November 29, 2021

Clerk of the Board
California Air Resources Board
1001 I Street
Sacramento, California 95814

Re: Proposed Amendments to the Small Off-Road Engine Regulations

Dear Clerk of the Board, California Air Resources Board:

On behalf of the Portable Generators Manufacturers' Association ("PGMA"), we appreciate the opportunity to submit these comments on the California Air Resources Board ("CARB") Proposed Amendments to the Small Off-Road Engine Regulations ("Proposed Amendments") and accompanying Initial Statement of Reasons ("ISOR"), released October 12, 2021. These comments supplement comments previously submitted by PGMA.[1]

PGMA is a trade association of portable generator manufacturers in the United States. Since our members include the major industry manufacturers of portable generators sold in North America and a significant majority of the industry, we are the recognized voice of the portable generator industry.

Our full member companies include:

- American Honda Motor Co., Inc.
- Briggs & Stratton Corporation
- Champion Power Equipment
- DuroMax Power Equipment
- Firman Power Equipment
- Generac Power Systems
- Harbor Freight Tools USA, Inc.
- Yamaha Motor Corporation USA

PGMA has many material concerns related to the Proposed Amendments, most of which have been previously expressed in PGMA's prior comment letter and those of other industry stakeholders, and in our meetings with CARB staff.

[1] PGMA submitted comments on this Rulemaking to CARB on April 7, 2021.

PGMA supports CARB's efforts to reduce emissions from small off-road engine ("SORE") equipment and is willing to work with CARB to develop a solution that accomplishes that goal.[2] But as CARB staff made clear in the ISOR, "[g]enerators are fundamentally different from other SORE equipment."[3] And yet, the Proposed Amendments do not treat generators fundamentally differently than other SORE equipment. Instead, the Proposed Amendments ignore the technological infeasibility and high costs of transitioning portable generators to zero-emissions in the timeframe required.

Our concerns with the Proposed Amendments, which are explained more fully in **Attachment** 1, are as follows.

First, the Proposed 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.

Second, the Proposed Amendments are premised on faulty data that overestimates both the population of spark-ignited portable generators in California and their associated emissions.

Third, the Proposed Amendments are neither technologically feasible nor cost-effective because zero emission generators do not perform the same functions as spark-ignited portable generators and are also orders of magnitude more expensive.

Fourth, the two-step phase out of spark-ignited portable generators will hamper the transition to zero-emission portable generators because it may divert the resources needed to develop effective and affordable zero emission technology.

Fifth, the credit provisions are unlikely to be effective because there will likely not be enough zero emissions generators sold to generate a significant number of credits.

Sixth, CARB's reliance on the 2016 Environmental Assessment for the State Implementation Plan is not supported because CARB has a significant amount of new, specific information it needs to analyze to support the broad conclusions in that document.

Seventh, the Proposed Amendments do not meet the Environmental Protection Agency's criteria for a waiver from the Clean Air Act.

PGMA's proposed solution, which focuses on the statutorily mandated requirements of technological feasibility and cost effectiveness, will ensure that California consumers will continue to have access to portable generator solutions that provide the function required during emergencies at reasonable price points.

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[2] *See* **Section VIII**, *infra*.

[3] ISOR, at p. 24.

We appreciate your attention to the issues addressed in this letter, and we look forward to discussing them further with you. If you have any questions, please feel free to call me at 216-241-7333 x7721 or email me at jharding@thomasamc.com.

Sincerely,

JOSEPH HARDING

Technical Director

Portable Generator Manufacturers' Association

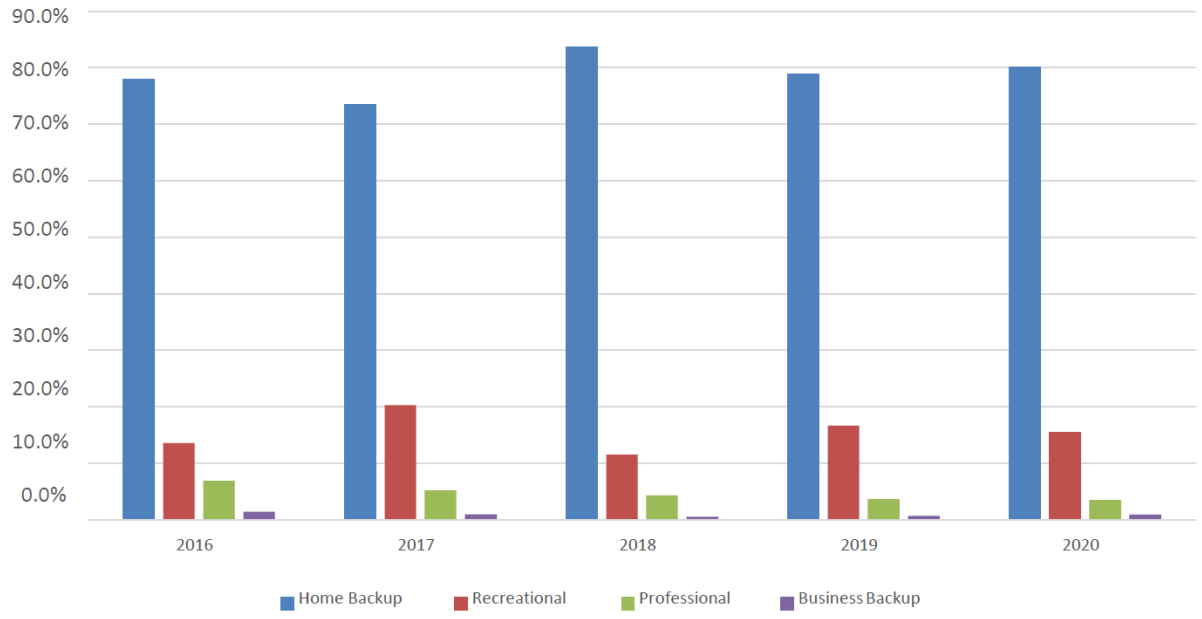
Attachment 1

TABLE OF CONTENTS

I. PORTABLE GENERATORS ARE A UNIQUE PRODUCT

A. A Large Majority of Consumers Use Portable Generators for Emergency Back-up Power

The ISOR states that "[s]ome small portable generators are purchased for home backup power."[4] But this assertion is a considerable understatement. Based on a PGMA member's data, about 80% of Californians who purchase a portable generator do so for the purpose of home backup power.[5]



