SENATE COMMITTEE ON ENVIRONMENTAL QUALITY
Senator Allen, Chair
2021 - 2022 Regular

Bill No:	AB 1346		
Author:	Berman and Lorena Gonzalez		
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Urgency:	No	**Fiscal:**	Yes
Consultant:	Eric Walters		

SUBJECT: Air pollution: small off-road engines

DIGEST: Requires the Air Resources Board (ARB) to adopt regulations to prohibit emissions from new "small off-road engines" (SORE)—such as those in lawn care equipment or portable generators—to apply to engines produced on or after January 1, 2024, or as soon as ARB determines is feasible, whichever is later.

ANALYSIS:

Existing federal law:

1) Sets, through the Federal Clean Air Act (FCAA) and its implementing regulations, National Ambient Air Quality Standards (NAAQS) for six criteria pollutants, designates air basins that do not achieve NAAQS as nonattainment, allows only California to set emissions standards stricter than the federal government, and allows other states to adopt either the federal or California emissions standards. (42 U.S.C. §7401 et seq.)

2) Prohibits states from adopting emission standards that would affect new nonroad engines which are used in farm or construction equipment or vehicles and which are smaller than 175 horsepower. (42 U.S.C. §7543)

Existing state law:

1) Establishes the Air Resources Board (ARB) as the air pollution control agency in California and requires the ARB, among other things, to control emissions from a wide array of mobile sources and implement the FCAA. (Health and Safety Code (HSC) §39500 et seq.)

2) Describes what is meant by "Small off-road engine" (SORE) by:

    a) Defining SORE to mean any engine that produces a gross horsepower less than 25 horsepower (at or below 19 kilowatts for 2005 and later model

year), or is designed (e.g., through fuel feed, valve timing, etc.) to produce less than 25 horsepower (at or below 19 kilowatts for 2005 and later model year), that is not used to propel a licensed on-road motor vehicle, an off-road motorcycle, an all-terrain vehicle, a marine vessel, a snowmobile, a model airplane, a model car, or a model boat;

b) Stating that SORE uses include, but are not limited to, applications such as lawn mowers, weed trimmers, chain saws, golf carts, specialty vehicles, generators, and pumps; and

c) Asserting that all engines and equipment that fall within the scope of the preemption of Section 209(e)(1)(A) of the FCAA, as amended, and as defined by regulation of the Environmental Protection Agency, are specifically not included within this category. (13 CCR §2401)

This bill:

1) Requires ARB, by July 1, 2022, to adopt cost-effective and technologically feasible regulations to prohibit engine exhaust and evaporative emissions from new SORE, as defined by the state board. Requires the regulations to apply to engines produced on or after January 1, 2024, or as soon as ARB determines is feasible, whichever is later.

2) Requires ARB to identify, and, to the extent feasible, make available, funding for commercial rebates or similar incentive funding as part of any updates to existing, applicable funding program guidelines for air districts to implement to support the transition to zero-emission SORE operations.

3) Makes related findings.

Background

1) *ARB SORE regulations*. SORE have been a regulated category since 1990, when the first emission standards for this category were adopted. The current exhaust emission standards for SORE were implemented between model years 2000 and 2008. The current evaporative emission standards were implemented between 2006 and 2013. It is important to note that the emission standards apply only to the manufacture of new equipment for sale or import into California. These regulations do not contain in-use requirements for equipment owners.

   Many engines have emissions below the current exhaust emission standards.

Since these emission standards were first implemented, many technological advancements that could reduce the exhaust emissions from this equipment have been made. However, the emission standards have not been updated to require the implementation of these technologies. The exhaust emission regulations require engines to meet emission standards through the engines' useful lifetime. Manufacturers determine the useful lifetime, which can be as low as 50 hours of operation.

The current evaporative emission regulations give manufacturers the option to certify their engines as a complete system (referred to as "performance certification") or using individually certified components (referred to as "design certification"). Many manufacturers use design certification to reduce their testing costs. Regardless of the certification method that the manufacturers choose, the compliance rates for evaporative emissions from this category are generally low, with equipment from both certification processes failing at a rate of nearly 40 percent.

In March 2021, ARB staff held a public workshop on a draft regulatory proposal to amend the SORE regulations. Staff plan to bring a proposal to the Board in the fall of 2021. The draft regulatory proposal includes updated emission standards for new SORE that would transition small off-road equipment to zero emissions. A new emission reduction credit program would facilitate the transition of generators from SORE to zero emissions.

