

State of California Air Resources Board

Board Item Summary

Item # 24-3-2: Public Hearing to Consider Proposed Zero-Emission Forklift Regulation

Staff Recommendation:

Staff recommends that the California Air Resources Board (CARB or Board) approve for adoption the proposed Zero-Emission Forklift Regulation (Proposed Regulation). The Proposed Regulation will reduce criteria pollutants such as oxides of nitrogen (NO_x), fine particulate matter (PM_{2.5}), and greenhouse gas emissions (GHG) from in-use large spark ignited (LSI) forklifts. The Proposed Regulation would restrict the sale of most LSI forklifts starting in 2026 and would establish phase-out requirements between the years 2028 and 2038 applicable to the most common LSI forklifts used in industrial and other applications across the State.

Discussion:

The Proposed Regulation is needed to meet California's public health and climate goals and to meet State and federal air quality standards. Mobile sources are a major contributor to the emissions of criteria pollutants and GHG in California. The combustion of fuel by mobile sources accounts for about 80 percent of ozone precursor emissions and approximately 50 percent of statewide GHG emissions.¹ Further, off-road equipment contributes to approximately 14 percent of the NO_x emissions and seven percent of the PM_{2.5} emissions attributable to mobile sources.² The Proposed Regulation has been identified in the 2022 State Strategy for the State Implementation Plan, the 2020 Mobile Source Strategy, and the Sustainable Freight Action Plan as one of several measures necessary for California to achieve its established air-quality and climate goals. Additionally, Executive Order N-79-20 set a goal to achieve 100 percent zero-emission off-road vehicles and equipment operations in the State by 2035, where feasible. Additionally, zero-emission technologies for forklifts

¹ California Air Resources Board, 2022 Scoping Plan for Achieving Carbon Neutrality, page 56, Figure 1-8: 2019 State GHG emission contributions by Scoping Plan sector, December 2022 (web link: <https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf>, last accessed April 2024).

² California Air Resources Board, Staff Report for the Proposed Amendments to the In-Use Off-Road Diesel Fueled Fleets Regulation, page 35, September 2022 (web link: <https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/off-roaddiesel/isor.pdf>, last accessed April 2024)

have already gained appreciable customer acceptance and market penetration making them the most well-suited off-road category to make the zero-emission transition.

Applicable forklifts would fall into two categories, Class IV and Class V, based on the powered industrial truck classification system developed by the Occupational Safety and Health Administration.³ Both Class IV and Class V forklifts use LSI engines as a power source. The performance requirements of the Proposed Regulation would restrict the purchase of all new Class IV forklifts and Class V forklifts with a rated capacity of 12,000 pounds or less. Additionally, the Proposed Regulation would phase out most LSI forklifts by model year, and forklift reporting requirements would apply to fleet operators, forklift dealers, and manufacturers.

The Proposed Regulation is the result of an extensive public process. Over the past three years of the Proposed Regulation development, staff hosted five public workshops and workgroups. In addition, CARB staff reached out directly to affected stakeholders and conducted numerous meetings with forklift fleets, dealers, rental agencies, manufacturers, industry groups, and other stakeholders. In May 2023, CARB staff held an evening listening session targeted at communities with off-road measures in their Community Emission Reduction Plans; the session sought community input regarding a handful of off-road programs including the Zero-Emission Forklift rulemaking.

CARB staff has also sent over 270,000 mailers to trucking fleets, over 200,000 mailers to small businesses, and email notices to over 70,000 subscribers of the Zero-Emission Forklift Rulemaking email list and other public email subscriber lists. A webpage was developed to host all information pertaining to the regulatory-development process, including all public meeting announcements, materials made available for public comment, draft regulation language, an email list signup link, and staff contact information. For every public event, staff sent notices to the email list announcing the meeting events, available documents, translation resources, and other associated regulatory materials to encourage participation and attendance at the workgroups and workshops. Most of the stakeholder and public meetings were held using webinars and videoconference applications.

Summary and Impacts:

The primary benefits of the Proposed Regulation are the reduction of NO_x, PM_{2.5}, and GHG emissions from LSI forklifts that operate in California. Staff estimates that cumulatively at full implementation, from 2026 to 2043, the Proposed Regulation will reduce statewide emissions by approximately 18,724 tons of NO_x, 2,075 tons of PM_{2.5}, and 9.4 million metric tons of GHGs, relative to the legal baseline. Based on these emission benefits, the Proposed Regulation will result in approximately 544 avoided cardiopulmonary deaths, 115 fewer hospital admissions for cardiovascular illness, 1,042 fewer hospital admissions for

³ Occupational Safety and Health Administration, Powered Industrial Trucks (Forklift) eTool (web link: <https://www.osha.gov/etools/power-industrial-trucks/types-fundamentals/types/classes>, last accessed April 2024).

respiratory illness, and 1,295 fewer cases of asthma onset. These health outcomes result in a total cost savings of \$7.5 billion. The avoided social cost of carbon ranges from about \$250 million to \$1 billion over this same timeframe while the net savings for fleets is an estimated \$2.7 billion.⁴

The Proposed Regulation has a total cost of \$7.7 billion and total benefit of \$17.5 billion from 2026-2043. This results in a net benefit of \$9.7 billion for the Proposed Regulation and a Benefit-Cost ratio of 2.26, indicating that the benefits are 126 percent greater than the costs.

The Proposed Regulation is estimated to result in a decrease in employment growth that is about 0.01 percent of baseline California employment in 2032 and a 0.02 percent gain in 2038 and 2043. All other compliance years result in a 0.00 percent change in employment. The employment changes represent the net change in employment across the California economy including positive impacts for some industries and negative impacts for others. In 2043, the Proposed Regulation is estimated to result in an employment gain of 8,047, primarily in construction, retail and wholesale, and services, and zero jobs foregone. However, some specific industries such as the industrial equipment repair industry and the propane industry are expected to see negative impacts. The overall jobs and output impacts of the Proposed Regulation are small relative to the total California economy, representing a change of no greater than a 0.02 percent increase or a 0.01 percent decrease as stated above. The relative changes to growth in private investment, an indicator of the future productive capacity of the economy, due to the Proposed Regulation are estimated to be an increase of about \$33 million in 2030 and an increase of \$563 million in 2043. Between 2026 and 2043, there is an estimated cumulative increase of about \$1.75 billion in private investment.

The draft environmental impact analysis (EIA) concluded implementation of the Proposed Regulation could result in: beneficial impacts to air quality (long-term operational-related) and GHG emissions (short-term construction and long-term operational-related); less than significant impacts to energy (short-term construction-related and long-term operational-related), mineral resources, population and housing, public services, recreation, and wildfire; and potentially significant [indirect/secondary] adverse impacts to aesthetics, agriculture and forestry resources, air quality (short-term construction-related), odors, biological resources, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, land use planning, noise and vibration, transportation, tribal cultural resources, and utilities and service systems. Many of the impacts recognized as potentially significant in the draft EIA for the Proposed Regulation could be mitigated or reduced to less-than-significant levels through conditions of approval applied and mitigation measures to project-specific development. However, the authority to

⁴ The social cost of carbon provides a dollar valuation of the damages caused by one metric ton of carbon pollution and represents the monetary benefit today of reducing carbon emissions in the future.

apply that mitigation lies with utilities or other agencies approving the development projects, not with CARB.