Outdoor Power
Equipment Institute

April 14, 2022

Via e-electronic submission: www.arb.ca.gov

RE: OPEI Comments to the California Air Resources Board's *Notice of Public Availability of Modified Text and Availability of Additional Documents - Proposed Amendments to the Small Off-Road Engine Regulations: Transition to Zero Emissions*

The Outdoor Power Equipment Institute (OPEI) respectfully submits the following comments regarding the California Air Resources Board (CARBs) *Notice of Public Availability of Modified Text and Availability of Additional Documents - Proposed Amendments to the Small Off-Road Engine Regulations: Transition to Zero Emissions ("15-Day Changes")*.

OPEI is an international trade association representing more than 100 manufacturers and their suppliers of gas and electric-powered outdoor power equipment, golf cars, and personal transport and utility vehicles, who are directly affected by the December approved for adoption Small Off-Road Engine (SORE) rule amendments. Representing the industry, OPEI submitted comments on November 29, 2021, opposing the amendments.

OPEI appreciates CARB's 15-day changes to address stakeholder regulation order, test procedure and certification procedure concerns, including many concerns outlined in OPEI's November 29, 2021, comments. However, many significant administrative procedure, lead time, and handheld evaporative emission concerns outlined remain unresolved by the 15-day changes. Several of these concerns are included again in the following comments. Given the unresolved and the following comments, OPEI opposes the amendments.

COMMENT 1 – The 15-Day Changes do not Address OPEI Administrative Concerns

The December 9, 2021 approved for adoption Small Off-Road Engine (SORE) rule amendments set zero-emissions limits for most SORE starting in Model Year 2024. The amendments rely on unsupported and unproven data and assumptions and lack sufficient evidence of technical feasibility (the term "technical feasibility" as used throughout these comments includes cost-effectiveness). The amendment rulemaking package overestimates benchmark/baseline emissions and emission reductions expected from the amendments based on the aforementioned unreliable data. Rulemaking benefits, including emissions, cost and health related benefits, are directly proportional to the difference (delta) between benchmark/baseline emissions versus reductions modeled from the amendments. As a result, overestimates in benchmark/baseline emissions result in overestimates of all benefits outlined in the amendments. Please see OPEI's November 29, 2021 comments.

OPEI supports ZEE as one key emission reduction strategy where technology feasibility has been demonstrated. *However, there is currently no one-size-fits-all ZEE approach to satisfy the full range of SORE powered equipment and use cases.* The SORE amendments pose numerous technical feasibility, economic, and implementation challenges for many industry stakeholders. The ability to work all day, and in some cases days on end, without recharging and/or needing dozens of expensive batteries, as well as the cost of battery maintenance over the life the product will continue to be a technology barrier for many user categories and applications which the amendments do not consider. Collectively these challenges are currently insurmountable and will result in significant and unnecessary hardships for manufacturers, retailers and end-users, culminating in an early market shortfall of products with high consumer need and demand.

COMMENT 2 – The Approved for Adoption Rule and 15-Day Changes Fail to Provide the Lead Time Required by the Clean Air Act

The lead time provided by the amendments is fundamentally inconsistent with the requirements of the Federal Clean Air Act. As a result, OPEI requests that the

implementation dates for the amendments be revised accordingly, shifting the implementation of the requirements from model year 2024 to model year 2026. In addition to providing stakeholders the federally required lead time, a revised implementation date will allow for CARB to apply for and obtain a waiver of Federal preemption from the U.S. Environmental Protection Agency (EPA), as required under Section 209 of the Clean Air Act.

In the Initial Statement of Reasons (ISoR) for the amendments to the SORE rules, CARB staff notes:

> *"New emission standards for all SORE would apply beginning with MY 2024 to provide the lead time required by the federal Clean Air Act § 209 in U.S. Code § 7543. That section requires that, "California … adopt such standards at least 2 years before commencement of the period for which the standards take effect." The two-year lead time provides manufacturers with lead time to develop and manufacture equipment to meet the new emission standards in the Proposed Amendments."*[1]

Additionally, during the March 24, 2021 workshop, CARB Senior Attorney Matthew Christen noted:

> *"The Clean Air Act requires a two-year lead time for new standards adopted by California, so that's generally the reason why we selected the 2024 as the earliest date, because its two years from the potential effective date of the upcoming regs."*[2]*; and*
>
> *"I just wanted to clarify, I meant the date of adoption on Greg Knott's question. Its two years from the date of adoption, which would put us at January 1, 2024,*

[1] Public Hearing to Consider Proposed Amendments to the Small Off-Road Engine Regulations: Transition to Zero Emissions. Staff Report: Initial Statement of Reasons, October 12, 2021, at 163.
[2] Public Workshop to Discuss Potential Changes to the Small Off-Road Engine Regulations, at 59:59 (March 24, 2021), available at: https://www.youtube.com/watch?v=K6xYWyZRrvQ.

