such costs for end users is not excessive. Commercial users, especially landscaping businesses, presumably purchase not just one lawn mower but several and not just one extra battery but several. Therefore, their upfront costs are potentially considerably higher than those of a residential user. However, comments from commercial users did not provide actual data demonstrating that costs would be excessive.

Commercial use presents cost considerations different than the cost considerations that pertain to manufacturers. For example, commercial users will pass costs on to customers in relation to the equipment run time needed to complete a task. Commercial users will also enjoy certain benefits from the transition to ZEE – lower "fuel" costs (i.e., the costs of recharging batteries as opposed to purchasing gasoline), lower repair and maintenance, etc. – and such benefits would presumably also be higher than for residential users. CARB considered these TCO factors in its rule adoption process. As noted above, EPA, in its role adjudicating CAA

[162] See https://www.lowes.com/search?searchTerm=push+lawn+mower&sortMethod=sortBy_highestRated, accessed December 2, 2024, screenshot included in Docket EPA-HQ-OAR-2023-0151 as "Lowes Screenshot 2024-12-02 155351.png".

section 209(b) waiver requests and section 209(e) authorization requests, has historically not considered costs other than costs to manufacturers. We continue to take the position that to do so would be inconsistent with the statute. The cost of multiple batteries that commercial users state is required for their business is not a cost to the manufacturer, but rather is an operating cost that, if it were to be considered, would have to be considered together with operating cost savings associated with ZEE. To the extent such operating costs are relevant, EPA notes that CARB reasonably considered these costs.

EPA has examined the concerns expressed regarding power storage units, also known as battery-powered portable generators. As mentioned, a power storage unit requires both a battery and an inverter, both of which impose costs. EPA notes that there are numerous power storage, or home power backup, units available from companies like EcoFlow and Jackery that are in the residential space.[163] This suggests that residential users are finding sufficient benefits associated with these devices despite their higher purchase prices relative to gasoline powered portable generators.

Commenters have tended to focus not only on purchase price differences between power storage and spark-ignition SORE portable generators, but also their run times, arguing that the spark-ignition SORE portable generator can run for longer periods by simply refilling its tank with gasoline. As noted in the discussion of feasibility above, in the context of determining consistency with CAA section 202(a), the test for whether there is adequate lead time for development and application of requisite technology does not depend on whether technology

[163] See https://www.wired.com/sponsored/story/living-off-grid-dream-ecoflow-delta-pro-ecosystem/#:~:text=you%20need%20power-,EcoFlow%2C%20one%20of%20the%20most%20successful%20and%20acclaimed%20producers%20of,a%20walk%20in%20the%20park, accessed December 11, 2024, saved as "Wired_EcoFlowDELTAPro.pdf" in Docket ID EPA-HQ-OAR-2023-0151; and https://www.cnet.com/home/energy-and-utilities/jackery-explorer-2000-plus-a-jackery-of-all-trades/, accessed December 11, 2024, saved as "CNET_Jackery.pdf" in Docket ID EPA-HQ-OAR-2023-0151.

compliant with the State standard is functionally equivalent to higher-emitting equipment in every way. Aside from this, EPA notes that power storage units present both advantages and disadvantages relative to spark-ignition SORE generators. The assertion that a portable spark-ignition SORE generator will have a longer run time is true only if a user has sufficient gasoline at hand or a functioning gasoline station nearby. Power outages often cause gasoline stations to cease operation due to the inability to pump fuel and/or the inability to process transactions. By contrast, a battery power station could be "refilled" via solar panels should the user also have panels on their property or otherwise have access to them nearby, the point being that neither battery power storage nor spark-ignition SORE portable generators are perfect, and both have positives and negatives when used as a backup emergency power source. Further, those end users unwilling or unable to transition to battery power storage can continue to make use of spark-ignition SORE portable generators via diligent maintenance and repair which should allow the equipment to operate as emergency backup power for years to come.

Regarding the comment concerning the cost per kilowatt-hour for batteries and the commenter's conclusion that the majority of incremental cost reductions to store electricity over time have already occurred, EPA does not agree that these comments are accurately predicting future trends in battery costs. However, importantly, EPA notes that CARB's analysis is not predicated on large reductions in battery costs as made clear in Table 3 and Table 4 which show very conservative equipment price reductions during the 2021 through 2030 years.