The ISOR then states that "[s]ome people depend on generators for power backup during outages. The longer time for generators to meet emissions standards of zero will allow for these people to identify suitable power backup options."[6] But according to PGMA member data, more than 70% of portable generator owners stated that it took them less than three weeks to decide to purchase a portable generator. This evidences the fact that most consumers buy a portable generator in response to an expected, imminent emergency situation. As described more fully below in **Section III.A**, zero emission portable generators are not suitable home backup power solutions. Other options for home backup power that the ISOR identifies such as stationary generators that run on natural gas or propane are very expensive and cannot be installed on demand. Thus, if CARB adopts the Proposed Amendments, a majority of California consumers

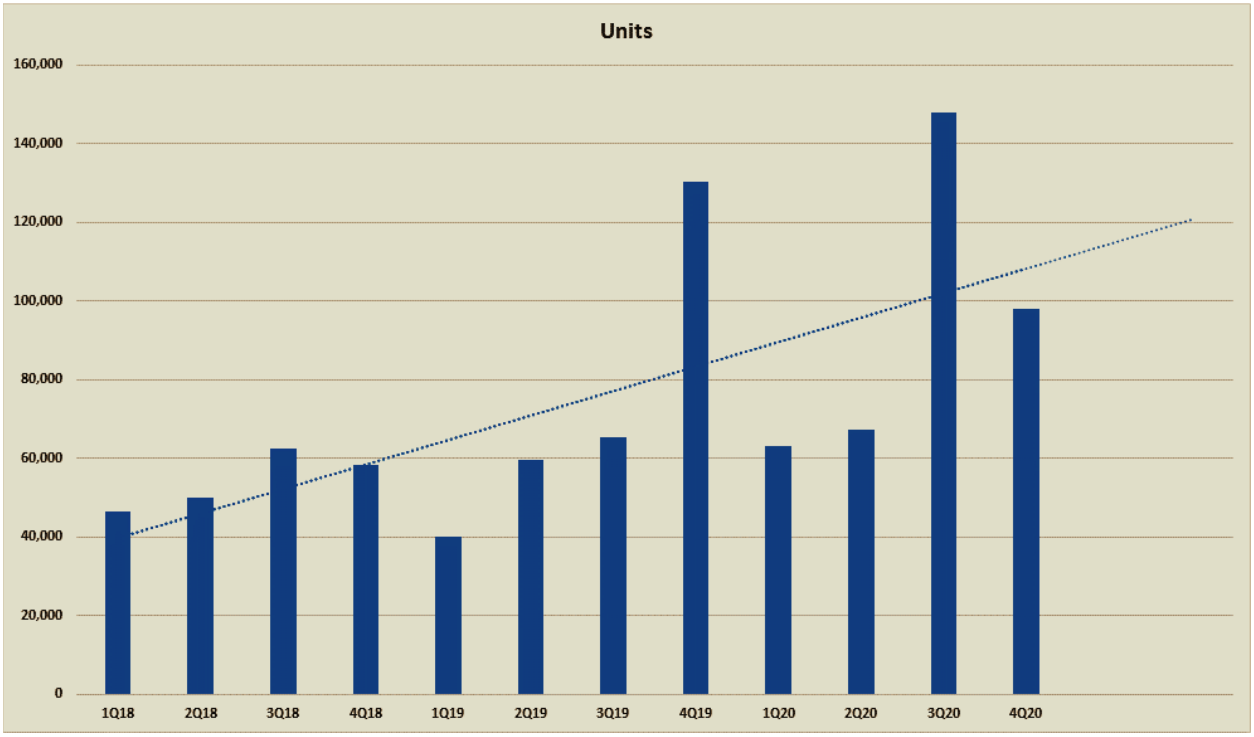
[4] ISOR, at p. 125.

[5] A PGMA member's data based on a survey of California customers.

[6] ISOR, at p. 163.

who face an imminent emergency situation will be unable to find a solution to adequately provide backup power in the face of grid failure.

California faces an unprecedented risk from wildfires and climate change is only expected to exacerbate this problem in the future. Consumers respond to potential Public Safety Power Shutoff ("PSPS") events by buying portable generators to provide power in these situations. As shown in the graph below of PGMA member shipments of portable generators into California in the period of 2018 to 2020, there has been a steady growth of portable generator shipments, with notable spikes during two quarters with high fire activity in the state.



The spike in the fourth quarter of 2019 can be attributed to the wide-scale PSPS events during this period and the second spike in the third quarter of 2020 can be attributed to three of California's largest ever fires: the August Complex, the LNU Lighting Complex, and the SCU Lightning Complex fires.

This data underscores a fundamental problem with the Proposed Amendments. The Proposed Amendments treat portable generators like any other type of SORE equipment. But this is just not the case. Portable generators save lives. Portable generators provide comfort in incredibly trying times. If there was a feasible path for portable generators to fulfill these functions while having zero emissions, PGMA and its member organizations would not have a problem being treated like every other SORE equipment in California. But the basic fact of the matter is that in 2028, there is very little chance that zero-emission alternatives will function at anywhere near the level of spark-ignited generators do today and not at the varied price points available to consumers today.

B. Lawn and Garden Equipment Are Discretionary Tools Whereas Portable Generators Are Not

As described above, the majority of California consumers who purchase portable generators do so for the purpose of home backup power. Aside from planned maintenance power outages, consumers use portable generators at unexpected times. This contrasts with lawn and garden equipment which is discretionary in the sense that an operator can freely choose when to use the equipment.

Similarly, there is flexibility on the timing of recharging the batteries of zero-emission equipment ("ZEE") lawn and garden equipment. This is not the case for portable generators in emergency backup power applications. Users cannot easily recharge ZEE portable generators during a power outage.[7] Strategies for extended usage of a ZEE portable generator during a power outage include buying multiple generators or a solar- or wind-powered charger. These strategies not only significantly increase the price of the ZEE portable generator to the consumer, but also are insufficient solutions as we will explain in more detail in our comments below.

