# Updated Informative Digest

## Proposed Advanced Clean Fleets Regulation

## Sections Affected:

Propose adoption of sections 2013, 2013.1, 2013.2, 2013.3, 2013.4, 2014, 2014.1, 2014.2, 2014.3, 2015, 2015.1, 2015.2, 2015.3, 2015.4, 2015.5, 2015.6, and 2016 to California Code of Regulations (CCR), title 13.

## Documents Incorporated by Reference (Cal. Code Regs., tit. 1, § 20, subd. (c)(3)):

The following documents would be incorporated in the regulation by reference:

- California Air Resources Board, 2014 amended in 2018. Final Phase 2 Greenhouse Gas Amendments to California Greenhouse Gas Exhaust Emission Standards and Test Procedures for 2014 and Subsequent Model Heavy-Duty Vehicles, Attachment B table called, "Phase 2 Plug-in Hybrid Electric Vehicles All-Electric Range (AER) Requirements and ATC Multipliers" is used to define "near-zero-emissions vehicle" or "NZEV" and is incorporated by reference in 13 CCR sections 2013 and 2015.
- California Air Resources Board, "California Standards and Test Procedures for New 2021 and Subsequent Model Heavy-Duty Zero-Emission Powertrains", adopted June 27, 2019, is used to define "rated energy capacity" and for Executive Officer determination of ZEV purchase exemption criteria, and is incorporated by reference in 13 CCR sections 2013, 2013.1, 2015, and 2015.3.
- Code of Federal Regulations, Title 40 section 1037.801, as last amended by USEPA on June 17, 2013 is used to define "battery-electric vehicle" or "BEV" and is incorporated by reference in 13 CCR sections 2013 and 2015.
- Code of Federal Regulations, Title 49 section 523.2. Title V of the Motor Vehicle Information and Cost Savings Act Vehicle Classification Definitions as it existed on June 3, 2022 is used to define "light-duty package delivery vehicle" and is incorporated by reference in 13 CCR section 2015.
- Code of Federal Regulations, Title 49, Chapter V, Parts 565, 566, and 571 is used to define "Vehicle Identification Number" and is incorporated by reference in 13 CCR sections 2013 and 2015.
- SAE, Recommended Practice SAE J1667 "Snap-Acceleration Smoke Test Procedure for Heavy-Duty Diesel Powered Vehicles," as issued February 1996 is defined for the "smoke opacity test "used for odometer reading documentation and is incorporated by reference in 13 CCR sections 2013, 2013.3, 2014, 2015, and 2015.5.

## Background and Effect of the Proposed Regulatory Action:

Mobile sources and the fossil fuels that still power them are the largest contributors to the formation of ozone, greenhouse gas (GHG) emissions, fine particulate matter (PM2.5), and toxic diesel particulate matter (PM) in the State. The transportation sector alone accounts for 41 percent of total GHG emissions (50 percent when upstream emissions from fuel is included) and is a major contributor to oxides of nitrogen (NOx) and PM emissions. Medium- and heavy-duty vehicles make up a quarter of transportation GHG emissions and a third of transportation NOx emissions, a disproportionately high share considering these vehicles represent only about 1.8 million trucks among the 30 million registered vehicles in the state. Despite California's progress in reducing air pollution, more than half (28 million out of nearly 39 million) of all Californians live in urban and rural downwind areas that exceed federal National Ambient Air Quality Standards (NAAQS) for ozone and PM2.5. The South Coast and the San Joaquin Valley Air Basins experience some of the nation's highest ozone and PM levels.

The proposed Advanced Clean Fleets (ACF) regulation, or "proposed regulation", would contribute to achieving the State's criteria pollutant and GHG reduction goals as well as cleaner technology targets needed to protect communities. The proposed regulation builds on other policies to continue reducing emissions including the Advanced Clean Trucks (ACT) regulation. It would be the next significant step in accelerating towards a zero-emission (ZE) transportation system as well as a more equitable future in California. With the adoption of the ACT regulation in 2020, the California Air Resources Board (CARB or Board) took a major step in securing a zero-emission future. The ACT regulation is a manufacturing requirement and covers everything from heavy-duty pickups or work trucks to the semi-trucks used in drayage and long-haul applications. Starting with the 2024 model year, truck manufacturers will be required to produce and sell ZEVs into California's market in growing numbers.