Regarding the comment that battery costs have increased since 2021, contrary to CARB's projection that battery costs would decrease, we note that CARB conducted their analysis in 2019 dollars, presumably consistent with the timeframe of conducting the analysis. There has, of

course, been considerable inflation relative to a 2019-dollar valuation due largely to the pandemic. The comment does not appear to take inflation into account.

Regarding the comment that batteries can only endure 300 to 500 charge cycles prior to being replaced, CARB noted in the FSOR that this claim was based on Lithium-Ion Polymer batteries, a battery technology that differs greatly from the batteries used in ZEE.[164] CARB stated that commenters on its SORE proposal provided no evidence that batteries used in ZEE have similar degradation to those in the claim, nor do they provide evidence that degradation of batteries used in ZEE prevents ZEE from being technologically feasible.[165] CARB also pointed out that Stihl states that a battery will retain up to 80 percent of its original capacity, even after 1,200 charging cycles.[166]

Regarding the comment that CARB had underestimated upfront costs, EPA notes that CARB used actual upfront retail prices in its estimates and was transparent in reporting the fact that many pieces of ZEE have higher prices than the corresponding spark-ignition SORE. The commenter did not provide any data regarding the cost to the regulated industry that would counter CARB's analysis. As noted above, CARB staff have been directed by the CARB governing board to review annually the status of the implementation of the proposed amendments and to conduct a technological review in the 2025 to 2026 timeframe to assess the progress towards the MY 2028 zero-emission standards for portable generators and any other engine or equipment category that may be newly subject to the MY 2028 zero-emission standards. EPA expects that CARB staff will conduct a thorough review and will act accordingly depending on the findings of that review.

[164] FSOR at 591.
[165] *Id*.
[166] *Id*.

Based on the foregoing analysis, we find the costs of compliance by the manufacturers with the SORE Amendments are not excessive. Such costs are well within the general boundaries and considerations provided in *MEMA I* that the costs must reach a "very high level" before the EPA can deny a waiver, or in this case an authorization request.[167] For these reasons, based on the record before the Agency, the opponents of the authorization based on costs have not met their burden of proof to demonstrate that the costs associated with manufacturers meeting the new requirement to be excessive. Further, while concerns regarding operating costs raised by some commercial end users are not within the scope of factors EPA may consider in deciding whether to grant an authorization, EPA notes that CARB has reasonably considered these costs and had reasonably explained its conclusion that such operating costs will not be excessive. Therefore, I cannot deny the authorization request based on considerations of cost.

d. Test Procedure Consistency

Regarding consistency of the 2016 Amendments with federal requirements, CARB states in their Authorization Request that 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.[168]

Regarding consistency of the 2021 Amendments with federal requirements, CARB notes in its authorization request that 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

[167] *MEMA I* at 1118.
[168] SORE Authorization Support Document at 26.

California's certification test requirements with the corresponding federal certification test requirements, 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.[169]

In the 2016 ISOR, CARB stated that the evaporative emissions regulations they adopted in 2003 were the first to control evaporative emissions from SORE. CARB provides more history and testing they have done leading to their 2016 Amendments.[170]

In the 2016 ISOR, CARB noted that the 2016 proposed amendments required that the fuel used for SORE testing contain 10 percent ethanol (E10) which would represent the fuel currently dispensed at California gasoline stations. CARB noted that, overall, their testing indicated that engines with well-designed and constructed evaporative emission control systems would meet the diurnal emission standards with E10 fuel and that implementing the changes in the proposed amendments should bring all evaporative families into compliance with the diurnal emission standards. It was not expected that additional changes would need to be made to evaporative families that are compliant with the pre-2016 diurnal emission standards using the prior fuel in order to continue to comply with the standards when tested with E10 fuel.[171]

Regarding fuel tank test procedures, the 2016 ISOR stated that the proposed amendments would align CARB's fuel tank testing requirements with EPA's without decreasing stringency. The revised CARB requirements would be at least as stringent as EPA's and more stringent in some respects. Some differences would still exist between CARB's and EPA's fuel tank testing

[169] SORE Authorization Support Document at 36.
[170] "Public Hearing to Consider the Proposed Amendments to the Evaporative Emission Requirements for Small Off-Road Engines, Staff Report: Initial Statement of Reasons," September 27, 2016, (ISOR) at 8.
[171] ISOR at 17.

