

# Updated Informative Digest

## Proposed In-Use Locomotive Regulation

### Sections Affected:

Proposed adoption to California Code of Regulations, title 13, section 2478.

### Background and Effect of the Proposed Regulatory Action:

Staff is proposing the In-Use Locomotive Regulation (Proposed Regulation) to achieve emission reductions from locomotives operating in California. Emission reductions from locomotives are needed to protect communities from near-source air toxics exposure, meet current health-based ambient air quality standards, and further California's climate goals. The Proposed Regulation would also increase the use of zero emission (ZE) technology in the off-road sector and support the goals of Executive Order N-79-20, which set a goal for 100 percent ZE off-road vehicles and equipment by 2035.<sup>1</sup>

In 2020, California's locomotive sector was responsible for 10 percent of statewide oxides of nitrogen (NOx) emissions from mobile sources and is projected to grow to over 15 percent in 2035 without regulation.<sup>2</sup> As cleaner technologies are adopted most other mobile sectors are expected to significantly reduce emissions by 2035, however, the locomotive sector's relative contribution is expected to increase without the Proposed Regulation.

The Proposed Regulation is designed to achieve public health, air quality, and climate benefits by eliminating the operation of the oldest, dirtiest locomotives and transitioning to operation of cleaner technologies including ZE technology. Key elements of the Proposed Regulation include the following:

1. Spending Account. Annually, locomotive operators will deposit funds into a spending account. The deposit amount is determined by the amount of particulate matter (PM) and NOx emissions emitted by each of an operator's locomotives and reflects the health cost burden on Californians due to these locomotive emissions as estimated by CARB. The Spending Account funds may only be used for:
  - a. The purchase, lease, or rental of Tier 4 or cleaner locomotives, or for the remanufacture or repower to Tier 4 or cleaner locomotives until January 1, 2030.
  - b. The purchase, lease, or rental of ZE locomotives, ZE capable locomotives, or ZE rail equipment, or to repower to ZE locomotives or ZE capable locomotives. A

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<sup>1</sup> Executive Order N-79-20, State of California Executive Order signed by Governor Gavin Newsom, September 23, 2020. (weblink: <https://www.gov.ca.gov/wp-content/uploads/2020/09/9.23.20-EO-N-79-20-Climate.pdf>).

<sup>2</sup> CARB, Appendix G, CARB's 2022 In-Use Locomotive Emission Inventory: Regulation Proposal and Scenarios.

- ZE capable locomotive is one that can be operated in a ZE capacity when in California.
- c. The purchase of ZE infrastructure intended to support ZE locomotives, ZE capable locomotives, or ZE rail equipment.
  - d. The pilot or demonstration of ZE locomotives or ZE rail equipment.
2. In-Use Operational Requirements.
- a. Starting January 1, 2030, only locomotives with original engine build dates less than 23 years old may operate in California. Additionally, on January 1, 2030, all switch, passenger, and industrial locomotives with an original engine build date of 2030 or newer must operate in a ZE configuration in California. Starting January 1, 2035, all line haul locomotives with an original engine build date of 2035 or newer must operate in a ZE configuration in California.
    - i. As part of these requirements, in 2027 and 2032, staff will assess the progress made in ZE technologies for use with switch, industrial, passenger, and freight line haul locomotives, as well as the status of infrastructure improvements that may be needed to support ZE locomotive operations.
3. Idling Requirements. The Proposed Regulation specifies that locomotives equipped with automatic start/stop systems cannot idle in California for more than 30 minutes. Certain exemptions permit idling in excess of 30 minutes consistent with those found in 40 C.F.R. Part 1033.
4. Recordkeeping and Reporting. The Proposed Regulation requires operators to submit annual reports on locomotive operations in each California Air District for each locomotive operated in the State, as well as annual reports supporting compliance with different provisions of the Proposed Regulation.
5. The Proposed Regulation includes two alternatives to directly complying with the requirements of the Spending Account and In-Use Operational Requirements.
- a. The Alternative Compliance Plan (ACP) provides entities the option to propose an alternative to the Spending Account, In-Use Operational Requirements, or both, provided that they reduce PM, NO<sub>x</sub>, and greenhouse gas (GHG) emissions by at least as much as would be achieved by directly complying with the Spending Account and In-Use Operational Requirements. ACPs are valid for a maximum of five years. After the five-year period, locomotive operators would need to reapply.
  - b. The Alternative Fleet Milestone Option (AFMO) is a fleet option, meaning all locomotives operated by the operator in California must be enrolled in the AFMO. The AFMO has annual fleet megawatt-hour (MWH) usage requirements. The requirements including ZE provisions are:
    - i. Beginning in 2030, at least 50 percent of annual fleet usage in California must be from Tier 4 (or cleaner) locomotives.
    - ii. Beginning in 2035, 100 percent of annual fleet usage in California must be from Tier 4 (or cleaner) locomotives.
    - iii. Beginning in 2042, 50 percent of annual fleet usage in California must be ZE.
    - iv. Beginning in 2047, 100 percent of annual fleet usage in California must be ZE (no exceptions).

