



EARTHJUSTICE



NRDC
NATURAL RESOURCES
DEFENSE COUNCIL

November 13, 2018

Ms. Mary D. Nichols, Chair
Air Resources Board
1001 I St.
Sacramento, CA 95814

via electronic submittal

Re: Reducing Emissions from Small Off-Road Engines: Operator Exposure, Health Risks, and Pathways to Zero Emissions

Chairman Nichols and Board Members:

The environmental organizations signed onto this letter urge the Board to swiftly adopt measures, including performance standards, to convert California's fleet of small off-road engines (SOREs) to zero-emissions equipment, with priority for commercial users and disadvantaged communities. SOREs are small, spark-ignited engines producing less than 25 gross horsepower, and include lawn mowers, weed trimmers, chainsaws, and leaf blowers. A rapid transition away from SOREs to zero-emissions equipment would reduce operator exposure to toxic emissions and related health risks, in addition to reducing hazardous air pollution, greenhouse gas (GHG) emissions and improving health outcomes throughout the state.

The preliminary results from CARB staff's exposure study indicate that gasoline-burning SOREs expose operators to significantly increased cancer risk as well as pollutant concentrations far above National and California Ambient Air Quality Standards. Stakeholders have long known that SOREs are significant contributors to smog-forming pollutants in California. They also contribute to climate change by emitting GHGs. High-performing electric alternatives to gas-burning SOREs exist, and we urge the Board to adopt a strong program to electrify California's SOREs fleet.

1. SOREs expose Californians—and in particular, SOREs operators—to significant, avoidable health risks.

As mentioned in previous Sierra Club comments, SOREs pose serious health risks. CARB staff has previously noted that SOREs contribute significantly to poor air quality

across California, emitting 45 tons of reactive organic gas and toxic air contaminant emissions in 2016, which surpass the emissions generated from 10,000 gas stations. Gasoline-burning SOREs produce high levels of localized emissions that include toxic and carcinogenic emissions, including benzene, 1,3 butadiene, formaldehyde, carbon monoxide, and fine particulate matter.¹ Benzene, 1,3 butadiene and formaldehyde are all carcinogenic compounds, causing lymphomas, leukemias, and other cancers.² There is no safe level of exposure to these carcinogens.³

The preliminary results from CARB staff's study highlight unique health risks posed to SORE operators from gasoline-burning SOREs. The study found that all gasoline-burning equipment increases operator exposure to carcinogenic substances. Testing in 45-minute exposures, the exposure study found that gasoline-powered devices produced elevated exposure concentrations for benzene and 1,3-butadiene, carcinogens with no safe level of exposure.⁴ This exposure correlates to cancer risks far above the general baseline for benzene and 1,3-butadiene, meaning that operators are exposed to significantly elevated cancer risks. The risks for gasoline-powered chainsaws were most pronounced, as operators experience an additional 41 to 158 cancers per million workers exposed.⁵ The study found that operators of gasoline-powered SOREs could potentially double their cancer risk from benzene and 1,3-butadiene in comparison to the recognized baseline risk for such cancers.⁶

For other, non-cancer risks, the exposure study would result in pollutant exposures up to 14 times the short-term recommended exposure levels, and up to 6 times the lifetime or "chronic" recommended exposure levels. The study found that electric equipment produces no elevated carcinogenic exposure and dramatically reduces exposure to ultrafine particles, black carbon, carbon monoxide, and noise.⁷ Though only preliminary, the results from the CARB Exposure Study indicate clear health risks associated with gasoline-powered SOREs in stark contrast to the nonexistent or reduced health risks associated with electric equipment.

2. SOREs imperil the state's climate goals.

With the passage of Senate Bill (SB) 32, California must reduce its greenhouse gas emissions by at least 40 percent below 1990 levels by 2030. California must further reduce emissions by 80 percent below 1990 levels by 2050 and achieve carbon neutrality

¹ Banks, Jamie L, Robert McConnell. "National Emissions from Lawn and Garden Equipment" (Sept. 2015) at 11, available at: <https://www.epa.gov/sites/production/files/2015-09/documents/banks.pdf>

² Baan R, Gross Y, Straif K et al on behalf of the WHO International Agency for Research on Cancer Monograph Working Group. "A Review of Human Carcinogens—Part F: Chemical Agents and Related Occupations," *Lancet Oncology* 2009; 10:1143-1144.

³ CARB Exposure Study at 3.

