

Advanced Clean Trucks Regulation Frequently Asked Questions

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The Northeast States for Coordinated Air Use Management (NESCAUM) is the nonprofit association of state air quality agencies in the six New England states, New Jersey, and New York. NESCAUM serves as a technical and policy advisor to its members and works with broader groups of states to develop strategies to achieve air quality and climate goals. For more than three decades, NESCAUM has supported states in using their authority under Section 177 of the Clean Air Act to adopt California's motor vehicle emission standards. Currently, NESCAUM hosts a workgroup for Section 177 states across the country to assist with and coordinate state adoption and implementation of California's clean car and truck standards. While NESCAUM works with the Section 177 states and California to develop common approaches and interpretations of California's clean car and truck standards, each state is ultimately responsible for interpreting and implementing its regulations. NESCAUM also facilitates the Multi-State ZEV Task Force, a unique forum for galvanizing state leadership on complementary policies and programs to accelerate transportation electrification through research and analysis, information sharing, collective strategizing, and coordinated action on shared priorities.

This resource is intended to address key questions related to adoption and implementation of California's Advanced Clean Trucks regulation. Under the federal Clean Air Act (CAA), California is the only state permitted to establish emission standards for new motor vehicles. Other states, however, may adopt and enforce California's emission standards, in-lieu of federal standards. States that adopt California's standards are referred to as "Section 177 states," in reference to the CAA provision that grants this authority.

ACT Overview

What is the Advanced Clean Trucks (ACT) regulation?

To reduce emissions of criteria pollutants, toxic air contaminants, and greenhouse gases (GHGs), the ACT regulation requires increasing percentages of manufacturer sales of on-road medium- and heavy-duty vehicles from Class 2b to Class 8 to be zero-emission vehicles (ZEVs). By model year 2035, zero-emission sales would need to be 55% of Class 2b-3 vehicle sales, 75% of class 4-8 vehicle sales, and 40% of Class 7-8 truck tractor sales. The ACT regulation also includes a one-time large entity reporting requirement to better understand what types of vehicles fleets own and how they use them. To date eleven states, including California, have adopted the ACT regulation with varied implementation dates (see table below).

How does the large entity reporting requirement work under the ACT regulation?

The regulation includes a one-time large entity reporting requirement that collects information about fleet vehicles with a gross vehicle weight rating (GVWR) over 8,500 pounds. The reporting threshold for

large entities with facilities in California is 50 vehicles for fleets and brokers, 1 vehicle for government agencies, and 1 vehicle for businesses with an annual revenue over \$50 million. Information collected can be used to assess the suitability of electrification in different use cases and to inform future fleet electrification strategies.

Some states have opted to modify or not to implement this reporting requirement. For instance, the reporting threshold in Oregon and Washington is fleets of 5 or more vehicles.¹ While New Jersey and New York did not change the reporting threshold, unlike California, they are requiring vehicle identification numbers (VINs) to be reported.² Another state, Vermont, is opting to forgo the one-time reporting requirement altogether due to the resources that would be required to collect and analyze the data.

What entities are subject to the ACT regulation?

Manufacturers that certify, complete, or import for resale on-road Class 2b-8 vehicles with a GVWR over 8,500 pounds are subject to the ACT regulation. Manufacturers that sell less than 500 such vehicles annually on average over a three-year period are exempt from the ZEV sales requirements, however, once a manufacturer exceeds 500 annual average vehicle sales, they become subject to the ACT regulation the second model year after exceeding the threshold.

Motor vehicle dealers, purchasers of medium- and heavy-duty vehicles, and entities that supply parts to importers or vehicle manufacturers are not subject to the ACT regulation.

Are buses subject to the ACT regulation?

Buses that meet the following conditions are exempted from the ACT regulation:

- 1) A passenger-carrying vehicle with a GVWR that is 14,001 pounds or more;
- 2) Has a load capacity of 15 or more passengers;
- 3) Is not a cutaway vehicle as defined in 13 CCR section 2023 (b)(17); and
- 4) Is not a school bus as defined in the California Vehicle Code section 545.