C. Spark-Ignited Portable Generators Create Power While ZEE Generators Simply Store It

ZEE "generators" are not truly "generators" so much as they are "power stations." The distinction is key because a spark-ignited portable generator *generates* electricity at the point of use. A ZEE power station simply *stores* electricity that was already created.[8]

As described more fully in **Section III**, spark-ignited portable generators can serve a wide variety of potential consumer needs because of their ability to *generate* electricity. For example, spark-ignited portable generators are ideal for providing emergency power during power outages and power at construction sites—both uses that by their nature lack access to the grid. Spark-ignited portable generators can provide power continuously for many hours or many days if needed, as long as there is a supply of fuel such as gasoline. Having enough fuel on hand to run a spark-ignited portable generator continuously for a few days is very feasible.

In contrast, ZEE portable generators are not suitable for providing emergency backup power during power outages and are not powerful enough to power the types of tools commonly seen on construction sites. While a ZEE portable generator may be an acceptable replacement for certain short-duration uses of spark-ignited portable generators such as tailgating, the

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[7] This comment letter refers to battery power stations as "ZEE generators" but as discussed in **Section I.C**, that term is a misnomer for such battery power stations as they do not generate electricity like a spark-ignited portable generator does.

[8] The exception to this general rule are portable power stations equipped with solar panels or wind turbines that create electricity at the point of use. That said, those accessories to a power station are often sold separately, cost additional hundreds of dollars, and typically do not generate enough power to recharge the power station in a reasonable amount of time during a power outage.

inability for a ZEE portable generator to *generate* electricity makes them fundamentally unsuitable for their most critical uses.

D. In Supporting the Proposed Amendments, the ISOR Treats Portable Generators the Same as All Other SORE Equipment

As described throughout this **Section I**, portable generators serve a fundamentally different purpose than other SORE equipment covered by the Proposed Amendments. Despite that CARB recognizes this at points throughout the ISOR, the ISOR also makes broad sweeping statements of general applicability that do not apply to portable generators. Any reliance on these statements to support the Proposed Amendment as they relate to portable generators is arbitrary and capricious. Below is a non-exhaustive list of statements that the ISOR makes that purport to be inclusive of portable generators but that are verifiably untrue of portable generators:

1. "The small off-road equipment market is well prepared for electrification."[9] As evidenced even by the Proposed Amendments extra time for portable generators, the current off-road equipment market is *not* well prepared for the electrification of portable generators.

2. "The wide availability of ZEE equivalents for SORE equipment suggests that replacing SORE equipment with ZEE is feasible."[10] This is not true for ZEE generators. There is not current wide availability of ZEE *equivalents* to SORE equipment today. For that reason, this statement cannot support a finding that replacing spark-ignited generators with ZEE is feasible.

3. "While adoption rates for ZEE among professional landscapers are lower than for residential users, there is substantial evidence that all new small off-road equipment can be zero-emission."[11] The ISOR does not provide any evidence that all new portable generators can be zero-emission.

4. "Electric small off-road equipment have been available for decades."[12] ZEE generators have not been available to the average consumer for decades.

5. "ZEE on the market today have a broad range of both capability and price."[13] ZEE generators are both limited in terms of capability (low capability) and price (high price).

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[9] ISOR, at p. ES-5.

[10] *Id*. at p. ES-7.

[11] *Id*.

[12] *Id*. at p. 3.

[13] *Id*.

6. "For the most common types of SORE equipment, there are ZEE equivalents available in the market with similar or better performance characteristics and lifetime."[14] As explained in depth in **Section III**, *infra*, there are no ZEE equivalents on the market today that have similar or better performance characteristics as equivalently priced spark-ignited generators.

7. "The SORE equipment and ZEE evaluated may have different runtimes, but the runtime of the ZEE can always be extended through the use of additional batteries."[15] The vast majority of ZEE generators are not set up to have interchangeable, separately chargeable batteries. Therefore, because most ZEE generators are effectively batteries themselves, the only way to efficiently extend the runtime of a ZEE generator is to buy a second ZEE generator.

8. "Many districts offer incentives on residential equipment, as well."[16] The ISOR includes no citation to this statement and PGMA is unaware of any air districts offering incentives to purchase ZEE portable generators.[17]

II. THE PROPOSED AMENDMENTS ARE PREMISED ON FAULTY DATA

To properly regulate a bucket of emissions sources, it is imperative that CARB understand the situation as it exists today. 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.

Certain results from the SSRC Survey should have raised sufficient red flags to CARB staff to step back and question the validity of those results. In the first instance, the model that had been in use until relying on the SSRC Survey, the OFFROAD2007 survey estimated that there were 375,407 generators in use in California. The SORE2020 model estimated the population of generators to be **more than five times** that amount, or 1,947,188. That disparity alone should have been enough to question the SORE2020 model's accuracy as it relates to portable generators. According to a PGMA survey conducted in late 2018, the portable generator population in California is estimated to be 1,556,667 units. Thus, the CARB model estimate represents 25% more units when compared to the PGMA data. This potential

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[14] *Id*. at p. 13.

[15] *Id*. at p. 15.

[16] *Id*. at p. 27.

[17] It does appear that air districts like the South Coast Air Quality Management District offer incentives for ZEE lawn and garden equipment but not ZEE generators, underscoring that other regulators treat these types of equipment differently. "Equipment available through this program includes handheld trimmers, chainsaws, pruners, backpack and handheld blowers and ride-on, stand-on, walk-behind and robotic lawn mowers." http://www.aqmd.gov/home/programs/community/community-detail?title=lawn-equipment

overestimation of portable generator population likely corresponds to an overestimation of associated emissions as well.

Examining the SSRC Survey and CARB's resulting SORE2020 model closely reveals many problems that likely led to this overestimation of generator use.

First, the SSRC Survey was incomplete which led to inaccurate survey answers. An example of this was the household survey question ("Q15") that asked "Do you own at least one generator?". This is a very misleading question, since it does not distinguish between portable generators (which are subject to the potential amendments to SORE regulations) and stationary generators (which are not subject to the potential amendments to SORE regulations). The surveyor did not explain this important distinction to the people surveyed and this contributed to the estimate of the population of portable generators in California to be higher than it would have been otherwise. Indeed, the CARB 2020 Emissions Model for SORE estimates a total portable generator population (2018 baseline) in California of 1,947,188 units.

Second, the survey lacked sufficient quality control. Some answers given by people surveyed were obviously inaccurate but were still included in the survey results. This brings the accuracy of the entire model into question.