As proposed, the transition to zero-emission equipment would occur in two phases. The first would start in model year 2024, when both the exhaust and evaporative emission standards would be zero for all new SORE, except generators. Manufacturers could use banked emission reduction credits to offset emissions from SORE, but no new emission reduction credits could be earned. Starting in model year 2024, emission standards for generators would be more stringent. A zero-emission generator emission reduction credit generation program would be implemented as part of this phase. This program would allow manufacturers of zero-emission generators to earn emission reduction credits, which could be used to offset emissions of SORE-powered generators.

The second phase would begin with model year 2028, when the exhaust and evaporative emission standards for new generators manufactured for sale in California would be zero. Manufacturers could still use any previously banked emission reduction credits to offset the emissions from new SORE-powered generators produced for sale in California until they expire.

ARB staff have held three public workshops, including the March 2021 workshop, to discuss potential amendments to the SORE regulations. Staff have also participated in conventions and community meetings, met with stakeholders, and conducted other outreach to get feedback on draft proposals. Staff will continue to consider feedback from stakeholders as they develop a proposal for the Board's consideration to transition small off-road equipment in California to zero-emission equipment.

2) *Technology forcing*. Technology forcing is a regulatory strategy that establishes currently unachievable and uneconomic performance standards to be met at some future point in time. The legislation or regulatory rules also set a defined time period for achieving these performance standards. Essentially, technology forcing sets regulatory standards and provides incentives for achieving the standards or disincentives for not achieving them.

   A widely-cited 2005 study in the journal "Technological Forecasting & Social Change" by two Carnegie Mellon University public policy experts describes the experience of promulgating technology forcing regulations as follows:

   > *"Technology-forcing policies are well suited for a study of the role of regulatory implementation in fostering technological change for two reasons: First, the specific intent of technology-forcing policies is to elicit advancements in environmental control technologies. Second, technology-forcing policies create an adversarial setting where regulators and firms each actively attempt to shape and to change the actions of the other party. Specifically, regulators want to force firms to commit resources to R&D whereas firms want regulators to delay, relax, or rescind the standards."*

   The proposed ARB SORE regulations are technology forcing. California has made use of technology forcing regulations to improve air quality since the 1960s in controlling pollution from automobiles and other sources.

Comments

1) *Purpose of Bill.* According to the author, "Today, operating the best-selling gas-powered commercial leaf blower for one hour emits air pollutants comparable to driving a 2017 Toyota Camry from Los Angeles to Denver. Smog-forming emissions from small engines will surpass those from passenger vehicles this year. We must look beyond transportation if we are to achieve the emissions reductions needed to fight climate change and improve air quality and health in our communities.

"AB 1346 will require sales of new small off-road engines in California to be zero-emission by 2024 or when the California Air Resources Board determines is feasible, whichever is later. This bill also requires the California Air Resources Board to make funding available to help landscaping businesses transition to zero-emission equipment. Transitioning to zero-emission equipment will reduce the occurrence of asthma, cardiovascular disease, and premature death caused by air pollution, and help California meet our air quality goals."

2) *SORE emissions.* Overall, statewide emissions from SORE are estimated by ARB, using their SORE2020 model, to be approximately 150 tons per day of oxides of nitrogen (NOx) and reactive organic gases (ROG). This is comparable to the NOx and ROG emissions from the state's light-duty passenger car fleet. This baseline emission estimation is what motivates ARB's current rulemaking, but is under question by the opposition to this bill.

   The SORE2020 model is based on new data from multiple sources, including a 2018 Cal State Fullerton (CSUF) phone survey of 3,131 respondents, engine production line testing data on the annual production of SORE, evaporative emission reporting data on the annual production volume of SORE equipment, and emissions data from certification and in-house testing of SORE.

   Overall, the CSUF survey reported higher annual residential use than the previous (reportedly outdated) OFFROAD2007 model, but lower business use. When integrated with the other data sources, altogether the SORE2020 model found statewide ROG+NOx emissions from SORE to be roughly 50% higher than had been estimated by OFFROAD2007. The opposition to this bill contend that data quality issues in the CSUF survey severely inflated ARB's estimation of emissions from SORE.

3) *Not all SORE are created equal*. While the author's intent seems focused on lawn and garden equipment, ARB's existing SORE definition is based on engine size and includes a much broader range of equipment types than lawn and garden equipment. According to ARB, the largest SORE contributors to smog-forming emissions in its jurisdiction are generators, followed by leaf blowers, lawn mowers, riding mowers, trimmers, chainsaws, and pressure washers. There are several more equipment types using ARB-regulated SORE with less significant total emissions. The definition of SORE used by ARB encompasses at least lawn mowers, weed trimmers, chain saws, golf carts, specialty vehicles, generators, and pumps.