With the ACF regulation, the estimated number of medium- and heavy-duty ZEVs in California would increase beyond the ACT only scenario from about 320,000 to about 510,000 in 2035, from about 780,000 to about 1,350,000 ZEVs by 2045, and from about 950,000 to about 1,690,000 ZEVs by 2050. Based on the expected number of ZEVs, deployment of the proposed regulation would result in almost doubling the ZEV growth rate from roughly 35,000 ZEVs per year to 63,000 ZEVs per year. California Energy Commission's preliminary modeling suggests that to charge these 180,000 medium and heavy-duty battery electric vehicles by 2030, 157,000 DC fast chargers would be needed.[1] These numbers align with staff's estimates which indicate roughly 135,000 depot chargers will be built by 2030, although staff's analysis assumes a wider range of power ratings for depot chargers.

## Objectives and Benefits of the Proposed Regulatory Action:

Recognizing the requirements of Senate Bill (SB) 32 and Executive Order S-3-05 (Pavley, Chapter 249, Statutes of 2016) to reduce GHG emissions as well as the need for California to attain NAAQS and California Ambient Air Quality Standards (CAAQS) for criteria air

[1] California Energy Commission. 2021. Assembly Bill 2127 – Electric Vehicle Charging Infrastructure Assessment. Available: https://efiling.energy.ca.gov/getdocument.aspx?tn=238853. Accessed August 8, 2022.

pollutants and to reduce exposure to Toxic Air Contaminant (TAC) emissions, the primary objectives of the proposed regulation includes the following:

- Achieve criteria and GHG emissions reductions consistent with the goals identified in the State Implementation Plan and Scoping Plan, including supporting compliance with state and federal ambient air quality standards.
- Provide criteria pollutant and toxic air contaminant emissions reductions in disadvantaged communities, which is consistent with CARB's statewide strategy to reduce these emissions in communities affected by high cumulative exposure burdens under Assembly Bill (AB) 617 (C. Garcia, Chapter 136, Statutes of 2017).
- Support the zero-emission transition targets set by the Board in Resolution 20-19 which calls for:
    - Drayage trucks, last mile delivery, and government fleets by 2035
    - Refuse trucks, local buses, and utility fleets by 2040
    - All trucks and buses where feasible by 2045
- Support the goals of Executive Order N-79-20 which calls for accelerated ZEV deployment with these targets:
    - 100 percent zero-emission drayage by 2035
    - 100 percent zero-emission trucks and buses where feasible by 2045
- Ensure requirements, such as ZEV deployment schedules are technologically feasible, cost-effective, and support market conditions
- Lead the transition away from petroleum fuels and towards electric drivetrains
- Contribute towards achieving carbon neutrality in California pursuant to Senate Bill (SB) 100, and in accordance with Executive Order B-55-18
- Complement the ACT regulation to enhance widespread ZEV deployment
- Mindfully set requirements to allow time for public zero-emission infrastructure buildout for smaller fleets or for regional haul applications who would be reliant on a regional network of public chargers
- Ensure manufacturers and fleets work together to place ZEVs in service suitably and successfully as the market expands
- Complement current and existing programs to achieve emissions reductions that are real, permanent, quantifiable, verifiable, and enforceable
- Establish a fair and level playing field among fleet owners
- Craft requirements in a way that ensures institutional capacity for CARB to manage, implement, and enforce requirements

Diesel-powered mobile sources emit a complex mixture of air pollutants, including diesel PM and gases. The gaseous pollutants include volatile organic compounds and NOx which can lead to the formation of ozone and the secondary formation of PM. The proposed regulation would reduce NOx and PM2.5 emissions, resulting in health benefits for individuals in California. Diesel PM is a toxic air contaminant composed of over 40 known cancer-causing substances and PM. Examples of these carcinogenic chemicals include: polycyclic aromatic hydrocarbons, benzene, formaldehyde, acetaldehyde, acrolein, and 1,3-butadiene. CARB listed diesel PM as a toxic air contaminant in 1998, due largely to its association with lung cancer. In 2012, additional studies on the cancer-causing potential of diesel exhaust, published since CARB's listing, led the International Agency for Research on Cancer, a division of the World Health Organization, to classify diesel engine exhaust as "carcinogenic

to humans."[2] In California, about 70 percent of known cancer risks from toxic air contaminants are from diesel engine emissions.