As an example of an inaccurate answer, Respondent C239 (dentist office) reported using a generator 4 times per week for 9 hours per use (1,872 hours per year). First, this generator was most likely a stationary generator and not a portable generator based on its high usage. Second, commercial business generators are intended for backup power use, not as primary sources of power. They are not economical solutions to power facilities year-round. CARB should not have included this data in the SORE 2020 emissions model.

As another example of an inaccurate answer, when asked the age and retention of a generator, a respondent stated that the unit was 45 years old, and that he planned to keep the unit for another 30 years. Small engine powered equipment that is greater than 30 years old is rare and expecting to keep equipment for 75 years is not a reasonable response.

SSRC should not have included inaccurate answers such as the ones above in the survey results. This led to the estimated emissions of portable generators in California being higher than they otherwise would have been.

Third, in the SSRC Survey Report dated May 15, 2019 ("SSRC Survey Report"), Table 50 shows that 16.6% of generators owned by households are not used at all. Inexplicably, the model does not include these generators in the analysis of duration of use. This led to the estimated emissions of portable generators in California being higher than they otherwise would have been.

Fourth, in the SSRC Survey Report, Table 52 shows that 39.4% of generators owned by households are at least ten years old. This is not aligned with the assumed life of portable generators in accordance with EPA durability guidelines on end of life (40 CFR §1054.107). In addition, according to the 2018 PGMA survey, the estimated average useful life of a portable generator, defined as the number of years it takes for 50% of a particular model year to be out of

the market (i.e., no longer operating) is 6 years. This led to the estimated emissions of portable generators in California being higher than they otherwise would have been.

Fifth, CARB assumed an average load factor of 0.68 for portable generators. This load factor is unreasonably high. According to a PGMA survey conducted in late 2018, the average load factor for portable generators in California is 0.38, or about half of the value assumed by CARB. This led to the estimated emissions of portable generators in California to be higher than it would have been otherwise.

The emission factors assumed by CARB are unreasonable based on current regulations and manufacturing standards for both deterioration and the baseline levels of exhaust and evaporative emissions. This led to the estimated emissions of portable generators in California being higher than they otherwise would have been.

III. THE PROPOSED AMENDMENTS ARE NEITHER TECHNOLOGICALLY FEASIBLE NOR COST-EFFECTIVE

The Proposed Amendments have been in process at CARB for more than two years. Assembly member Berman introduced Assembly Bill ("AB") 1346 in March 2021 and originally simply tracked what CARB was already doing, "adopt cost-effective and technologically feasible regulations to prohibit engine exhaust and evaporative emissions from new small off-road engines, as defined by the state board." But the legislature felt that what CARB was already doing was not protective enough of people who rely on portable generators in emergencies, recognizing that converting portable generators to zero emission will be difficult. The legislature therefore amended AB 1346 in the Senate to specifically require that CARB consider the "expected availability of zero-emission generators" when determining technological feasibility.

Multiple senators assured their colleagues that CARB would ensure that ZEE portable generators would be available before enacting amendments to the SORE regulations. Senator Allen stated that "the amendments that have been taken in this house [regarding portable generators] really make this bill sensible and workable."[18] He then added that "there is built in flexibility into this bill … so as to be able to track the development of technology in the space in real time."[19] His comments imply that CARB would provide for a process to continue to track the availability of ZEE generators prior to mandating their sale. But CARB did not change the Proposed Amendments after the legislature enacted AB 1346 to reflect this type of procedure. In fact, CARB staff finalized the Proposed Amendments less than one month after the Governor signed AB 1346 into law. Thus, it is impossible that CARB engaged in the type of analysis that the legislature demanded regarding the availability of portable generators.

Senator Hertzberg, who voted for AB 1346 said the following: "I am happy about the amendments with respect to generators because the comments made by my colleagues reek with common sense. If you have power shutoffs or other things, you have to have a power source in

[18] Senator Ben Allen, Senate Floor Session Debate on AB 1346 (Sept. 8, 2021).

[19] *Id.*

the interim to generate power."[20] Senator Hertzberg then stated, "If there are any folks from CARB listening to this … please, as you implement regulations understand and listen to the legislature and the comments they are making and what guidance they are giving you as you move forward."[21] As described below, CARB has failed to do so.

A. The ISOR Ignores the Three Most Important Characteristics of a Portable Generator When Determining Technological Feasibility

Under Health and Safety Code section 39602.5(b), CARB must only adopt measures if they are technologically feasible and cost-effective. 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. In the ISOR, staff claimed that "[c]haracteristics that establish functionality of a spark-ignited or zero-emission generator include the types and number of receptacles available on the generator and the power rating."[22] While these two characteristics are part of what makes up the functionality of a generator, two key characteristics are even more important: (1) initial runtime and (2) the ability to easily recharge to extend that runtime even further. The ISOR glosses over these important characteristics and simply states that "[t]he runtime of a zero-emission generator that does not have solar or wind attachments is determined by the energy storage and the load on the generator. Therefore, if a longer runtime is required under the same load, a larger energy storage zero-emission generator must be purchased."[23] In fact, CARB's own data highlighted that "[p]erformance, run-time, and cost were the top three reasons" people haven't adopted ZEE equipment. The ISOR fails to critically examine any of these three reasons when comparing spark-ignited generators with ZEE generators.

1. A Spark-Ignited Generator Can Provide Home Backup Power for an Extended Period of Time; A ZEE Generator Can Not

As described above in **Section I.A,** a majority of consumers use portable generators for emergency home backup power and generator sales spike during periods of high fire danger. Thus, a fundamental use of a portable generator is providing home backup power during PSPS events in California.

The California Public Utilities Commission tracks every PSPS event and publishes data associated with each PSPS event including the outage duration.[24] Since 2013, there have been almost 5,000 PSPS events, with an average duration of 34.86 hours and a median duration of

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[20] Senator Robert Hertzberg, Senate Floor Session Debate on AB 1346 (Sept. 8, 2021).

[21] *Id.*

[22] ISOR, at p. 14.

[23] *Id*.

[24] *See* CPUC PSPS Event Rollup October 2013 through June 23, 2021, available at: https://www.cpuc.ca.gov/consumer-support/psps/utility-company-psps-post-event-reports.

33.4 hours. If you limit the data to those PSPS events impacting the largest number of customers (4,000+), the average duration of the outage is 55.5 hours, reflecting that PSPS events that threaten large numbers of homes are longer duration events.

Thus, when determining whether a zero emissions replacement product will have similar functionality as a spark-ignited generator, one key characteristic is its ability to run for extended periods of time without grid power.