- v. ZE locomotive or ZE rail equipment provision: Each MWh of ZE locomotive or ZE rail equipment activity in an operator's California fleet prior to 2047, allows usage from other locomotives to be counted as Tier 4 locomotives in the following amounts:
  - Two (2) MWhs from Tier 2 or 3 locomotives, or
  - One and a half (1.5) MWhs from Tier 1 locomotives, or
  - One (1) MWh from Tier 0 locomotives, or
  - Half (0.5) MWh from pre-Tier 0 locomotives.

## **Objectives and Benefits of the Proposed Regulatory Action:**

The main objectives of the Proposed Regulation are to: (1) achieve fine particulate matter (PM<sub>2.5</sub>), NO<sub>x</sub>, and GHG emission reductions to protect communities from near-source air toxics exposure, contribute toward meeting the current health-based ambient air quality standards across California, and contribute toward achieving the State's climate goals; (2) transition locomotives to ZE technology, as directed by Executive Order N-79-20; and (3) address multiple state policies and plans directing CARB to achieve additional emission reductions.

The primary benefits of the Proposed Regulation are reductions in PM<sub>2.5</sub>, NO<sub>x</sub>, and GHG emissions from locomotives that operate in California. Staff estimates that cumulatively, from 2024 to 2050, the Proposed Regulation will reduce statewide emissions by approximately 7,400 tons of PM<sub>2.5</sub>, 386,000 tons of NO<sub>x</sub>, and 21.6 million metric tonnes (MMT) of GHGs, relative to the baseline. These emission reductions will benefit California residents by reducing cancer risk to individual residents and workers near facilities where locomotives operate, including those located in and near disadvantaged communities; improving air quality and resulting ozone exposure from reductions in NO<sub>x</sub>; providing GHG emission reductions needed to combat climate change; and reducing non-cancer health impacts such as premature deaths, hospital visits for cardiovascular and respiratory illnesses, and emergency room visits for asthma, especially in sensitive receptors including children, the elderly, and people with chronic heart or lung disease. The total statewide valuation of avoided adverse health outcomes as a result of the Proposed Regulation from 2024 to 2050 is approximately \$32 billion. Emission reductions will also decrease occupational exposure and benefit on-site workers, including, but not limited to, locomotive operators and other individuals who work at facilities where locomotives operate.

The Proposed Regulation will also provide an opportunity to increase ZE technology in the off-road locomotive sector. As more ZE and ZE capable locomotives are operated in California as a result of the Proposed Regulation, industry acceptance of advanced technologies will improve. The state of ZE locomotive technologies will progress, starting with shorter range locomotives such as switchers, and expand into extended range locomotives such as line haul locomotives.

Operators may choose to retrofit existing locomotives to be able to operate in a ZE capacity some (or all) of the time (referred to here as a ZE capable locomotive) or may instead purchase new or used ZE locomotives as they become commercially available. Retrofitting existing locomotives may benefit various businesses in the ZE locomotive supply chain, including those involved in battery and fuel cell technology throughout the State. Purchases

of ZE locomotives may benefit ZE locomotive manufacturers, as well as various businesses in the ZE locomotive supply chain, including those involved in battery and fuel cell technology. Supporting infrastructure installations will provide opportunities for design, engineering, construction, and project management firms to design new and expanded infrastructure, as well as benefit suppliers, equipment installers, and electricians. The expansion of electric charging infrastructure will also increase the amount of electricity supplied by utility providers and help the State's investor-owned utilities meet the goals of Senate Bill 350 (De León, Stats. 2015, ch. 547), which requires the State's investor-owned utilities to develop programs to accelerate widespread transportation electrification with goals to reduce dependence on petroleum, increase the uptake of ZE vehicles and equipment, help meet air quality standards, and reduce GHGs.

Lastly, the Proposed Regulation will result in noise reduction benefits. Current industry-standard locomotive engines can produce a noise, which may result in adverse health impacts. This is of concern when locomotives operate in and near places where people live, work, and play. Staff have received several noise complaints regarding locomotive activity near schools, hospitals, elder care facilities, and residential neighborhoods. The Proposed Regulation will transition locomotives to ZE technology, which can produce little to no noise. The Proposed Regulation will eventually lead to the elimination of use of non-ZE locomotives and reduce noise levels.

## **Description of Regulatory Action**

On September 20, 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 the Proposed In-Use Locomotive Regulation," for public review. The Staff Report contains a description of the rationale for the Proposed Regulation. On September 20, 2022, all references relied upon and identified in the Staff Report were made available to the public. CARB received 38 written comments during the 45-Day Notice comment period.

On November 18, 2022, CARB conducted an initial public hearing. CARB staff informed the Board of the proposed In-Use Locomotive Regulation and the Board received written and oral comments from the public. At the conclusion of the hearing, the Board directed staff to collaborate with transit agencies to transition to zero emission operations, increase ridership, and minimize repayment of public grant funds.

