A SORE Subject

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1. Introduction

We all have our pet peeves. One of mine is anything that is loud. This includes:

- Autos that make too much noise, either through:
  - Loud exhaust
  - Loud audio equipment (generally accompanied by fully open windows)
- Other vehicles that make too much noise
- Construction that makes too much noise
- SORE that make too much noise

You are probably asking what are SORE? They are: “small off-road engines.” The California Legislature passed a bill that would ban them in the next few years, and Governor Newsome just signed this bill.

This brief post is about this bill, its provisions and the SORE impending demise in my (soon to be much quieter) state.

2. Issues

From the above referenced bill,[1] *The Legislature finds and declares all of the following:*

(1) Small off-road engines (SORE), which are used primarily in lawn and garden equipment, emit high levels of air pollutants, including oxides of nitrogen (NOx), reactive organic gases (ROG), and particulate matter (PM). NOx and ROG together contribute to formation of ozone, a criteria pollutant with a national ambient air quality standard set by the United States Environmental Protection Agency (U.S. EPA) and a California ambient air quality standard and that has adverse impacts on health. Currently, California exceeds U.S. EPA and state standards for ozone in many areas, including the South Coast Air Basin, the San Francisco Bay area, and the County of Sacramento. NOx also contributes to formation of PM, which, along with directly emitted PM, has direct negative health impacts. PM also has an air quality standard set by the U.S. EPA and the state. Many areas in California also currently fail to meet PM standards, including the South Coast Air Basin and the San Joaquin Valley Air Basin.

(2) In 2020, California daily NOx and ROG emissions from SORE were higher than emissions from light-duty passenger cars. SORE emitted an average of 16.8 tons per day of NOx and 125 tons per day of ROG. Without further regulatory action, those emission levels are expected to increase with increasing numbers of SORE in California. Regulations of emissions from SORE have not been as stringent as regulations of other engines, and one hour of operation of a

[1] Californi Legislative Information, AB-1346, Air pollution: small off-road engines, https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202120220AB1346

commercial leaf blower can emit as much ROG plus NOx as driving 1,100 miles in a new passenger vehicle.

(3) *Currently, there are zero-emission equivalents to all SORE equipment regulated by the State Air Resources Board. The battery technology required for commercial-grade zero-emission equipment is available and many users, both commercial and residential, have already begun to transition to zero-emission equipment.*

(4) *The Governor's Executive Order No. N-79-20 of September 23, 2020, directs the state board to implement strategies to achieve 100 percent zero emissions from off-road equipment in California by 2035, where feasible and cost-effective. The state will not achieve that goal without further regulation of SORE, including a mandate to transition all sales of new equipment to zero-emission equipment.*

It is the intent of the Legislature to encourage the state board to act expeditiously to protect public health from the harmful effects of emissions of small off-road engines.

By July 1, 2022, the state board shall, consistent with federal law, 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. Those regulations shall apply to engines produced on or after January 1, 2024, or as soon as the state board determines is feasible, whichever is later…

Of course, even though the main issues with SORE are other forms of pollution (including noise), they also emit large amounts of greenhouse gasses.

3. Carrots

By July 1, 2022, the state board shall, consistent with federal law, 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. Those regulations shall apply to engines produced on or after January 1, 2024, or as soon as the state board determines is feasible, whichever is later.

In determining technological feasibility pursuant to paragraph (1), the state board shall consider all of the following:

(A) *Emissions from small off-road engines in the state.*

(B) *Expected timelines for zero-emission small off-road equipment development.*

(C) *Increased demand for electricity from added charging requirements for more zero-emission small off-road equipment.*

(D) *Use cases of both commercial and residential lawn and garden users.*

(E) *Expected availability of zero-emission generators and emergency response equipment.*

Consistent with the regulations adopted pursuant to this section and relevant state law, the state board shall 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 districts to implement to support the transition to zero-emission small off-road equipment operations.

4. Additional Information

The following are additional comments from a congressional analyst. These can be accessed through Reference 1.

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.

ARB sets emissions standards for new SORE, it does not regulate the use of SORE equipment, and this bill does not give ARB that authority. Some cities have adopted restrictions on SORE equipment use, primarily on leaf blowers in urban and suburban communities. These restrictions are typically focused on noise and/or dust impacts, rather than exhaust or evaporative emissions.

Without a definition of SORE and a hard deadline, it's not clear how and when this bill will be implemented. The bill does require ARB to "prohibit" (as opposed to "control") emissions from SORE as soon as ARB determines feasible but the bill gives ARB broad discretion to determine the feasible dates for prohibiting emissions from engine and equipment types. As noted above, ARB staff currently proposes a longer lead time to get to a zero-emission standard for generators.

Within lawn and garden equipment, there is wide variation in the availability and utility of zero-emission equipment depending on the use. For residential uses, rechargeable electric lawnmowers, leaf blowers, and string trimmers have been available for years and have significant market share. For commercial uses, there is very little market for zero-emission equipment as today's technology is relatively expensive and requires multiple batteries and/or frequent recharging and replacement.

In other applications, such as pumps, generators, and chainsaws, current zero-emission SORE technology may be inadequate even if money is no object, particularly when used in rural areas without convenient access to recharging.

Banning sales of new combustion engines under 25 horsepower could have a few unintended consequences. As long as there is no statewide registration requirements or use restrictions for SORE equipment, banning new engines may lead to prolonged use of older, dirtier engines, increased manufacture and sale of engines over 25 horsepower, and purchase of non-compliant engines out of state for use in California.

According to the Bill's 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 ARB determines is feasible, whichever is later. This bill also

requires ARB 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 pollution, and help California meet our air quality goals. Arguments in Support

Supporters state:

There are zero-emission equivalents to all SORE that are regulated by ARB, 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…AB 1346 recognizes that California must look beyond gas powered vehicles to achieve the emissions reductions needed to meet our state's environmental goals, fight climate change, and improve health in our communities by reducing air pollution. Arguments in Opposition

Opponents state:

AB 1346 and ARB'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.

Fiscal Effects:

According to the Senate Appropriations Committee, cost pressure of an unknown, but likely significant amount (General Fund or special funds), to provide commercial rebates or incentive, funding to support the transition to zero-emission SORE. Unknown one-time costs for ARB to implement the provisions of this bill.

5. Authors Comments

I have been using 100% electric equipment in lieu of SORE for a couple of decades. This includes a rechargeable lawn-mower and string trimmer for my Livermore Residence (I do all of the lawn and garden work here). I have found them not only quieter and non-polluting, but also much more reliable (Lawn Mower is about 20 years old, and string-trimmer is about 10 years old). Also these are much safer (no cans of gasoline in my garage), and more convenient than SORE-equipment.

The technology to produce 100% battery-powered commercial-grade equipment is available, and commercial-grade mowers and other yard equipment exist (see links below). Also many recent hybrid and electric pickups have options for AC receptacles that can be used by chargers. If California starts demanding this equipment, supply will increase.

This is also an opportunity to reengineer and reimagine equipment for each professional user, resulting in more efficient performance in addition to a better environment. If California takes the lead on this, the rest of the country will eventually follow.

https://www.yardforceusa.com/120vrxbrushlesstech

https://www.greenworkscommercial.com/82sp25m-82-volt-25-self-propelled-lawn-mower-tool-only