   The use cases, necessity, performance requirements, and emission profiles of

different SORE equipment vary significantly. For example, individuals purchasing electric leaf blowers for home use have flexibility in when they use their equipment and will likely not need to run it for long. This suitability for existing zero-emission equipment (ZEE) options is reflected in the fact that over half of all household lawn and garden equipment is already electric in California today.

Not all replacements of SORE-powered equipment with ZEE will be as simple as residential users buying electric lawn care equipment for personal use as needed. Commercial lawn care operations need equipment that can run considerably longer in one day than residential users need, and (depending on the scale of their business) may create noteworthy demand increases on the electricity grid when charging. Fossil fuel-powered generators can provide needed electricity during an extended emergency, and users may have little discretion in when they need to use them. Of particular note, a search for battery electric alternatives to SORE-powered chainsaws show battery runtimes of roughly 40 minutes, a far cry from the usage required by firefighters and for fuel reduction activities.

4) *Leading the way*. Despite the challenges associated with transitioning to ZEE, there are technologies and businesses doing so today.

A recent article in the Washington Post profiled a lawn care business in Alabama that predominantly uses electric equipment. The story states that the volume of electric-powered lawn equipment shipped by North American manufacturers increased from 9 million units in 2015 to over 16 million units in 2020 – a 75% increase in five years, during which the overall lawn equipment market shifted from 32% to 44% electric. The article also acknowledged that runtime, cutting power, and costs all still remain reasons for reluctance to switch. One solution discussed for charging issues was to outfit landscaping vans with solar panels to recharge batteries on the go—an expensive solution that one company was able to implement by charging customers 10% to 20% more than their competitors.

Battery-powered and fuel cell options to replace generators are also available, though the ZEE options do come with downsides compared to fossil fuel-powered offerings. While portable power stations such as the popular Goal Zero Yeti can provide power without any associated noise or emissions from the unit, they are ultimately constrained by battery capacity. Whereas a gasoline or diesel generator can be refueled repeatedly with little downtime, a portable power station may take hours to recharge. There are also concerns about the charge that can be delivered at once being unable to power the

amount of appliances and devices a conventional generator can. These ZEE options can also be five to twenty times the cost of fossil-fuel powered options.

In many use cases, complying with the proposed updated SORE regulation would not require wholesale invention of new technology, but rather improvements to existing ZEE offerings and accelerated adoption timelines. This is a familiar conundrum in adopting technology forcing regulations. Just how much can ZEE technology be expected to improve in the coming years, and will adopting aggressive targets hasten those improvements?

5) *Fraught decision*. The same Carnegie Mellon report described in the background expounds upon the challenges that come in establishing technology forcing regulations:

> *"…The implementation process for technology regulations is tense, with extensive pressure on regulators, firms, legislators, the courts, and the process is particularly vulnerable to unforeseen consequences. Firms have many outlets to disrupt a technology forcing timetable, including colluding to suppress technological development and adoption, or litigation and lobbying legislators."*

There is no dispute that the ZEE requirements being contemplated by ARB for some SORE equipment could be prohibitively expensive—if not downright impossible—to achieve today. Successful technology forcing SORE regulations then must thread a needle. If the regulations are truly unachievable in the given timeframe, no manufacturers or users will comply. If the regulations are fully within the realm of comfort and normal turnover for users, no additional improvement to air quality will be achieved.

In AB 1346, the committee is faced with weighing in on a technology forcing regulatory process that is currently underway. However, the bill does not make substantial changes to the contents of that regulation. It puts some firm timeline requirements on ARB, but also leaves some elements to the board's discretion. Under AB 1346, ARB will be given a July 1, 2022 deadline to adopt new SORE regulations that prohibit engine exhaust and evaporative emissions from new SORE. They will also be required to identify and (where feasible) make available funding for rebates or other incentives.

It should be noted that, alongside AB 1346's call for ARB to identify and make available funding for rebates or other incentives for ZEE SORE alternatives, the author has also been pursuing a budget item that would provide money for such programs. However, absent that inclusion in the budget, there is no

obvious funding stream for the incentives mentioned in this bill.

Even if AB 1346 were enacted, the content of those regulations is left largely to ARB's discretion. They must be "cost-effective and technologically feasible," and they must "apply to engines produced on or after January 1, 2024, or as soon as the state board determines is feasible, whichever is later." How ARB will define cost-effectiveness and feasibility are unknown, and left to their discretion.