considering the Board will be considering this in the fall. So, I just wanted to make that clarification.[3]"

Importantly, the amendments to the SORE regulations have not yet been adopted. In fact, the amendments cannot be adopted until all changes, including these 15-day changes, are finalized and CARB staff completes the Final Statement of Reasons (FSoR). Stakeholders must have certainty before proceeding to test, change product designs, and seek certification for products to new regulations. Considering it is already mid-April 2022 and staff must consider comments submitted in response to these 15-day changes, it is doubtful that the FSoR will be completed for submission to the Office of Administrative Law (OAL) before this summer. This timing does not provide the two-year lead time required by the Clean Air Act, as described by the ISoR and CARB Senior Attorney Christen.

Additionally, implementation of the new SORE amendments less than two calendar years after those standards are adopted does not provide the lead time needed for manufacturers to comply with the substantive changes of the amendments. Practically speaking, enforcement of new standards commences with the certification stage when CARB staff makes compliance determinations for the upcoming model year when evaluating Executive Order applications from manufacturers. This process may start as early as March or April of the year prior to the commencement of the model year for some manufacturers (e.g., March or April 2023) and extends through the end of the prior year. A strict two-year lead time based on calendar years does not account for this certification process and timing (when enforcement truly beings), which happens well-before the actual implementation date.

COMMENT 3 – The Approved for Adoption Rule and 15-Day Changes Fail to Provide a Reasonable Path for Handheld Engines to Generate Evaporative Credits Needed to allow Manufacturers to use Fairly Banked Exhaust Credits

[3] Public Workshop to Discuss Potential Changes to the Small Off-Road Engine Regulations, at 1:03:11 (March 24, 2021).

The current Regulation Order does not include an Averaging, Banking and Trading (ABT) program by which handheld manufacturers can bank evaporative emission credits. Evaporative ABT will be necessary for manufacturers to use fairly earned exhaust credits starting in model year 2024. Absent a fair strategy, manufacturers will be unable to utilize exhaust credits they earned as part of current regulations. OPEI approached CARB rulemaking and Executive Staff this winter to discuss several fair solutions that would allow manufacturers to use banked credits. Unfortunately, industry remains concerned CARB staff's 15-day proposal will not resolve the issue due to insufficient lead time to implement new testing requirements needed to generate credits, and ultimately lack of time to generate evaporative credits to match current 5-year exhaust credit banks.

Handheld equipment, such as trimmers / chain saws cannot bank evaporative credits under current ABT strategies. The 15-day amendment proposal will allow manufacturers to generate evaporative credits based on diurnal testing starting in 2023 – However, today there is no regulation that allows handheld manufacturers to certify by diurnal testing. As a result, the current evaporative emission regulations have no strategy for handheld manufacturers to generate evaporative credits to use with earned exhaust credits.

In accordance with the approved for adoption amendments, evaporative emission limits will go to zero in 2024. In order for manufacturers to use banked exhaust credits they must have some bank of evaporative credits (which there is currently no strategy for and no "handheld" credit bank exists) or must buy or trade for existing credits. In CARB rulemaking materials staff assumed all limited evaporative credits would be used by generator manufacturers. It is unclear to OPEI why this assumption was made. Nevertheless, due to the limited number of evaporative credits, OPEI believes it is unlikely manufacturers will be willing to sell or trade credits to handheld manufacturers – As a result, handheld manufacturers will be forced out of the market without being allowed to use earned exhaust credits.

The 15-day changes propose a new "diurnal" test allowance for manufacturers. However, there is no handheld test experience with this procedure or limits, and conditioning + testing + certification may take up to a year per family. As a result,

manufacturers may have only a few months (July 2023 – December 2023) to generate evaporative credits for families which they can complete testing on, in order to use their earned exhaust credits. OPEI is concerned this is insufficient time to generate the amount of EVAP credits needed to be able to use banked exhaust credits.

As an alternative, OPEI has proposed several options to allow manufacturers to use fairly earned exhaust credits beyond model year 2023:

1) Retain the current evaporative limits and “permeation” test requirements beyond 2024 for “handheld” equipment. This strategy is identical to the one already included in the SORE amendments for CO where CARB retained current (non-zero) CO exhaust emission limits beyond 2024 for the same reason – A lack of an existing or proposed CO credit scheme. This situation is the same as already approved by the Board. Additionally, limited CARB data suggests handheld equipment certified under current “permeation” requirements would comply with equivalent diurnal standards.
2) Retain the current “permeation” test requirements beyond 2023 for “handheld” equipment. Additionally:
    a. Allow manufacturers to generate evaporative credits based on the existing “permeation” (tank) limits of 2.0 g/m^2/day retroactively or as soon as the regulation is effective; and
    b. Allow manufacturers to generate evaporative credits based on the existing fuel line limits of 15 g/m^2/day retroactively or as soon as the regulation is effective; and
    c. Eliminate the diurnal test requirement and limits for MY 2024+; and
    d. Set “permeation” and fuel line evaporative limits to zero for MY 2024 with the use of credits earned in 2023 (as described in a. and b. above) permitted; and
    e. Allow the use of exhaust HC credits banked under the current strategy to be used for evaporative emissions (see 3 below).
3) Include an optional provision that allows manufacturers to convert exhaust emission credits earned through model year 2023 into evaporative emission credits (in lieu of the hot soak plus diurnal emission standard set forth in sections

2754(a)(3) table 2). Additionally, OPEI proposes a conservative credit calculation method which will neither negatively influence the emission reduction in the ISOR nor change the expected emission reductions of NOx and ROG in the 2016 State SIP Strategy measure for SORE of 4 and 36 tons per day (tpd), respectively, in 2031, as compared to the Baseline Scenario emissions described in the ISOR.
OPEI proposes the following credit calculation method to calculate “evaporative emissions over median life” based on diurnal emission standard (0.95 + 0.056 x nominal capacity [liters]) set forth in sections 2754(a)(1) table 1. With model year 2024 the hot soak plus diurnal emission standard set forth in sections 2754(a)(3) table 2 will be zero. Thus "evaporative emissions over median life" will be negative and can be offset by banked positive exhaust emission credits. In addition, an “Uncertainty Factor” UF of 1,5 is proposed as a factor to include hot soak emissions, as no measurements are to be carried out for this.
For each evaporative family OPEI proposes, evaporative emission credits (negative) are to be calculated according to the following equation and rounded to the nearest hundredth of gram. Consistent units with two significant digits are to be used throughout the equations.

Credits = -EFELD x production volume x ML x UF
(Credits = -(0.95 + 0.056 x nominal capacity [liters]) x production volume x ML x UF)

Where:
EFELD = Diurnal emission standard set forth in section 2754 (a)(1) – EMEL

EMEL = 0.00 gram

ML = Median Life [days]: 1095 days corresponds to 3 years (according enclosures figure 4: Table 16. Median Life (years) Lawn & Garden and Light Commercial Categories (SORE2020 Model))

UF = Uncertainty Factor of 1,5*

* Consideration of hot soak emissions not included in section 2753 (c) and 2754(a)(1) table 1. Determination based on Table 20 of CARB 2020 Emissions Model for Small Off-Road Engines – SORE2020 final report.

4) Per OPEI's February 2, 2022 conference call with Ms. Dunwoody and Ms. Chang, allow conditional diurnal EO approval while manufacturers complete diurnal testing, which would allow manufacturers to generate credits based on the conditional approval date when successful diurnal testing is completed.

OPEI believes these strategies are consistent with options already included in the amendments, and/or consistent with the spirit of driving to zero-emissions starting with MY 2024 while minimizing the hardships on manufacturers and consumers and eliminating unnecessary new certification work for CARB. OPEI requests CARB reconsider these alternatives before finalizing the rule.

COMMENT 4 – The Approved for Adoption Rule and 15-Day Changes Force Tilt Test Requirements for Many Engines and Applications that Contradict Manufacturer Operating and Handling Limits

Amended TP 902 will require engines and equipment to be tested in orientations that are inconsistent with manufacturer's designed and recommended operating angles. The regulations should be consistent with manufacturer recommendation, not mis-use or unrecommended conditions. OPEI requests CARB staff modify this language to limit tilt test angles to the manufacturer's recommendations and not an arbitrary value of 90 degrees. Engine and equipment manufacturers can supply CARB installation instructions, application models, and operator manual instructions that provide the maximum operating angles of the engine / equipment as part of the application process to support the test data collected under this requirement.

COMMENT 5 – The Approved for Adoption Rule and 15-Day Changes Result in Unclear Requirements for Large Spark-Ignited Engines

OPEI is seeking additional clarification regarding the applicability of the amendments to Large Spark Ignited Engines (LSI) greater than 19 kW, less than 1 liter. Section 2754(a)(1) has been amended to confirm that LSI engines must meet the evaporative requirements in Table 1 for 225cc displacement from 2013 – A diurnal standard of 1.20 + 0.56 x nominal capacity, or design-based requirements of fuel line limits of 15 g/m^2/day plus fuel tank limits of 1.5 g/m^2/day plus carbon canister requirements outline in TP-902. OPEI appreciates this clarification, however several questions remain.

First, OPEI is seeking clarification that design-based certification will be permitted in accordance with the limits of Table 1.