In accordance with Government Code section 11346.8, the Board requested staff make any 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 and make modifications as may be appropriate in consideration of the comments received, and shall present the regulation to the Board for further consideration if warranted.

Subsequent to the hearing, CARB released a Notice of Public Availability of Modified Text and Availability of Additional Documents and Information (15-Day Notice) on March 1, 2023. The text of the proposed regulatory and Staff Report modifications was posted on CARB's website at <https://ww2.arb.ca.gov/rulemaking/2022/locomotive>, accessible to all

stakeholders and interested parties. The 15-Day Notice proposed modifications that included the following changes to the regulatory text:

- Modifications to provide further clarification and readability throughout.
- Modifications to section 2478.4 Spending Account, to allow a Locomotive Operator to remove funds and close their Spending Account if all Locomotives are Operated in a ZE Configuration in California in the previous Calendar Year.
- Addition to section 2478.6 Compliance Extensions. Staff included a one-year compliance extension to the Spending Account, In-Use Operational Requirements, Alternative Compliance Plan, or Alternative Fleet Milestone Option requirements, for any delays due to compliant equipment manufacture delays, installation delays, or unavailability. This section includes the process to obtain the extensions.
- Modifications to section 2478.7 Alternative Compliance Plan (ACP), to clarify and streamline the requirements of an ACP, such as adding assumptions to be used when developing an ACP.
- Modification to section 2478.7 Alternative Compliance Plan to allow GHG emission reductions to be achieved with no geographical constraints.
- Addition of section 2478.8 Alternative Fleet Milestone Option (AFMO), an alternative compliance pathway that may be used in lieu of directly complying with the Spending Account and In-Use Operational Requirements sections.
- Modification of section 2478.11 Reporting and Recordkeeping Requirements, to streamline reporting and add reporting requirements for the AFMO and the Small Business Hardship Extension.
- Addition in section 2478.12 Administrative Payment and Alternative Compliance Plan Application Payment, to add payments and payment process for ACP applications.
- Modifications to section 2478.17 Severability, for better organization and to include additional severability provisions.

In addition to the larger modifications described above, staff corrected grammar, punctuation, and spelling throughout the proposed changes. These changes are nonsubstantive.

The Final Environmental Analysis (Final EA) and written responses to the Draft Environmental Analysis (Draft EA) were posted on April 14, 2023, for public review. CARB staff presented the Final EA, written responses to the Draft EA, Final Regulation Order, and Proposed Resolution 23-12 to the Board at its April 27, 2023, hearing, and received written and oral comments from the public. At the conclusion of the hearing, the Board approved Resolution 23-12, which approved written responses to the Draft EA, certified the Final EA, and approved the Proposed Regulation, as noticed on September 20, 2022, with the modifications as noticed on March 1, 2023. Staff subsequently prepared written responses to the comments received during the 45-Day and 15-Day comment periods and Board hearings, as set forth in the Final Statement of Reasons (FSOR).

## **Update to the Emission Inventory**

The 15-Day Notice, released on March 1, 2023, proposed the AFMO per the Board's direction to collaborate with transit agencies to transition to zero emission operations, increase ridership, and minimize repayment of public grant funds. Staff assumes only passenger operators will opt to comply via the AFMO due to their cleaner fleet composition. If the AFMO was used by all California passenger operators, it could result in a one percent decrease in total PM and total NOx emission reductions compared to the total emission reductions from directly complying with the Spending Account and In-Use Operational Requirements. The updated total emission reductions of the Proposed Regulation from 2023 to 2050 (as a result of the 15-day changes) was estimated to be 7,390 tons PM2.5, 386,283 tons NOx, and 21.6 MMT of GHG compared to 7,455 tons PM2.5, 389,360 tons NOx, and 21.9 MMT of GHG in the Initial Statement of Reasons.

## **Comparable Federal Regulations**

The United States Environmental Protection Agency (U.S. EPA) sets new locomotive emission standards under 40 C.F.R. Part 1033. There are no comparable federal regulations which address the same issues as CARB's Proposed Regulation, as the federal government has not adopted regulations for in-use locomotives. Therefore, the Proposed Regulation does not conflict with nor duplicate any current federal regulations.

Section 209(e) of the Clean Air Act prohibits states from adopting standards to control emissions from new locomotives or new engines used in locomotives (42 U.S.C. § 7543(e)(1)(B).) The Proposed Regulation does not prescribe any emission standards for new locomotive engines but instead only requires that locomotive operators meet certain operational requirements. While operators could meet these requirements by purchasing new locomotives that outperform current U.S. EPA emission standards, that is not necessary to meet the requirements of the Proposed Regulation. In other words, the Proposed Regulation does not require the purchase of any new locomotive that would outperform current U.S. EPA emission standards.

## **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 the Proposed Regulation is neither inconsistent nor incompatible with existing state regulations.