Accordingly, transit buses, motor coaches, articulated shuttles, and double decker buses are exempted from the ACT regulation. On the other hand, school buses and cutaway shuttles are subject to the ACT regulation. It is worth noting that California regulates transit buses under the Innovative Clean Transit regulation (13 CCR § 2023).

¹ *Medium and Heavy-Duty One-Time Fleet Reporting Guide* (March 2022), Oregon Department of Environmental Quality, <https://www.oregon.gov/deq/aq/Documents/FleetReportingGuidance.pdf>; and *Fleet Reporting Platform Guidebook for Fleet Managers* (revised August 2023), Washington Department of Ecology, <https://apps.ecology.wa.gov/publications/UIPages/documents/2302068.pdf>.

² *Medium- and Heavy-Duty One-Time Fleet Reporting Guide* (October 2022), New Jersey Department of Environmental Protection, <https://dep.nj.gov/wp-content/uploads/stophesoot/nj-act-reporting-guidance.pdf>; and *Advanced Clean Trucks Medium- and Heavy-Duty One-Time Fleet Reporting Guide* (October 2022), New York Department of Environmental Conservation, https://www.dec.ny.gov/docs/air_pdf/actreportguidance.pdf.

Are emergency vehicles subject to the ACT regulation?

While there is no mention of an emergency vehicle exemption in the ACT regulation, California law exempts emergency vehicles from regulations regarding “motor vehicle pollution control devices,” such as the ACT regulation. See California Vehicle Code § 27156.2. Generally speaking, Section 177 states also exempt emergency vehicles.

Does the ACT regulation require consumers or fleets to purchase zero-emission trucks?

Consumers and fleets are not required to buy zero-emission trucks under the ACT regulation. The regulatory requirement falls upon manufacturers to deliver and sell an increasing percentage of zero-emission trucks. It is worth noting, however, that CARB adopted the Advanced Clean Fleets (ACF) regulation, which requires certain fleets in California to purchase zero-emission trucks when adding new vehicles to their fleets. To date, no states outside of California have adopted the ACF regulation.

ACT Rule Mechanics

How does the ACT regulation work?

The ACT regulation uses a credit and deficit system. Deficits are generated by selling vehicles into the state; credits are earned by selling ZEVs or near-ZEVs (NZEVs). Vehicles must be produced and delivered to an ultimate purchaser in the state to generate deficits and credits. (Note: CARB initiated a rulemaking in November 2023 to revise credit reporting to clarify that compliance determinations and sales reporting requirements are both defined when vehicles are produced and delivered for sale in the state.)

Manufacturers achieve compliance when total credits retired equals total deficits. If a manufacturer does not have sufficient credits, they have one year to make up the deficit. Credits may be banked and traded between manufacturers. (Note: CARB initiated a rulemaking in November 2023 to allow manufacturers to make up deficits over three years instead of one year.)

Do vehicles from different weight classes generate the same number of deficits and credits?

Weight class modifiers (WCMs) are applied to account for heavier vehicles generating more emissions (e.g., the WCM is 0.8 for class 2b-3; 1.0 for class 4-5, 1.5 for class 6-7; etc.). Thus, heavier vehicles generate more deficits and credits. This approach maintains overall emissions benefits but allows manufacturers to produce more ZEVs in one category than another.

NZEV credits are calculated by applying the appropriate WCM to the NZEV Value Factor (0.01 multiplied by the all-electric range and not to exceed 0.75). To generate credits, NZEVs must achieve an increasing minimum all-electric range through Model Year 2029, after which it is 75 miles or greater.

Can manufacturers use credits from different weight classes to satisfy deficits?

Yes, with one exception. Deficits and credits are calculated on a per vehicle basis and grouped into two categories – tractor deficits/credits and all other deficits/credits. Manufacturers may only use credits

from zero-emission tractor sales to offset tractor sale deficits. Otherwise, deficits may be satisfied with credits from any vehicle class.

Can manufacturers of Class 2b-3 vehicles generate credits for both the ACT and ACC regulations?