Second, OPEI is seeking clarification of the applicability of other amendments to the Regulation Order that could apply to LSI engines. Final Regulation Order Chapter 9, Division 3, Title 13, Article 4.5, Section 2433(b)(4)(B), 2008 revisions, requires that LSI engines less than 1 liter must meet the SORE evaporative requirements of Title 13, Chapter 15, Article 1. This reference does not specify a dated edition. This may imply that applicable SORE Regulation Order requirements amended since 2008 also apply.

Third, OPEI is seeking clarification that TP-902, adopted July 26, 2004 and CP-902, adopted July 26, 2004 will continue to apply for purposes of certification of LSI engines less than 1 liter. Final Regulation Order Chapter 9, Division 3, Title 13, Article 4.5, Section 2433(d)(2), 2008 revisions, requires that LSI engines be certified to TP-902 and CP-902 *adopted July 26, 2004*. A LSI rulemaking is needed if CARB seeks to require that manufacturers comply with 2016 or 2021 amendments of TP-902 and CP-902 moving forward.

COMMENT 6 – The Regulation Order is Unclear Regarding "Replacement Engines" Less than 225cc Beyond MY 2023

Replacement engines less than 225cc have historically not been an issue, because certified engines were usually available. However, starting in model year 2024,

it is likely that most less than 225c engines will be unavailable for the California market. A clear replacement engine strategy is therefore required for this category of engine.

The regulation order prohibits replacement of less than 225cc engines produced before 1995. The regulation order does not specifically address replacement engines produced after 1995. In the absence of any specific language addressing replacement engines less than 225cc for units manufactured after 1995, it is OPEI's understanding that less than 225cc replacement engines are unconditionally permitted, and will continue to be permitted beyond January 1, 2024 as long as the engines at least met the regulations of the original equipment.

If this understanding is not correct, OPEI request CARB add provisions for allowing less than 225cc replacement engines in the same way greater than 225cc displacement replacement engines are permitted by Section 2403(g)(2). Absent such a provision, manufacturers will be unable to meet warranty requirements included in the regulation.

COMMENT 7 – The Rational for Additional Supporting Documents Added to the Record is Unclear. Without Discussions in the Record Supporting these Documents Stakeholders Cannot Confidently Understand the Meaning and Intent of these Documents or Respond with the Certainty Needed for Rulemaking Purposes.

The 15-day changes include the addition of dozens of new documents to the record not referenced in the original rulemaking documents or in these 15-day changes. The intent of these documents is unclear which makes it difficult for stakeholders to provide comments. OPEI may supplement these comments later if additional information about these documents is provided. Nevertheless, OPEI has the following comments regarding documents added to the record. Due to time constraints and uncertainty regarding the additional documents, these comments are not exhaustive of all documents added to the record.

Comment 7a – Document 2 DTSC_2021 "*How is California Doing with Recycling Rechargeable Batteries*"

The applicability of the document and California Rechargeable Battery Recycling Act to this rulemaking is unclear. It is OPEI's understanding that in-use application of the Act is for "small" batteries less than 100 W-hr. To that point, outdoor power equipment batteries, despite their wide use, are not included in the list of any of the Battery Type and Their Common Application examples. Many outdoor power equipment batteries, especially those for commercial grade outdoor power equipment are much larger than 100 W-hr.

Recycling and transportation challenges are ongoing concerns with "large format" batteries greater than 300 W-hr. There are many reports of lithium-ion batteries igniting during transportation. In fact, a lithium-ion battery fire is believed to be a significant contributor to the sinking of the Felicity Ace transport ship in the Atlantic this year. Large format batteries, like those found in many outdoor power equipment applications need special handling consideration for storage and transportation, including recycling, which has yet to be resolved.

Finally, while the number of lithium-ion batteries in service has grown significantly in recent year, Table "Rechargeable Batteries Collected by Weight" suggests a year-over-year ***decrease*** in battery recycling. Based on this table, it can be reasonably concluded that additional support and consideration for recycling lithium-ion batteries is needed to support the millions of batteries anticipated to be added to the fleet each year in response to this rule.

Comment 7b – Document 14 CARB 2018 "*2012 California Survey of Residential Lawn and Garden Equipment Owners: Population and Activity*"

The applicability of the document to this rulemaking is unclear. First, the document is based on nearly three times the number of survey participants yet suggests significantly lower annual use numbers of residential equipment than finalized in CARB's SORE2020 emissions model. Annual Use is directly proportional to emissions, and as a result, increases in Annual Use in SORE2020 (based on significantly less survey participants) results in higher emissions than if 2011 survey Annual Use averages were applied. In turn, the use of the CARB and CSU-F 2018-2019 survey data

results in higher fleet emissions and a much different narrative, and cost and health impact than if the larger sample size 2011 survey Annual Use estimates were used.