requirements, but applicants would have the option of testing one set of fuel tanks to meet the requirements for both CARB and EPA.[172]

In the 2021 ISOR, CARB proposed evaporative emission standards of 0.00 grams per test except for portable generators for which standards were to be lower but not zero. Further, the 2021 ISOR proposed that, beginning with MY 2024, the evaporative emission standards would cover a greater portion of an engine's evaporative emissions by expanding the standards to include not only diurnal emissions but also hot soak emissions. The proposed amendments also expanded the applicability of the proposed standards to include SORE generators smaller than 80 cc, a segment that had not been subject to diurnal emission standards prior to MY 2024.[173]

In the 2021 FSOR, and consistent with changes made to exhaust emission standards, CARB proposed new diurnal and hot soak standards for pressure washers with SORE engines greater than or equal to 225 cc. The proposed modifications were made in response to public comments asking for more time to allow the zero-emission commercial pressure washer market to develop. CARB noted that there were challenges with zero-emission pressure washers, including a lack of availability of cordless zero-emission pressure washers. More than 30 commenters stated that the initial proposal would significantly impact the ability of professional cleaners to provide sanitation in public areas because they often use pressure washers in places where outlets are not available to plug in a corded unit, and the pressure washers they use have high power demands. The proposed modifications would allow more time for the specific engine displacement category of 225 cc and larger to comply with emission standards of zero because pressure washers with such engines have greater pressure ratings and water flow rates that are

[172] *Id* at 17.
[173] "Public Hearing to Consider Proposed Amendments to the Small Off-Road Engine Regulations: Transition to Zero Emissions," October 12, 2021, at 32-35.

used in professional cleaning work. As a result of these features, pressure washers with engine displacement greater than or equal to 225 cc cost significantly more to purchase than pressure washers with engine displacement less than 225 cc. The cost and size of pressure washers with engine displacement greater than or equal to 225 cc make them less practical for users other than professional cleaning services, so users such as residential users are less likely to purchase or use them. The unique features of pressure washers with engine displacement greater than or equal to 225 cc and the high cost of professional zero-emission pressure washers set them apart from other equipment types and necessitated this change. Emission standards of zero would apply to pressure washers with engine displacements less than 225 cc for model years 2024 and later, consistent with the requirements under the Proposed Amendments described in the ISOR for all other SORE equipment except generators. Such pressure washers are more likely to be used by users other than professional cleaning services.[174]

Also, in the FSOR, CARB noted that concerns they received regarding the proposed change in the requirement that only one engine be tested for compliance, that commenters have speculated on the inability of manufacturers to meet both California and federal requirements with one test engine and that the commenters during the state rulemaking do not provide evidence to support their claims. CARB notes that although its requirements are more stringent than federal requirements this does not preclude the use of one test engine to meet both California and federal requirements.[175]

In their May 2024 Supplemental Comment Letter, Exhibit B, CARB stated that requiring performance certification is necessary to ensure engines meet the more stringent emission standards and support the effective inclusion of hot soak emissions in the emission standards.

[174] 2021 FSOR at 7-8.
[175] *Ibid* at 378.

The 2021 Amendments specify revisions to section 2754(a) and add a new subsection 2754(d) that, beginning with MY 2024, would require manufacturers to demonstrate compliance with evaporative emission standards that incorporate hot soak emissions and to submit data showing that hot soak plus diurnal emissions will not exceed the new emission standards prior to certification. CARB disagrees with the assertion that removing design certification would prevent manufacturers from using exhaust emission credits. Amendments to section 2754.1, certification averaging, banking, and trading (ABT) for evaporative emission credits, are discussed on pages 229-236 of the ISOR. All engines certified to the diurnal or hot soak plus diurnal emission standards specified in section 2754(a) may participate in the ABT program for evaporative emissions.[176]

EPA received several comments on the issue of test procedure consistency despite CARB's statements that no issues exist. The primary concerns expressed by commenters were geared toward the slight differences in requirements (e.g., California LEV III fuel versus EPA's required fuel) rather than the presence of requirements that would require a different design or different product for the California market versus the rest of the nation. CARB makes clear that there are no issues that preclude the use of one engine (i.e., one design or one product) to demonstrate compliance with both California and federal requirements. EPA agrees with this assessment. EPA believes that any well-designed system can be made capable of meeting both sets of standards, even if two sets of demonstrations may or may not be required to do so.[177]

[176] CARB Supplemental Comment Letter, Exhibit B at 16.
[177] To be consistent with "(2)" in terms of consistent test procedures, the California certification procedures need not be identical to the Federal certification procedures. California procedures would be inconsistent, however, if manufacturers would be unable to meet the state and the Federal requirements with the same test vehicle in the course of the same test. See, e.g., 43 FR 32182 (July 25, 1978).