Due to its small size, inhaled PM2.5 can reach the lower respiratory tract and potentially pass into the bloodstream to affect other organs. In this way, PM2.5 air pollution contributes not only to increased cancer risk, but also to respiratory and cardiovascular diseases and even premature death; other adverse health outcomes from PM2.5 also include asthma, chronic heart disease, and heart attack. Because the proposed regulation is expected to result in the reduction of both NOx and PM2.5, it is expected that there would be a resulting reduction in incidences of cancer, though this was not quantified for the proposed regulation. The value of health benefits calculated for this regulation is due to fewer instances of premature mortality and fewer hospital and ER visits. While this analysis does not further quantify upstream emissions benefits of criteria pollutant reductions, to the degree reduced fuel demand from this rule results in reduced liquid fuel production at California refineries, further benefits would result from less toxic pollution.

The direct economic impact of the proposed regulation to California fleets is a net savings of $48.0 billion, with additional health benefits savings of $26.5 billion, and social cost of carbon savings ranging from $10.3 billion to $40.3 billion. Staff's total cost of ownership analysis shows some truck types are already at cost parity with more truck types anticipated to achieve parity in the total cost of ownership with their combustion vehicle counterparts over the coming decade. The proposed regulation is estimated to result in a cumulative net benefit to California of $37.9 billion with a benefit-cost ratio of 1.6, meaning benefits are more than costs between 2024 and 2050.

Table 1: Statewide Cumulative Benefits of Proposed Regulation to 2050

| Cumulative Benefit to 2050 | Value |
|---|---|
| NOx Reduction | 146,872 tons |
| PM2.5 Reduction | 6,875 tons |
| GHG Reduction | 327 MMT $CO_2$ |
| Avoided Cardiopulmonary Mortalities | 2,526 |
| Health Benefits Savings | $26.5 billion |
| Social Cost of Carbon Savings* | $9.8 to $38.7 billion |
| Statewide Direct Cost-Savings | $116.7 billion |
| Tax and Fee Revenue | -$36.6 billion |
| **Total Benefits and Savings**** | **$106.6 billion** |

* The Social Cost of Carbon savings are global and are not included in the total benefits and savings.
**The total benefits include cost-savings and health benefits savings minus the tax and fee revenue.

[2] World Health Organization, International Agency for Research on Cancer, *IARC: Diesel Engine Exhaust Carcinogenic*, 2012 (web link: https://www.iarc.who.int/news-events/iarc-diesel-engine-exhaust-carcinogenic/, last accessed April 2022).

## Description of Regulatory Action

The proposed regulation provides a ZEV phase-in approach which provides initial focus where the best fleet electrification opportunities exist, sets clear targets for regulated fleets to make a full conversion to ZEVs, and creates a catalyst to accelerate development of a heavy-duty public infrastructure network. In addition, it transitions drayage trucks to ZEVs given the suitability of their duty cycles, outsized impact on disproportionately impacted communities, and ability to maximize emissions reductions in heavily impacted communities. This approach gives fleets the flexibility to phase in ZEVs in the most suitable applications first and focuses initially in of community health around ports and railyards. The proposed regulation includes four components with three sets of fleet requirements: State and local government fleets, drayage truck fleets, and high priority and federal fleets. A fourth component establishes a 100 percent ZEV sales requirement on medium- and heavy-duty truck manufacturers. Portions of the proposed regulation exclude certain vehicles with two-engines, military tactical vehicles, historical vehicles, heavy cranes, emergency vehicles, dedicated snow removal vehicles and test fleet vehicles. The proposed regulation also does not apply to certain vehicle types already subject to other CARB zero-emission upgrade requirements, or school buses.

The proposed regulation is the result of an extensive public process. In February 2020, CARB staff began informing the public of the proposed regulation and development process. Over the past 4 years of rule development, staff hosted 24 public listening sessions, workgroups, and workshops. CARB staff reached out directly to affected stakeholders and conducted more than 386 meetings with over 170 groups and individuals. CARB staff also sent more than 273,000 mailers and numerous emails to the 81,944 recipients from 10 email distribution lists, and 84,597 more fleet contacts from the Truck Regulation Upload, Compliance and Reporting System or TRUCRS. CARB staff offered engagement opportunities to receive feedback and solicit alternatives from a variety of groups and stakeholders, including manufacturers, large fleet owners, single truck owners-operators, environmental advocacy organizations and the communities most heavily impacted by truck emissions. Through this public process, staff considered all stakeholder feedback and integrated many stakeholder's concepts into the proposed regulation.