HR/YR Product	2011 Survey	SORE2020
Chain Saw	8	18
L&G Tractor	15	SEE RLM
Leaf Blower	12	15
RLM	26	83
WBM	15	19
Wood Splitter	14	48

Second, as discussed in OPEI's November 29, 2021 comments, neither the CARB CSU-F 2012 nor the most recent CARB CSU-F 2018-2019 survey normalize data for important factors that impact equipment use, such as residential lot size.

Finally, as discussed in OPEI's November 29, 2021 comments, neither the CARB CSU-F 2012 nor the most recent CARB CSU-F 2018-2019 survey provide evidence to correlate responses to real world use. There is no evidence survey participants track or know with confidence the answers to survey questions – Especially when considering specific equipment run time as part of a longer task (for example, how long is a chain saw running during the task of "cutting firewood", a task which also potentially includes splitting logs by hand or with another machine, and handling wood). OPEI studies found that landscapers overestimate riding mower run-times by 2-3 times on average. In fact, every landscaper surveyed by OPEI overestimated equipment use when comparing survey responses to equipment hour meters. (See OPEI November 29, 2020 comments.) Neither CARB nor CSU-F have tried to correlate survey responses to real-world use or accounted for this unknown. Accurate responses are required to assure survey confidence. Evidence suggests these surveys are not rooted in accurate responses.

As a result, both the 2012 and 2018-2019 survey data must be studied and examined with great caution.

Comment 7c – Document 15 Freedonia 2018 "*Industry Study #3674 Power Lawn & Garden Equipment*"

The applicability of the document to this rulemaking is unclear. First, the document is based on dollar growth, which is difficult to draw conclusions about growth

or trends of specific equipment or power types, including low-cost zero-emission equipment penetration.

Second, the report purchase and use trends appears based on a limited number of surveys. Figure 2-4 appears to be based on roughly 1100 surveys nation-wide. Figure 2-5 appears to be based on just 300 surveys nation-wide.

Finally, the reliability of the data and Freedonia group subject expertise is questionable. The report erroneously states “individual states may create more stringent standards”. With the exception of California though the wavier process, adoption and enforcement of small engine emission regulations is prohibited by the Clean Air Act and 40 C.F.R. Part 1074. The report erroneously states “Power lawn and garden equipment (including blowers, *commercial mowers, garden tractors,* and trimmers) primarily use two-stroke engines, which emit more pollution than the four-stroke engines in motor vehicles…”. This characterization of commercial mowers, garden tractors, and other implied equipment is obviously incorrect to most equipment users. The report notes “(ICE) growth will trail that for electric equipment, but engine-driven products will continue to account for the majority of sales”. Again, this is not true. OPEI’s Market Statistics program, where members report to OPEI monthly shipments, finds that 56% of all outdoor power lawn and garden equipment shipped in 2021 was “zero-emissions equipment”. 63% of handheld products shipped were zero-emissions equipment, including approximately 80% of all handheld blowers and hedge trimmers, and 37% of all walk-behind mowers shipped were zero-emissions equipment. Finally, Figure 3-7 grossly underestimates the market share increase of electric walk-behind mowers, suggesting that the dollar percentage of electric walk-behind mowers is approximately 10-15% of gas-powered mowers in 2022. As noted above, shipments of electric mowers exceeded 35% of total units shipped in 2021.

For these reasons, the Freedonia reports are unreliable for rulemaking purposes.

Comment 7d – Documents 30 & 31 USCPSC 2015a. “*Letter to Greg Knott, OPEI*” and USCPSC 2015b. “*Study of Fuel Leaks Associated with Outdoor Ground-Supported Gasoline-Powered Equipment*”.

The applicability of these document to this rulemaking is unclear. In 2016 and 2017 the OPEI B71.10 Committee had several meetings/discussions/communications with CPSC staff regarding “fuel leaks associated with outdoor ground-supported gasoline-powered equipment”. Following a February 2016 meeting with CSPC staff and an OPEI follow-up letter outlining our analysis of CPSC data CPSC responded “CPSC staff agrees with your assessment that the rate of reported stress cracks and seam splits from tanks has decreased (since before the B71.9-2013 standard)… Based on the discussion at our technical meeting in February, where OPEI members explained the changes made in the ANSI B71.10 standard and the associated reduction in reported stress cracks and same splits, CPSC staff, at this time, does not recommend modifications to the B71.10 standard regarding the stress crack performance tests (elevated temperature and cyclic pressure tests)”. Additionally, in response to the draft B71.10-2018 revision, CPSC staff, as a participant on the standard consensus body responded “The list of proposed changes to the B71.10 is impressive and substantial. CPSC staff is confident that the addition of requirements for fuel filters, vent grommets, fuel shut-off valves, impact tests, ultraviolet (UV) light exposure tests, ozone exposure tests, and test sample conditioning to cold environments will reduce the likelihood of incidents and recalls associated with outdoor ground-supported, gasoline powered equipment (OGSGPE) fuel leaks. CPSC staff believes the proposed requirements will represent the fuel system components better as they are used in the field.”. See Annex A.