We also received comments expressing concerns over California's required SHED testing for handheld equipment, a category for which EPA has no allowance to accept SHED testing. However, again, an engine maker could conduct SHED testing for California and verify design requirements for EPA and comply with both requirements with a single system. Importantly, handheld equipment will be ZEE in the future and this issue of evaporative emission requirement differences will no longer exist.

EPA notes that, while CARB has in place a SHED testing requirement for non-handheld equipment in the 2024 through 2027 timeframe, EPA can accept that test data as an option in place of the required performance test data in EPA regulations. Also, while CARB required SHED testing for non-handheld equipment in the 2018 through 2023 timeframe, and EPA does not require or consider for federal requirements the CARB SHED testing, the fact remains that a single engine could be used to demonstrate compliance with EPA's requirements and the CARB SHED testing requirements and thus does not pose test procedure consistency issues. See 40 CFR part 1054, part 1060 and part 1065 for EPA's applicable standards.

Notably, the comments regarding test procedure consistency deal specifically with spark-ignition SORE. ZEE has no test procedures or test requirements and are not even being certified by CARB or EPA. As such, EPA considers the main issues to center on the 2024-2027 test procedures for SORE portable generators and pressure washers. Given that fact and given that EPA has a provision (see 40 CFR 1060.105(e)) to accept CARB performance testing for compliance with EPA evaporative emission requirements on non-handheld equipment and given that there is nothing in either the CARB or EPA standards that would preclude a single engine being used to demonstrate compliance, EPA believes there to be no meaningful test procedure consistency concerns.

Based on the record before EPA, and with the burden of proof on opponents of the authorization, there is no reasonable basis to deny the authorization request based on a finding of test procedure inconsistency. Further, there is no evidence that a manufacturer would be unable to test a piece of SORE equipment on both the federal and CARB test procedures, if necessary, in order to demonstrate compliance with applicable emission standards at the federal and California levels.

e. Safety

EPA also considers the safety of the emission controls needed to comply with the standards. In considering any request from California to authorize the state to adopt or enforce standards or other requirements relating to control of emissions from new nonroad spark-ignition engines smaller than 50 horsepower, the Administrator will give appropriate consideration to safety factors (including the potential increased risk of burn or fire) associated with compliance with the California standard.[178]

EPA received several comments regarding safety and as noted below EPA finds that the opponents have not met their burden of proof to demonstrate that CARB's SORE Amendments are creating unreasonable safety issues. One commenter argued that the portable generator standards for 2024-2027 would require lean operation which increases operating temperatures and surface temperatures thereby increasing fire and burn risks as well as increasing maintenance costs.[179] Commenters also argued that U.S. Department of Transportation (DOT) regulations would not allow for transporting sufficient batteries for a full day of operation of certain SORE equipment. The commenters noted that the DOT regulations currently prohibit commercial users

[178] *See* 40 CFR 1074.105(c).
[179] PGMA at 15.

from transporting an adequate supply of batteries needed to power day-long usage of ZEE equipment.[180]

Conversely, EPA received comment in support of the authorization considering the added safety associated with the SORE amendments. A commenter stated that workers operating these hazardous engines (i.e., spark-ignition SORE) are not protected by federal health laws and are routinely exposed to toxic fumes and engines operating at decibel levels that destroy hearing. The commenter argues that California's new policy will prevent hundreds of premature deaths.[181]

EPA has examined CARB's state rulemaking to determine their consideration of safety in adopting the SORE Amendments. In the FSOR and their Supplemental Comment Letter, CARB stated that battery storage, packaging, air transport, UN classification scheme, marking, and labeling were beyond the scope of the 2021 Amendments. Further, CARB argued that commenters had not provided evidence that batteries for ZEE cannot be transported as needed for retail distribution, use by equipment owners, and recycling at the end of the batteries' life.[182]