⁴ *Id.*

⁵ *Id.*

⁶ *Id.*

⁷ *Id.* at 4.

by 2045, under Executive Orders S-3-05 and B-55-18.⁸ These climate goals will require drastic cuts in GHG emissions across multiple sectors, including transportation, electric, agricultural, and industrial sectors.

And yet, emissions from gasoline-powered SOREs are currently projected to increase over the coming years. One study from 2015 estimated that nationwide GHG emissions from SOREs would increase by 12.3% between 2011 and 2018.⁹ According to the EPA, one gas mower generates 88 pounds of carbon dioxide and 34 pounds of other pollutants each year.¹⁰ Furthermore, there are more SOREs in California (16.5 million) than there are light-duty passenger vehicles (13.7 million). CARB staff expect smog-forming emissions (e.g., nitrogen oxides, and volatile organic compounds) from SOREs to remain steady at around 50 tons per day and slightly increase near 2031, despite falling emissions from most other market sectors.¹¹

These projected climate and health impacts from SOREs could frustrate established California climate policy, and we urge the Board to address these impacts through continued regulation and incentives.

3. CARB can and should incentivize electric alternatives to gas-burning SOREs and continue to tighten emissions standards for manufacturers.

The Air Resources Board should review and adopt measures to speed the transition away from gasoline-burning SOREs in favor of zero-emissions equipment. The South Coast Air Quality Management District (AQMD) has led the way with incentives to push residents towards exchanging gasoline-powered SOREs with electric equipment. Their programs include a residential lawn mower rebate of up to \$250 for the purchase of a battery-powered lawn mower upon the scrapping of a gas-powered mower.¹² The Bay Area AQMD offers a similar program.¹³

A second South Coast AQMD program aims to target commercial landscapers and gardeners operating in environmental justice areas. The program offers rebates for the purchase of electric-powered lawn equipment when an equivalent gas or diesel-powered piece of lawn or garden equipment is scrapped. Other states also offer incentives for swapping out gasoline-powered SOREs in favor of electric equipment. For example, in 2012, the Southwest Pennsylvania Air Quality Partnership offered modest rebates for the

⁸ Executive Order B-55-18, <https://www.gov.ca.gov/wp-content/uploads/2018/09/9.10.18-Executive-Order.pdf>.

⁹ Banks & McConnell at 11.

¹⁰ <https://www.peoplepoweredmachines.com/faq-environment.htm>.

¹¹ CARB Small Engine Fact Sheet (July 2018), available at https://www.arb.ca.gov/msprog/offroad/sm_en_fs.pdf.

¹² See South Coast Air Quality Management District, “Electric Lawn and Garden Equipment” webpage, at <http://www.aqmd.gov/home/programs/community/community-detail?title=lawn-equipment>.

¹³ See Bay Area Air Quality Monitoring District, “Commercial Lawn & Garden Equipment Exchange Program” at <http://www.baaqmd.gov/funding-and-incentives/businesses-and-fleets/lawn-and-garden>.

purchase of electric lawn equipment to residents willing to exchange a gas-powered lawn mower or trimmer.¹⁴

In addition, the Board should consider establishing more stringent emissions standards for SORE, and establishing standards for at least some categories of SORE that reflect the feasibility and cost-effectiveness of zero-emissions, electric engines. We also encourage the Board to assess midstream incentives for retailers and distributors to carry and publicize electric alternatives to gas-powered SOREs in stores and online. Similar programs have been shown to be effective in energy efficiency programs for increasing purchases of energy efficient appliances. Similar incentives might increase the purchase of electric alternatives, particularly if health and environmental impacts are noted on packaging and in advertising.

We support efforts to accelerate retirement of gasoline-powered SOREs in favor of zero-emissions equipment. We also support the prioritization of measures targeting commercial operators in disadvantaged communities. Commercial operators are likely to face the most significant health impacts from SOREs, due to the amount of time spent operating the equipment and the likely larger commercial-grade equipment and corresponding emissions. Additionally, the equipment used by commercial landscapers and gardening are likely to be used more intensively than SOREs owned for home use. Similarly, populations in disadvantaged communities as identified by the CalEnviroScreen face disproportionate environmental burdens, and we recommend that these populations see the first and strongest incentives.

For these reasons, we urge the Board to adopt incentives and other mandatory measures to speed the transition away from SOREs and towards zero-emissions electric alternatives.

Sincerely,

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¹⁴ See Southwest Pennsylvania Air Quality Partnership, Inc, 2012 news archive, available at http://www.spaqp.org/news_archive.html.