Comment 7e – Document 35 CARB-2022b “*Evaluation of Data Questioned by OPEI*”

The inclusion of the CARB staff evaluation of OPEI CARB CSU-F 2018-2019 survey data is welcomed by OPEI. However, we express our concern and confusion as to why this document was not previously provided to OPEI, and/or ask why OPEI and industry experts were not invited to discuss the responses together before they were published. OPEI scheduled multiple meetings with CARB staff to discuss these concerns, and provided the ground work and initial rational to CARB for the subject analysis (after CSU-F and CARB failed to conduct the analysis they were contractually

obligated to do on their own as part of the project), yet CARB did not reengage OPEI in discussion about the subject before finalizing the SORE2020 model.

First, as discussed in OPEI's November 29, 2021 comments, neither the CARB CSU-F 2012 nor the most recent CARB CSU-F 2018-2019 survey provide evidence to correlate responses to real world use. There is no evidence survey participants track or know with confidence the answers to survey questions – Especially when considering specific equipment run time as part of a longer task (for example, how long is a chain saw running during the task of "cutting firewood", a task which also potentially includes splitting by hand or with another machine, and handling wood). On the contrary, OPEI surveys (of the same questions administered by CSU-F) found that landscapers overestimated riding mower run-times by 2-3 times on average. In fact, every landscaper surveyed by OPEI overestimated equipment use when comparing survey responses to equipment hour meters. (See OPEI November 29, 2021 comments.) Neither CARB nor CSU-F have tried to correlate survey responses to real-world use or accounted for this unknown. Accurate responses are required to assure survey confidence. Evidence suggests these surveys are not rooted in accurate responses.

Second, the report confirms OPEI's comments noted in its November 29, 2021 comments, that respondents with significantly larger than average lot sizes are included and impact annual use results. In response to R594, CARB staff notes "Please note that the respondent is located in Humboldt County. Looking at the land use of Humboldt County you can see that almost 40% of lots in the Humboldt county have an average size of 24 acres and the rest of the 60% have an average size of 0.42 (~20,000 sqft). This again speaks to the size of the land and usage patterns in rural areas than might be different from the urban areas." OPEI agrees land size is a likely driver of outdoor power equipment use and must be accounted for when normalizing data. According to HomeAdvisor.com,[4] California has the second smallest average property and landscapable area in the U.S. – The average California lot size is 0.17 acres with a landscapable area of 0.13 acres. Including equipment use on lot sizes with 24 acres when the average California home landscapable area is approximately 0.13 acres is misleading. The data requires normalization to address this bias. CARB did not

[4] https://www.homeadvisor.com/r/average-yard-size-by-state/

normalize any of the data for lot size to address bias. In fact, it is OPEI's understanding that CARB did not normalize any annual use or age data for any bias, even though CSU-F normalized the number of units in its report for number of residents, resident type and number of employees.

Finally, in their analysis of annual use from the equipment survey, Staff used an IQR analysis conducted in log space to identify pieces of equipment with very high annual use that were further evaluated for potential removal from the sample. In some cases, certain pieces of equipment considered outliers with this analysis were removed[5]. After the removal of some of the outliers, Staff computed annual use of the remaining sample using arithmetic averages. However, very few pieces of equipment were removed from the sample, resulting in very high annual use for many equipment types.

OPEI contracted with AIR to conduct an IQR analysis as one part of its outlier analysis in April 2020. AIR believes that Staff's use of the log of annual use to identify outliers should have been accompanied by using the geometric mean to compute annual use, instead of arithmetic means.

A comparison of the two methods for different equipment types for household, business, and landscape use is shown in the tables below. There are significant differences in annual use between arithmetic averages and geometric averages. For example, for household welders, where the sample size is only 16 pieces, the arithmetic average is 178.2 hours per year, and the geometric average is 4.8 hours per year. The median use is only 2 hours per year. Welder use is hugely influenced by a welder that the respondent says is being used 2184 hours per year, which would be 8.4 hours per year, 5 days a week for the entire year. This type of use for a household is highly unlikely. Another example is landscape lawnmowers.

Other examples are shown in the tables. Any gasoline equipment with use in excess of 2000 hours per year is highly suspect, because it indicates use for about 8 hours per day, 5 days per week. While electric equipment such as pumps can experience high use, gasoline equipment where the motor is reported to be on 8+ hours

[5] Staff computed the log of annual equipment use (in hours per year), then used an IRQ analysis to identify outliers.

per day requires so much refueling that it is simply not logical that anyone would be using the equipment his much.