CARB also noted that safety is often a more significant concern for gasoline-powered equipment than for ZEE. CAL Fire requires all portable gasoline-powered equipment, which includes lawnmowers, to have spark arrestors when used in wildland areas. Spark arrestors trap or destroy hot exhaust particles from internal combustion engines for fire prevention. The exhaust system, spark arrestors, and equipment must be in proper working order and free of carbon buildup to minimize fire risk. Gasoline-powered lawn mowers can also start fires when grass gets caught in the muffler or engine, when a user checks the fuel improperly, or when a leaky gasket in the carburetor causes fuel to leak. The United States Consumer Product Safety

[180] OPEI at Annex C, Comment 10.
[181] Dr. Anthony DeRiggi.
[182] 2021 FSOR at 375-378; CARB Supplemental Comment Letter, Exhibit B at 15.

Commission has issued numerous recalls for lawn mowers that posed fire hazards caused by leaking fuel.[183]

EPA concurs with CARB on these safety issues surrounding batteries and battery safety. Modern batteries and battery chargers contain safety features geared toward maintaining safe temperature levels during charging. Further, lithium iron phosphate (LFP) batteries have proven to be safer than the other types of Lithium-Ion batteries for which most media reports of battery fires are based and are more robust with respect to overcharging, over-discharging, and are less likely to have a thermal event if short-circuited due to physical damage. Provided high quality batteries are used and proper safety measures are taken within the design of the battery cells and packs and the design of their venting in the event of a cell failure, there should be no significant concerns regarding battery safety.

As for lean operation on SORE, allegedly needed to comply with the 2024-2027 portable generator and/or pressure washer standards, EPA does not agree that lean operation is necessary to meet the standards. Class 2 engines operated near stoichiometry using oxygen sensor feedback control have been available in the U.S. market for more than a decade. Engines of this type using standard three-way catalyst technology can meet the 2024-2027 portable generator and/or pressure washer standards. Nearly two decades ago, EPA conducted a comprehensive safety study and Failure Mode and Effects Analyses (FMEA) of catalyst-equipped, non-handheld Class 1 and Class 2 engines that investigated incremental impacts on safety, focusing on the risk of fire and burn to consumers associated with catalyst and evaporative emissions control technologies.[184]

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[183] *Id.* at 13-14.

[184] U.S. EPA. 2006. EPA Technical Study on the Safety of Emission Controls for Nonroad Spark-Ignition Engines < 50 Horsepower. EPA Document No. EPA420-R-06-006. https://nepis.epa.gov/Exe/ZyPDF.cgi/P100KIWA.PDF?Dockey=P100KIWA.PDF.

EPA finds that CARB has reasonably addressed safety concerns raised by the commenters and that CARB has reasonable addressed how the emission controls (e.g., batteries) necessary for compliance with the 2021 SORE Amendments can be designed and installed and otherwise maintained and used. Opponents of the authorization have not met their burden of proof to demonstrate that the 2021 SORE Amendments create unsafe conditions compared with pre-existing standards and SORE and SORE equipment. Therefore, EPA cannot deny the authorization based on safety considerations.

III. Other Issues

EPA has long construed CAA section 209 as limiting the Agency's authority to deny California's requests for waivers and authorizations to the respective three listed criteria under CAA section 209(b) and section 209(e)(2)(A). This narrow review approach is supported by decades of waiver and authorization practice and judicial precedent. In *MEMA I*, the D.C. Circuit held that the Agency's inquiry under CAA section 209(b) is "modest in scope."[185] The D.C. Circuit further noted that "there is no such thing as a 'general duty' on an administrative agency to make decisions based on factors other than those Congress expressly or impliedly intended the agency to consider.[186] In *MEMA II*, the D.C. Circuit again rejected an argument that EPA must consider a factor outside the section 209(b) statutory criteria concluding that doing so would restrict California's ability to "exercise broad discretion."[187] EPA's duty, in the authorization context, is thus to grant California's authorization request unless one of the three listed criteria is met. "[S]ection 209(b) sets forth the only waiver standards with which California must comply . . . If EPA concludes that California's standards pass this test, it is obligated to approve California's

[185] *MEMA I* at 1105.
[186] *Id.* at 1116.
[187] *MEMA II* at 453.

waiver application."[188] EPA has therefore consistently declined to consider factors outside the three statutory criteria listed in CAA sections 209(b) and 209(e)(2)(A).