It is therefore important to compare the runtimes of the same models of generators that the ISOR used as a comparison to establish similar functionality, the Briggs & Stratton #030744 and the Goal Zero Yeti 1500. The Briggs & Stratton is a 5,500-Watt portable generator that can run for 12.5 hours on a 50% load (i.e., if the items plugged in total 2,750-Watts, the generator will run for 12.5 hours before needing refilling with gasoline). The Goal Zero Yeti 1500 is a 2000-Watt power station that cannot run for any time with 2,750-watts plugged in because its max load is 2000-Watts. But if we compare the max runtime of the Goal Zero Yeti with 50% max load or 1000-Watts of 1.5 hours to that of the Briggs & Stratton running the same load, approximately 16 hours, it is clear that the spark-ignited generator can last much longer on a single tank of fuel than the ZEE generator can last on an initial charge. It is also clear that the ZEE generator is not an appropriate generator in an extended power outage during a PSPS event.

2. Spark-Ignited Generators Can Power More Equipment than ZEE Generators

While the ISOR claims it compared the "power ratings" of spark-ignited generators and ZEE generators, it really just included a conclusory statement that "[m]ost SORE and zero-emission generators are equipped with 120-volt power output, but both are available with 240-volt output as well."[25] This of course is only one aspect of "power rating." While the availability of 120-and 240-volt power output is common across all generators, what is not the same between ZEE generators and spark-ignited generators is the total power output available for running and surges.

Again comparing the same generators the ISOR uses, the Briggs & Stratton spark-ignited generator can supply up to 5500 watts continuously and 6250 watts during startup or a surge. By comparison, the Goal Zero Yeti 1500X can only supply up to 2000 watts continuously and 3500 watts during a surge. In other words, the Briggs & Stratton is able to power 2.75X as much equipment as the Goal Zero Yeti. Even the "professional" ZEE generator the ISOR cites, the Goal Zero Yeti 3000x, can only supply up to 2000 watts continuously and 3500 watts during a surge.

By comparison, there are multiple spark-ignited generators on the market at price points lower than the Goal Zero Yeti 1500X that can supply up to more than 10,000 watts continuously. In other words, the ZEE generators on the market today are five times less powerful than less expensive spark-ignited generators.

[25] ISOR, at p. 14.

The ISOR also provides other examples of ZEE generators and suggests that they "can serve the needs of users."[26] But each of these other ZEE generators cited come at extremely high costs and *still* do not provide the same power as spark-ignited generators priced at a fraction of the cost. For example, the ISOR cites the Goal Zero Yeti 6000X. The Goal Zero Yeti 6000X cannot provide more continuous power than Goal Zero's other generators, 2000 watts continuously and 3500 watts during a surge. It simply has a larger battery so it can power the same devices for a longer period of time. It costs $5,400. The ISOR also cites the Onyx Rhino portable power system. The Onyx Rhino costs $12,500 and can provide 4000 watts continuously and 7000 watts during a surge. The Mobi Gen is the only ZEE "mobile power unit" that the ISOR cites that comes close to providing similar power as a reasonably priced spark-ignited generator can. The Mobi Gen can provide 11,000 watts continuously and 20,000 watts during a surge. What the ISOR fails to disclose is the Mobi Gen costs $65,000. A spark-ignited generator that can provide 12,000 watts continuously can be purchased at Home Depot for $2197.84.[27] In other words, to get the same power as a readily available spark-ignited generator in a ZEE generator, Californians would need to spend almost 30 times the amount of money.

3. The ISOR Does Not Establish That ZEE Generators Are Cost-Effective

As described in **Section III.A.2**, *supra*, ZEE generators are not cost-effective for most Californians. The ISOR notes that a "cost difference of [2 times the price] would be significant for most consumers.[28] As noted above, to get the same power output as a roughly $2,000 spark-ignited generator, a consumer would need to spend thirty times that amount for a ZEE generator. Even generators geared towards an average consumer without large power needs would need to spend orders of magnitude more on an equivalent ZEE generator.

The ISOR's comparison of the Briggs & Stratton and the Goal Zero Yeti 1500X understates the cost differences between spark-ignited generators and "equivalent" ZEE generators. As noted in the ISOR, the Briggs & Stratton #030744 costs $861.49 and the Goal Zero Yeti 1500X costs $2,169.95. As discussed above, the Briggs & Stratton is almost three times as powerful as the Goal Zero Yeti 1500X, making the comparison like comparing apples to oranges. There are plenty of spark-ignited generators on the market that come closer to the Goal Zero Yeti 1500X performance that should have been used to compare prices. The Westinghouse WGen2000 spark-ignited generator is a roughly equally powerful spark-ignited generator as the Goal Zero Yeti 1500X. Its price is $309.[29] In other words, the Goal Zero Yeti 1500X provides the same power output as a spark-ignited generator that is seven times less expensive.

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[26] ISOR, at p. 24.

[27] https://www.homedepot.com/p/Champion-Power-Equipment-15-000-12-000-Watt-Gasoline-Powered-Electric-Start-Portable-Generator-100111/206840905

[28] ISOR, at p. 23.

[29] https://www.homedepot.com/p/Westinghouse-WGen2000-2-500-2-000-Watt-Gasoline-Powered-Portable-Generator-with-Automatic-Low-Oil-Shutdown-WGen2000/301462813

The ISOR recognizes that even the cost difference between the Briggs & Stratton spark-ignited generator and the Goal Zero Yeti 1500X "would be difficult to recoup without significantly increased use."[30] Still, the ISOR concludes that "CARB staff expects that generator manufacturers will be able to offer zero-emission generators at a price and capability comparable to existing spark-ignited generators by MY 2028 and that, as the market matures, the overall supply of zero-emission generators will increase to meet the demand."[31] The only evidence CARB staff has to support this assertion is that "[t]he price of zero-emission generators per unit of energy storage will likely decrease over time as the cost of batteries decreases. Projections suggest that, from 2010 to 2030, the price of a battery holding a kilowatt-hour of energy will decrease by over 90 percent (Martin, 2019)."[32]

The "Martin, 2019" reference is to a Bloomberg article written by Chris Martin in 2019 titled, "Better Batteries."[33] As a threshold issue, it appears that the article is predicting the price of a kilowatt hour of energy for utility scale and electric vehicle batteries. Therefore, any trends it predicts may not be applicable to batteries used in ZEE Generators. Additionally, Martin notes that "[t]he price of a lithium-ion battery pack holding a kilowatt hour of energy **has already plunged** and is expected to fall by more than 90 percent from 2010 to 2030." The ISOR conveniently ignores the first part of the sentence that battery prices have "already plunged" and instead focuses on the second part of the sentence that battery prices will decrease by more than 90 percent from 2010 to 2030. The ISOR cites that precise point five times and never reveals that the price of batteries has "already plunged." This obfuscation to support the contention that ZEE generators will be priced comparably to spark-ignited generators by 2028 is either intentionally misleading or a complete failure of due diligence. [34]

The very same article includes a graphical depiction of the cost of storing a kilowatt-hour of electricity between 2010 and 2030.[35]

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[30] ISOR, at p. 25.