Household Gasoline Equipment Annual Hours						
Equipment	Count	Minimum	Maximum	Average	Median	Geometric Mean
Chainsaw	169	0	208	17.9	2.0	3.7
Compressor	15	0	2912	349.3	26.0	18.9
Generator	127	0	2184	46.2	3.0	4.8
Lawn Mower	308	0	780	23.4	10.0	8.5
Leaf Blower/Vacuum	100	0	156	14.9	8.0	7.4
Pressure Washer	68	0	624	29.3	6.0	6.4
Pump	7	0.17	50	9.8	2.0	3.5
Snow Blower	4	0.5	10	5.4	5.5	4.1
String Trimmer	169	0	208	15.8	5.0	6.0
Welder	16	0	2184	178.2	2.0	4.8

Business Gasoline Equipment Annual Hours						
Equipment	Count	Minimum	Maximum	Average	Median	Geometric Mean
Chainsaw	91	0	192	21.2	6.0	7.0
Compressor	23	0	2080	203.2	8.7	17.4
Generator	87	0	2920	167.2	8.0	16.1
Lawn Mower	81	0	1092	106.1	24.0	26.0
Leaf Blower/Vacuum	116	0	728	86.1	26.0	29.9
Hedge Trimmer	12	3	192	55.5	24.0	26.3
Riding Mower	4	24	468	147.3	48.5	72.1
Pressure Washer	100	0	1040	78.2	12.0	16.2
Pump	30	0	3120	167.8	13.0	16.7
Snow Blower	3	6	150	58.0	18.0	26.2
String Trimmer	90	0	728	70.1	18.0	21.3
Welder	33	0	2184	118.2	26.0	17.6

Landscape Gasoline Equipment Annual Hours						
Equipment	Count	Minimum	Maximum	Average	Median	Geometric Mean
Chainsaw	1825	0	1248	137.4	62.4	52.0
Compressor	30	4	468	176.3	92.5	70.2
Generator	100	0	1456	61.9	15.0	15.2
Hedge Trimmer	1096	0	2080	137.8	62.8	57.1
Lawn Mower	1174	0	4368	253.8	216.7	131.0
Leaf Blower/Vacuum	1616	0	4160	224.3	119.6	110.4
Pressure Washer	151	0	312	29.6	12.0	12.6
Pump	25	0	832	160.6	18.0	25.0
Riding Mower	135	0	2912	290.3	182.8	120.5
Snow Blower	31	52	390	379.1	390.0	365.6
String Trimmer	1596	0	2920	196.3	103.9	92.0
Welder	10	0.33	48	25.9	39.4	13.8

Thank you for your consideration of OPEI's comments. Please feel free to contact me if you have any questions.

Kind regards,

Greg Knott
Vice President, Standards & Regulatory Affairs
Outdoor Power Equipment Institute
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ANNEX A

OPEI CPSC "*Study of Fuel Leaks Associated with Outdoor Ground-Supported Gasoline-Powered Equipment*" Communications (Comment 7d)

U.S. CONSUMER PRODUCT SAFETY COMMISSION
4330 EAST WEST HIGHWAY
BETHESDA, MD 20814

July 11, 2016

Greg Knott
Director, Industry Affairs
Outdoor Power Equipment Institute (OPEI)
341 South Patrick Street
Alexandria, VA 22314

Dear Mr. Knott:

Thank you for your letter of May 31, 2016, providing feedback on our meeting of February 10, 2016, and the CPSC staff report, "Study of Fuel Leaks Associated with Outdoor Ground-Supported Gasoline-Powered Equipment."[1] Hereafter, the report will be referred to as: "CPSC Staff Report." It was a pleasure to meet you and the OPEI B71.10 members at the February meeting. We engaged in productive discussions regarding fuel leaks from outdoor ground-supported gasoline-powered equipment ("OGSGPE").

In your May 31 letter, you raised several concerns that surfaced during our meeting and after your independent review of incident/recall data. This letter addresses those concerns.

CPSC staff agrees with your assessment that the rate of reported stress cracks and seam splits from fuel tanks has decreased. Before the first edition of the American National Standards Institute ("ANSI"), and Outdoor Power Equipment Institute standard ANSI/OPEI B71.10 – *Standard for Ground Supported Outdoor Power Equipment – Gasoline Fuel Systems* in 2008, there were 13 recalls from 2000 to 2008, related to stress cracks/seam splits for snow blowers and lawn mowers. In contrast, there was only one recall from 2009 to 2015.[2] Based on the discussion at our technical meeting in February, where OPEI members explained the changes made in the ANSI/OPEI B71.10 standard and the associated reduction in reported stress cracks and seam splits, CPSC staff, at this time, does not recommend modifications to the B71.10

[1] Lim, H. "Study of Fuel Leaks Associated with Outdoor Ground-Supported Gasoline-Powered Equipment," U.S. Consumer Product Safety Commission, September 2015, Internet Source: http://www.cpsc.gov/Global/VoluntaryStandards/FuelLeakOutdoorGasolineEquipmentSept2015.pdf

[2] CPSC Recall Notice 15-222 (not included in the CPSC staff report). Internet Source: http://www.cpsc.gov/en/recalls/2015/scag-power-equipment-recalls-lawn-mowers/ and Scag Company Website: http://www.scag.com/libertyz-fueltank.html

standard regarding the stress crack performance tests (elevated temperature and cyclical pressure tests).