6) *Letting the regulator regulate*. Ultimately, AB 1346 does not set a date for the ban of SORE; it sets a firm end date on ARB's in-progress rulemaking and directs ARB to look at possible rebate or incentive funding. Given that ARB has considerable technical expertise in SORE and technology forcing policy design, it is reasonable to leave technical details open to their discretion and allow the rulemaking to proceed uninterrupted.

While some of the arguments raised by the groups opposed to this bill are valid and compelling, they are not objections to the content of this bill so much as they are objections to ARB's proposed regulation. Given that ARB is still developing that regulation through active engagement with stakeholders, these concerns should undoubtedly be raised in those contexts. However, addressing concerns with the regulation through this legislation would tie the hands of the regulator and may supersede the outcome of their public process.

Given the technical nature of this issue, the committee may wish to support this measure, thereby leaving ARB to carry out their ongoing regulatory process, while ensuring ARB is required by law to complete that work in a timely manner and with due consideration of applicable incentives.

Related/Prior Legislation

SOURCE: Author

SUPPORT:

350 Bay Area Action
350 Humboldt: Grass Roots Climate Action
350 Sacramento
350 Silicon Valley
Active San Gabriel Valley

American Lung Association in California
Audubon California
Bay Area Air Quality Management District
California Walks
Carbon Free Mountain View
Center for Community Action & Environmental Justice
Cha Cha Clean Healthy Air, Clean Healthy Altadena
City of Albany
City of San Jose
Clean Power Campaign
Climate Health Now
Coalition for Clean Air
Electrify Now
Environment California
Glendale Environmental Coalition
Greentown Los Altos
Natural Resources Defense Council
Physicians for Social Responsibility - San Francisco Bay Area Chapter
Regional Asthma Management and Prevention (RAMP)
Sierra Club California
Silicon Valley Democratic Club
Silicon Valley Youth Climate Action
South Coast Air Quality Management District
The Climate Center
Union of Concerned Scientists
Verdugo Woodlands West Homeowners Association
Zev 2030
1 Individual

OPPOSITION:

California Retailers Association
Far West Equipment Dealers Association
National Association of Landscape Professionals
Outdoor Power Equipment Institute (OPEI)
Portable Generator Manufacturers' Association (PGMA)

ARGUMENTS IN SUPPORT: According to a coalition of environmental advocacy groups in support, "Small off-road engines (SORE) emit high levels of air pollutants, including oxides of nitrogen (NOx), reactive organic gases (ROG), and particulate matter (PM). For example, one hour of operation of a commercial leaf blower can emit as much ROG and NOx as driving 1,100 miles in a 2017

Toyota Camry. California daily NOx and ROG emissions from SORE are predicted to surpass emissions from light-duty passenger cars this year. If the state does not take action, emission levels from small engines are expected to increase. By 2031, small engine emissions will be more than twice those from passenger cars.

"There are zero-emission equivalents to all SORE that are regulated by the California Air Resources Board (CARB), generally electric alternatives that run on batteries or plug into an outlet. Many users, including over half of household users, have already begun the transition to zero-emission equipment."

ARGUMENTS IN OPPOSITION: According to the Outdoor Power Equipment Institute, "The bill closely mirrors the California Air Resources Board's (CARB) March 24, 2021 proposal. CARB's recent potential rule proposes similarly zero-level emission limits starting with model year 2024. AB-1346 and CARB's potential rule will, in effect, ban most SORE equipment starting in just over two years. AB-1346 and CARB's potential rule pose numerous technology feasibility, economic, and implementation challenges for industry stakeholders. Collectively these challenges are insurmountable and will result in significant hardships for manufacturers, retailers and end-users, culminating in an early market shortfall of products with high consumer need and demand. As a result, industry groups oppose both AB-1346 and CARBs potential rule.

"Industry believes it is not too late to develop a data-supported and reasonable regulatory reduction strategy to achieve California's model year 2031 SORE State Implementation Plan (SIP) goals without banning SORE. This process starts with agreement on a representative SORE sector emissions model which serves as the basis for modeling reasonable, data-driven, technologically feasible and cost-effective strategies that achieve the SIP SORE goals. Despite significant industry-led outreach, CARB's final SORE2020 model largely ignores industry concerns and as a result fails to reasonably represent SORE sector emissions. Until these issues are addressed, AB-1364 and CARB's potential rules will continue to be arbitrary and a violation of the federal Clean Air Act which California relies on to adopt unique emissions regulations."

-- END --