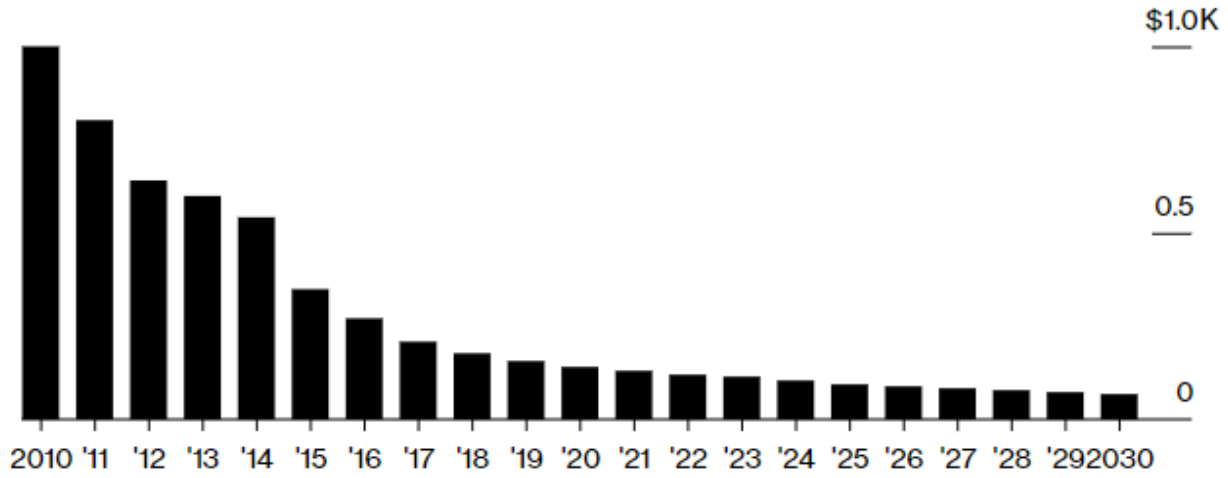
[31] ISOR, at p. 26.

[32] *Id.*

[33] Martin, Chris. 2019. Better Batteries. Bloomberg. October 11, 2019, available at: https://www.bloomberg.com/quicktake/batteries.

[34] Additionally, a recent article from Bloomberg notes that "battery prices are forecast to bounce ***up*** in 2022 after years of declines" and "rising prices in China add weight to expectations that the trend of year-on-year declines seen over the past decade may stall." Lee, Annie. The Commodity Boom is Starting to Push Battery Prices Higher. November 4, 2021, available at: https://www.bloomberg.com/news/articles/2021-11-04/the-commodity-boom-is-starting-to-push-battery-prices-higher (emphasis added).

[35] *Id.*



Source: BNEF
Note: Figures for 2018 and beyond are projections

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. But the cost to store a kilowatt-hour of electricity **has already dropped $869 or 93% of the total expected drop in price.** 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.

Thus, the ISOR's conclusion that "manufacturers will be able to offer zero-emission generators at a price and capability comparable to existing SORE generators by MY 2028" is unfounded. As described above, spark-ignited generators are anywhere from seven to thirty times less expensive than comparably capable ZEE generators.

The Goal Zero Yeti 1500X has a 1.516 kWh battery pack. Thus, according to the Bloomberg article, the cost of just the battery portion of the product is about $198.60 ($131/kWh x 1.516 kWh = $198.60). Assuming the trend continues and the cost of storing a kilowatt-hour of electricity decreases between now and 2028 as expected in the Bloomberg article, the cost of storing the same amount of energy will decrease to $119.76 ($79/kWh x 1.516 kWh=$119.76). It can therefore be reasonably expected that the price of the Goal Zero Yeti 1500X, which currently costs $1,999, would decrease by about $79, to about $1,900 in 2028. The price drop in batteries alone will not drive the costs of ZEE generators down to the price of similarly capable spark-ignited generators by 2028.

In summation, CARB's reliance on the Bloomberg article for the contention that ZEE generator prices will drop is unfounded. ***First***, the Bloomberg article is focused on prices of utility-scale and electric vehicle batteries and the trends predicted for those market segments may not be the same for batteries in portable generators. ***Second***, the Bloomberg article's conclusions may be outdated and recent evidence points to battery prices increasing. ***Third***, the vast

majority of the 90% drop in battery prices cited by the ISOR has already occurred. Thus, there is no evidence that the remaining 7% drop from 2010 levels will translate into significantly less expensive ZEE generators. ***Fourth***, even accepting the Bloomberg article's predicted price drops, the total cost of a ZEE generator would not substantially decrease.

Therefore, CARB's failure to establish that the Proposed Amendments are technologically feasible and cost-effective render them arbitrary and capricious and contrary to law.

IV. THE TWO-STEP PHASE OUT OF SPARK-IGNITED GENERATORS WILL HAMPER THE TRANSITION TO ZERO-EMISSIONS

The ISOR notes that the "proposed MY 2024-2027 emission standards are approximately 40 to 90 percent lower than current emission standards for generators. Engines currently certified for sale or lease for use or operation in California exhibit emissions below the proposed MY 2024-2027 emission standards. These engines demonstrate the feasibility of the proposed emission standards."[36] But the ISOR does not discuss the cost-effectiveness of mandating that *all* portable generators for sale between 2024 and 2027 meet these more stringent standards.