CPSC's Staff Report identified components, such as fuel filters and vent grommets, which were the subject of recalls. CPSC staff is concerned because these components are not addressed in the current ANSI/OPEI B71.10 standard. In your letter, you stated that the committee is evaluating these components. CPSC staff appreciates the committee's efforts on this regard.

Although CPSC staff commends the B71.10 committee for their willingness to evaluate components currently not covered in the ANSI/OPEI B71.10 standard, such as fuel filters and vent grommets, CPSC staff respectfully requests that the committee consider examining the other outstanding issue involving moving parts contacting fuel tanks. At least three fuel tank recalls[3] post-2009 were due to objects such as drive belts or pulleys contacting the tanks, rubbing holes in them, and causing fuel leaks. CPSC staff recommends the B71.10 committee examine this issue further to determine if spacing requirements in future versions of the ANSI/OPEI B71.10 standard can reduce the likelihood of fuel tank failures due to objects contacting the tanks.

Your letter requests that CPSC staff consider revising statements in the CPSC Staff Report. Regarding the footnotes on page 10 of your letter, you expressed concern about CPSC staff's characterization of particular recurring issues that had led to fuel leaks and that industry standards may not be replicating real-world scenarios. CPSC staff believes the statements in the CPSC Staff Report do not need revision because the current ANSI/OPEI B71.10 standard does not have any requirements for fuel filters, vent grommets, and moving objects, such as drive belts contacting fuel tanks, all of which have caused fuel leaks. The CPSC Staff Report statements do not single out any particular issue; rather the statements generally describe how the various fuel leak scenarios may be recurring and how some scenarios may not replicate real-world conditions.

CPSC staff looks forward to future dialogue with the OPEI B71.10 committee, to work collaboratively to improve future versions of the ANSI/OPEI B71.10 standard, with the goal of reducing the risk of fuel leaks associated with OGSGPE.

Sincerely,

Han Lim,
Mechanical Engineer
Mechanical and Combustion Engineering Division
Directorate for Engineering Sciences

cc: Patricia Edwards, CPSC Voluntary Standards Coordinator

[3] CPSC Recall Notices 13-048, 13-187, and 13-734, searchable by recall notice number at www.cpsc.gov.

U.S. CONSUMER PRODUCT SAFETY COMMISSION
4330 EAST WEST HIGHWAY
BETHESDA, MD 20814

October 12, 2017

Greg Knott
Director, Industry Affairs
Outdoor Power Equipment Institute
341 South Patrick Street
Alexandria, VA 22314

Dear Mr. Knott:

This letter responds to your request for the canvass review of the American National Standards Institute (ANSI) and Outdoor Power Equipment Institute's (OPEI) standard ANSI/OPEI B71.10 – 201X – *Standard for Ground Supported Outdoor Power Equipment – Gasoline Fuel Systems,* hereafter referred to as "B71.10." CPSC staff has reviewed the draft B71.10 and completed the ballot sheet.

The list of proposed changes to the B71.10 is impressive and substantial. CPSC staff is confident that the addition of requirements for fuel filters, vent grommets, fuel shut-off valves, impact tests, ultraviolet (UV) light exposure tests, ozone exposure tests, and test sample conditioning to cold environments will reduce the likelihood of incidents and recalls associated with outdoor ground-supported, gasoline-powered equipment (OGSGPE) fuel leaks. CPSC staff believes the proposed requirements will represent the fuel system components better as they are used in the field.

CPSC staff appreciates the opportunity to comment on the latest draft of the B71.10. As CPSC staff has done in the past B71.10 ballots, CPSC staff abstains with comments. For your consideration, CPSC staff identified one typographical error, which is shown on the requested comment form.

CPSC staff sincerely commends your leadership and the B71.10 committee's significant contributions to help reduce the risk of fuel leaks from OGSGPEs.

Sincerely,

Han Lim,
Mechanical Engineer
Directorate for Engineering Sciences, Mechanical and Combustion Engineering Division (ESMC)

cc: Patricia Edwards, CPSC Voluntary Standards Coordinator

Enclosures (2): Ballot Sheet; Editorial Comment Form for the B71.10 standard text