EPA received comments that were outside the scope of the considerations involved in EPA evaluation of CARB's authorization requests under CAA section 209(e)(2)(A). Commenters asked that EPA find as appropriate lead time from the date of EPA's authorization decision under the concept that EPA's authorization decision marks the final action of a CARB nonroad engine rulemaking. The commenters note that CARB has indicated that model year 2024 Executive Orders for engines and equipment meeting the pre-2022 Amendment standards will "terminate" the days EPA approves the waiver.[189] EPA appreciates the concerns expressed by these trade associations on behalf of its members. As noted in Section II.C, EPA believes that lead time begins from the date of CARB's adoption of the applicable regulations or amendments and that in this instance the opponents of the authorization have not meet their burden of proof to demonstrate inadequate lead time. Given the timing of EPA's authorization decision, coinciding with the end of the 2024 model year, EPA anticipates that CARB will exercise its enforcement discretion and responsibilities in an appropriate manner upon EPA's official announcement of the authorization decision. Within the authorization evaluation and decision EPA plays no role in CARB's implementation of its regulation and therefore encourages regulated parties to contact CARB for further questions regarding the implementation of its SORE regulations.

EPA also received comment that suggested that the 2021 Amendments hamper the transition to ZEE portable generators and are not cost-effective. These commenters noted that most available portable generators do not meet the reduced emissions standards for 2024 through 2027 and would therefore need to be redesigned and resubmitted for exhaust and evaporative

[188] *Id.* at 463.
[189] EMA and OPEI, EPA-HQ-OAR-2023-0151-0033 and 0034.

emissions approval. The commenters also noted the research and development time plus expenses associated with this process may not be warranted for portable generators that would only be available for sale in California within a four-year window.[190] We explain above why we cannot conclude that these interim standards are infeasible. Insofar as the comment is raising the question of whether EPA should consider broader policy choices made by the State, EPA notes that section 209 contemplates that EPA defer to the State's policy choices, such as the decision to require this interim emission standard.

IV. Decision

After evaluating CARB's authorization request and the Small Off-road Engine (SORE) regulations, the public comments and other materials contained in the administrative record, EPA is granting an authorization for the 2016 SORE Amendments and the 2021 SORE Amendments that comprise the SORE regulations and that CARB submitted for an authorization under CAA section 209(e)(2)(A).[191]

Section 307(b)(1) of the CAA governs judicial review of final actions by the EPA. Petitions for review must be filed within 60 days from the date notice of this final action is published in the *Federal Register*.

V. Statutory and Executive Order Reviews

As with past authorization decisions, this action is not a rule as defined by Executive Order 12866. Therefore, it is exempt from review by the Office of Management and Budget as required for rules and regulations by Executive Order 12866.

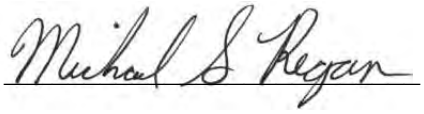
[190] PGMA at 14.

[191] Given that CARB adopted its 2016 and 2021 Amendments separately, as well as the distinct analysis on the three statutory authorization criteria for each amendment, EPA intends our authorization of the 2016 and 2021 Amendments to be severable. Were a reviewing court to set aside our authorization regarding either amendments, or portion thereof, EPA intends for our authorization of the other amendments to remain in effect.

In addition, this action is not a rule as defined in the Regulatory Flexibility Act, 5 U.S.C. § 601(2). Therefore, EPA has not prepared a supporting regulatory flexibility analysis addressing the impact of this action on small business entities.

Further, the Congressional Review Act, 5 U.S.C. § 801, *et seq.*, as added by the Small Business Regulatory Enforcement Fairness Act of 1996, does not apply because this action is not a rule for purposes of 5 U.S.C. § 804(3).[192]

Dated: December 19, 2024



Michael S. Regan,

Administrator.

[192] The U.S. Government Accountability Office (GAO) has issued a decision (in the context of its review of EPA's SAFE I Reconsideration decision) that the Congressional Review Act does not include adjudicatory orders and also excludes certain categories of rule from coverage, including rules of particular applicability. As part of this decision, the GAO also determined that even if the SAFE I Reconsideration waiver action were to satisfy the Administrative Procedure Act's definition of a rule, it would be considered a rule of particular applicability, and, therefore, would still not be subject to the CRA's submission requirement. https://www.gao.gov/products/b-334309.