The majority of available portable generators do not meet the proposed dramatically reduced California emissions standards for 2024 through 2027 and would therefore need to be redesigned and resubmitted for exhaust and evaporative emissions approval. 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. This may impact the availability of reasonably priced portable generators for emergency backup and other uses and would conflict with California Executive Order N-79-20 Section 2, which stated that "CARB shall act consistently with technological feasibility and cost-effectiveness" and AB 1346 which also require the regulations to be cost-effective and technologically feasible.

V. THE CREDIT PROVISIONS ARE UNLIKELY TO BE EFFECTIVE

It is not clear at this time how beneficial the proposed zero-emission generator credit provisions will be for manufacturers because it is not clear if California consumers will buy ZEE generators in significant volume to generate needed credits. As described extensively above, ZEE portable generators are much more expensive and offer much lower utility than spark-ignited portable generators.

Level 3 and Level 4 ZEE generators would likely not be portable, because of the size and weight of the batteries. What's more, there would likely be challenges with shipping and storing products with such large batteries because of U.S. Department of Transportation regulations.

VI. CARB'S RELIANCE ON THE 2016 EA IS NOT SUPPORTED AND CARB SHOULD UNDERTAKE ADDITIONAL CEQA REVIEW

[36] ISOR, at p. ES-8.

CARB is relying on the Final Environmental Analysis for the Revised Proposed 2016 State Strategy for the State Implementation Plan ("2016 EA") to support adopting the Proposed Amendments. But the new specificity of the Proposed Amendments raises substantial evidence that there will be impacts not addressed in the 2016 EA and the impacts that were addressed may be substantially more severe.

The 2016 EA was explicit that additional CEQA review would occur when specific regulatory actions are taken to reduce criteria air pollutants:

> "The level of detail in this Final EA reflects that the State SIP Strategy is a broad program; consequently, **the analysis does not provide the level of detail that will be provided in subsequent environmental documents prepared for specific regulatory actions that ARB or other agencies may decide to pursue to reduce criteria air pollutant (CAP) emissions** (Cal. Code Regs., tit. 14, § 15152.) As ARB pursues regulations to implement any of the measures discussed in the State SIP Strategy, **each regulation would go through a project-specific environmental analysis**, and, as part of the Administrative Procedure Act (APA) process, a rigorous public review process."[37]

The ISOR includes no critical analysis to determine the environmental impacts associated with these specific Proposed Amendments. One of CEQA's basic purposes is to inform government decision-makers and the public about the potential significant environmental effects of proposed projects[38] and to disclose to the public the reasons for approval of a project that may have significant environmental effects.[39] Courts have repeatedly stated that informed decision making and public disclosure are fundamental purposes of the CEQA process.[40] CARB has far more information available to it today (e.g., the SSRC Survey data) that it could use to more precisely analyze potential impacts of the Proposed Amendments compared to the broad and high-level analysis associated with the 2016 EA.

The entire extent of the analysis in the 2016 EA for what environmental impacts would arise from a compliance measure to "increase the penetration of zero-emission technology" was as follows:

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[37] 2016 EA, at p. 3 (emphasis added).

[38] 14 Cal Code Regs §15002(a)(1).

[39] 14 Cal Code Regs §15002(a)(4).

[40] *See Union of Med. Marijuana Patients, Inc. v City of San Diego* (2019) 7 Cal.5th 1171, 1184; *Friends of the Eel River v North Coast R.R. Auth.* (2017) 3 Cal.5th 677, 711; *California Bldg. Indus. Ass'n v Bay Area Air Quality Mgmt. Dist.* (2015) 62 Cal.4th 369, 381; *Citizens of Goleta Valley v Board of Supervisors* (1990) 52 Cal.3d 553; *Laurel Heights Improvement Ass'n v Regents of Univ. of Cal.* (1988) 47 Cal.3d 376; *No Oil, Inc. v City of Los Angeles* (1974) 13 Cal.3d 68.

> "Reasonably foreseeable compliance responses under this measure would include an increase in manufacturing, production and use of zero-emission technology in small off-road engines. This could require the construction or modification of associated manufacturing facilities to increase the supply of zero-emission technology for small off- road engines, including battery electric-powered equipment. Increased demand for lithium batteries could increase production, along with associated increases in lithium mining and exports from source countries or other states would be anticipated. Disposal of any portion of vehicles, including batteries, would be subject to, and be in compliance with existing laws and regulations governing solid waste, such as California's Universal Waste Rule (Cal. Code Regs., tit. 22, Chapter 23). That is, disposal of used batteries into landfills is prohibited; however, they could be refurbished or re-used. To meet an increased demand of refurbishing or reusing batteries, new facilities, or modifications to existing facilities, are anticipated to accommodate battery recycling activities. Turnover may result in recycling or selling old equipment."[41]

This cursory analysis of potential impacts is nowhere near the level of detail required to adopt specific regulations such as the Proposed Amendments. Below are just a few of the potential environmental impacts that the 2016 EA did not address that are relevant to CARB's decision to adopt the Proposed Amendments.

1. *Air Quality Impacts*

The 2016 EA does not include any accounting for people holding on to gas powered equipment for longer than they currently do, thus undercutting air quality benefits touted by the regulation. Further, there was no critical analysis about how individuals will respond to these regulations. For instance, will they run their cars/trucks to charge batteries instead of buying additional batteries? This is clearly a foreseeable result of the Proposed Amendments as many people will have their SORE equipment with them away from their homes and grid power. When people idle their cars for the sole purpose of charging their ZEE equipment, there will be additional pollution. Additionally, it is very likely that many consumers will choose to travel to nearby states to purchase spark-ignited portable generators. Therefore, new spark-ignited portable generators will still be coming into the state even after the phase out of California sales. These emissions were not accounted for in the 2016 EA nor the ISOR.

2. *Energy Use*

The 2016 EA does not analyze the potential energy impacts of the Proposed Amendments. CARB staff issued a "Technical Support Document" that purports to

[41] 2016 EA, at p. 36.

analyze the potential increase in electricity demand from added charging requirements for ZEE SORE equipment ("Electricity Demand Support Document"). However, this document was not a CEQA document and does not analyze the issue from a CEQA perspective. The CEQA Appendix G thresholds of significant ask whether the Proposed Amendments would "conflict or obstruct a state or local plan for renewable energy or energy efficiency?". The Electricity Demand Support Document concludes that by 2043, when 99 percent of small off-road equipment subject to the SORE regulations would be ZEE, there would be an additional 581 GWh of electricity required as compared to 2020. While the Electricity Demand Support Document summarily concludes that this amount of additional electricity required "is a fraction of a percent of the statewide electricity consumption in 2020", there is absolutely no analysis on how this added load will affect California's statutory requirement to have 100 percent zero-carbon electricity by 2045. How many more utility scale solar farms will be required to fill this need?