On September 2, 2022, CARB released the Notice of Public Hearing (45-Day Notice) and Staff Report: Initial Statement of Reasons for Rulemaking (Staff Report), titled "Public Hearing to Consider Advanced Clean Fleets Regulation for public review. The Staff Report contains a detailed description of the problem the proposed regulation is intended to address; a snapshot of the ZEV market; emissions analysis; health exposure and benefits analysis; cost and cost benefits analysis; Environmental Analysis, Fiscal Analysis, alternatives assessment; and purpose and rationale for the proposed regulation. The Notice of Public Hearing included all references relied upon and identified in the Staff Report. CARB received written comments from 344 commenters during the 45-Day Notice comment period. Staff has listened to stakeholder concerns and has designed several flexibilities for fleet owners who are complying with the regulation. These provisions were designed for unique situations and edge use cases that can serve as guardrails for fleets who may need help transitioning their operation to ZE.

On October 27, 2022, CARB conducted a public hearing. CARB staff informed the Board of the proposed Advanced Clean Fleets Regulation and the Board received 32 written and 163 oral comments from the public. At the conclusion of the hearing, the Board directed staff to

evaluate providing more time for infrastructure development and for trucks using renewable fuels in response to Senate Bill 1383 (Lara, Chapter 395, Statutes of 2016), continue working with transit fleets and utilities to ensure they can do their important work, streamline criteria for other flexibilities, and assess moving up the end date for sales of combustion trucks, as well as conduct additional stakeholder outreach.

At the direction of the Board, staff proposed updates to the original proposal and solicited stakeholder feedback through a series of two focused public workgroups and one public workshop. Waste and Wastewater provisions were discussed at the December 12, 2022, public workshop which was attended by 253 remote and more than 23 in-person participants; Infrastructure Construction Delays and ZEV Purchase Exemption was discussed at the January 13, 2023, public workgroup which was attended by 717 remote and 49 in-person participants; and a final February 13, 2023, public workshop on the draft 15-day revisions to the original proposal was attended by 77 in-person and 1,015 remote participants.

Based on the Board's direction and feedback from the additional public workshops, a number of proposed changes have been made. The date for ending new combustion engines sales in California would move from 2040 to 2036. New internal combustion engine vehicle purchases must be California certified engines if ZEVs are not required. A new provision was added to provide more time to begin phasing in ZEVs for compressed natural gas (CNG) powered trucks operated by waste and wastewater fleets involved in municipal diversion of organic waste that exclusively use biomethane. Similarly, transit agencies would be exempt until January 1, 2030, to allow them to focus on electrifying their buses. Extensions for ZEV infrastructure were expanded to address circumstances beyond the fleet owner's control when constructing ZEV infrastructure in obtaining grid power. Other changes were made to streamline criteria for the ZEV Purchases and Daily Usage exemptions, and some safeguards were added to ensure exemptions are only granted when necessary for compliance. The drayage truck reporting requirements for terminals, seaports, and railyards were also streamlined.

In accordance with Government Code section 11346.8, the Board may adopt the proposed amendments after making any appropriate conforming modifications, as well as any additional supporting documents and information available to the public for a period of at least 15 days. The Board further provided that the Executive Officer shall consider such written comments as may be submitted during this period and shall make such modifications as may be appropriate in light of the comments received, then shall present the regulations to the Board for further consideration if warranted.

Prior to the April 27, 2023, hearing, CARB released a Notice of Public Availability of Modified Text and Availability of Additional Documents and Information (15-Day Notice) on March 23, 2023. The text of the proposed regulatory and staff report modifications is posted on *CARB's website*: *https://ww2.arb.ca.gov/rulemaking/2022/acf2022* and was made accessible to all stakeholders and interested parties.

## Comparable Federal Regulations:

There are no comparable federal requirements for fleets to purchase or use zero-emission technologies for vehicles greater than 8,500 lbs. GVWR, and there are also no federal

requirements for 100 percent sales of zero-emission technologies for Class 2b-8 vehicles beginning in 2036 or later.

## An Evaluation of Inconsistency or Incompatibility with Existing State Regulations (Gov. Code, § 11346.5, subd. (a)(3)(D)):

During the process of developing the proposed regulatory action, CARB conducted a search of any similar regulations on this topic and concluded these regulations are neither inconsistent nor incompatible with existing state regulations.