The Electricity Demand Support Document concludes that "it is technologically feasible that the increase in electricity demand due to the Proposed Amendments can be met by the current electricity infrastructure", but it does not include any analysis as to whether it can be met by the *future* electricity infrastructure that is required to be 100 percent zero-carbon. Without this analysis, CARB cannot conclude that the Proposed Amendments will have less than significant impact on Energy Resources pursuant to CEQA.

3. *Wildfire Impacts*

The Proposed Amendments' wildfire impacts were not analyzed at all in the 2016 EA. As described above, a majority of California consumers use portable generators for the purpose of home backup power, and generator purchases spike in times of high fire danger. The lack of spark-ignited portable generators would hinder homeowners in fighting and withstanding wildfires. Further, with the widespread adoption of electric vehicles expected in the coming decades, the ability to charge cars without grid power in the case of emergencies will become even more paramount. Without access to spark-ignited portable generators, folks may be stranded if their electric vehicles do not have enough charge to safely get them away from a fire.

4. *Mineral Resources*

The 2016 EA's less than significant conclusion needs to be reevaluated now that CARB can better calculate the quantity of lithium that would be required to implement the amendments. CARB has specific data it is relying on for these Proposed Amendments that it can use to predict the quantity of minerals required to convert spark-ignited equipment to ZEE. Without this analysis, it is impossible to determine whether the impacts to mineral resources will be significant.

Until CARB conducts this additional analysis, its finding that the 2016 EA properly analyzed the Proposed Amendments will be unfounded.

VII. THE PROPOSED AMENDMENTS DO NOT MEET EPA REQUIREMENTS FOR A CLEAN AIR ACT WAIVER

Section 209(e)(2) of the federal Clean Air Act preempts states from adopting and enforcing standards and other requirements relating to the control of emissions from non-road engines, including generators. That said, the same section requires the EPA Administrator, after notice and opportunity for public hearing, to authorize California to adopt and enforce standards and other requirements relating to the control of emissions from such engines if California determines that California standards will be, in the aggregate, at least as protective of public health and welfare as applicable Federal standards.

But EPA shall not grant such authorization if it finds that (1) the determination of 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 California standards to meet compelling and extraordinary conditions; or (3) California standards and accompanying enforcement procedures conflict with Section 209 of the Clean Air Act, including whether the standards are technologically feasible.

CARB cannot enforce the Proposed Amendments until the EPA has authorized California to do so. The Proposed Amendments are not within the scope of the EPA's previously granted authorization. As described throughout this letter, the standards are not technologically feasible. Adopting the Proposed Amendments as currently drafted risks regulatory uncertainty while California consumers and SORE manufacturers await EPA's decision on whether the Proposed Amendments are consistent with Section 209 of the Clean Air Act.

VIII. PROPOSED SOLUTION

As described throughout this letter, the Proposed Amendments are neither technologically feasible nor cost-effective when it comes to portable generators. And portable generators serve a function that is too important to risk not having capable products on the market. With that in mind, PGMA and its member organizations are proposing the following framework for new SORE regulations that will meet the requirements of the California consumer as well as CARB's statutory authority. This proposal is in response to CARB staff's request of PGMA to offer a proposed solution in its November 17, 2021 meeting.

First, the amendments to the SORE regulations should require reduced emissions in portable generators starting in 2026. There are currently no identified methods where evaporative emissions can be reduced to the proposed levels. Therefore, the proposed reduction in evaporative emissions is challenging and manufacturers will need more time to comply. Although page 33 of the ISOR claims "Currently-certified engines meet these emission standards, including the hot soak. Several evaporative families in each displacement category meet the proposed emission standards", no data was provided to support this claim. It would be helpful if CARB would identify which engines and evaporative families in each displacement category meet the proposed evaporative emission standards.

Another reason for extending the date for reduced emissions from 2024 to 2026 is due to ongoing supply chain issues in the industry. Travel restrictions inhibit the speed of new development programs for components that will be required in order to comply with the

proposed reduced exhaust and evaporative emission standards, along with the proposed increase in the emissions durability period.

In addition, PGMA proposes revising Table II-3 of the ISOR so that the emissions durability period for model years 2026 and later should be 500 hours, regardless of the engine displacement. There are two reasons for this:

- A durability period of 500 hours for a portable generator is reasonable, since a 1000 hour lifetime is not typical for a portable generator.

- It will be difficult to achieve a 1000-hour durability period in combination with meeting the proposed exhaust emission standards.

Second, amend the proposed HC + NOx emission standard for 225-825 cc generators MY 2026 and later to 6.0 g/kWh to harmonize all generators 825 cc and below. The 225-825 cc category of generators is the most popular for emergency home backup and the technical changes required to meet a 3.0 g/kWh standard would likely make the generator cost too much for the average consumer to afford. This would risk consumers not having acceptable backup power during non-discretionary, emergency situations. Setting an emissions standard of 6.0g/kWh for 225-825 cc generators will result in reduced emissions compared to current standards while ensuring that these important products remain available to consumers when they need them most.

Third, mandate zero emission portable generators when they are cost effective and technologically feasible, but not earlier than 2031 or later than 2035. This would provide for a minimum 5-year sales window for reduced emission portable generators, allowing manufacturers more time to obtain a return on the investment needed to develop these products.

For purposes of a finding that ZEE portable generators are "cost-effective", CARB must establish that the average purchase price to consumers of ZEE portable generators is within 20% of conventional gasoline units, for the same kilowatt-hours available from the latter, before recharging is needed, versus a tank of gasoline.

For purposes of a finding that ZEE portable generators are "technologically feasible". CARB must establish that the utility of ZEE portable generators equals conventional gasoline units, including, but not necessarily limited to, (i) 8-12 hours of run time with at least 2000-watt power output before recharging is necessary and (ii) a recharging time of 15 minutes, assuming there is infrastructure available to support portable generator recharging even during a power outage, such as at vehicle recharging stations.

With these changes to the Proposed Amendments, California consumers will be assured that when they find themselves in an emergency situation, there will be affordable products on the market that will meet their urgent emergency needs.