A manufacturer that generates ZEV or NZEV credits from the Class 2b-3 vehicle group may generate credits for either the ACT or the ACC regulation. Within 90 days following the end of each model year, the manufacturer must submit a declaration that includes:

- 1) The number of on-road vehicles produced and delivered for sale in the state to generate credits under the ACT regulation; and
- 2) The number of on-road vehicles produced and delivered for sale in the state to generate credits under the ACC regulation.

At what point in time are credits earned under the ACT regulation?

A manufacturer may generate credits for each ZEV or NZEV produced and delivered for sale in a Section 177 state for the manufacturer-designated model year. Credits are earned when a new on-road vehicle is sold to the ultimate purchaser in the Section 177 state. (Note: CARB initiated a rulemaking in November 2023 to clarify that credits are earned when a new on-road vehicle is delivered for sale in the state).

What is the lifetime of credits earned under ACT?

Beginning with the first year of implementation and thereafter, credits earned have a 5-year life. Note that NZEVs can only generate credits until the end of model year 2035.

ACT Compliance Flexibility Provisions

Which compliance flexibilities can manufacturers utilize when calculating their ZEV requirement performance for a given model year?

The ACT regulation includes numerous flexibilities that manufacturers may utilize to achieve compliance with the ZEV sales requirements, including “early action” credits, credit banking, credit trading between manufacturers, NZEVs, interchangeable non-tractor credits, use of non-tractor credits to meet tractor deficits for manufacturers with twenty-five or fewer tractor deficits, and carry forward deficits. (Note: CARB plans to initiate a rulemaking in calendar year 2025 to add pooling, which is described below, as a compliance flexibility available to manufacturers.)

What are “early action” credits?

Manufacturers may earn “early action” credits in California for eligible ZEVs and NZEVs sold in the 2021 to 2023 model years prior to the regulatory requirements going into effect in model year 2024. Given that the generation of early action credits is voluntary, Section 177 states may modify this provision when adopting the ACT regulation in subsequent model years. Eligible early action and implementation model years in the Section 177 states that adopted the ACT regulation are shown in the table below.

State	Early Action Model Year	Implementation Model Year
California	2021	2024
Colorado	2024	2027
Maryland	2026	2027
Massachusetts	2021	2025
New Jersey	2022	2025
New Mexico	2025	2027
New York	2022	2025
Oregon	2022	2025
Rhode Island	2024	2027
Vermont	2023	2026
Washington	2021	2025

Are there any limits on how manufacturers may use “early action” credits?

In California, early action credits earned during the 2021-2023 model years expire at the end of the 2030 model year and cannot be used to meet compliance for 2031 and later model years. The expiration of early action credits earned in the Section 177 states in the 2021 through 2023 model years also expire at the end of the 2030 model year. Any credits earned after model year 2023, even if earned before a Section 177 state’s ACT implementation model year, expire five years from the model year in which they were earned.

How does banking work?

Excess NZEV and ZEV credits may be banked for use in future model years in which a manufacturer has a deficit. Banked NZEV and ZEV credits expire five years after the model year in which they were earned.

How does trading work?

Excess NZEV and ZEV credits that have not expired may be traded to another manufacturer after offsetting deficits from previous model years.

How may NZEV credits be used for compliance?

A manufacturer may use NZEV credits to satisfy up to 50% of the annual summed deficits. Deficits carried over to the following model year cannot be made up with NZEV credits.

How can manufacturers use non-tractor credits to make up deficits?

Class 2b-3, Class 4-5, Class 6-7, and Class 8 non-tractor credits may be used interchangeably to make up non-tractor deficits. For example, a manufacturer may use Class 2b-3 credits to make up deficits generated from the sale of class 4-8 non-tractor vehicles. Manufacturers may not use zero-emission non-tractor credits to offset tractor deficits.

Additionally, a manufacturer that generates 25 or fewer Class 7-8 tractor deficits in a model year and has tractor deficits after retiring all of their tractor credits may use a maximum of 25 non-tractor credits, starting with the earliest expiring credits, to satisfy their Class 7-8 tractor deficits.

What are carry forward deficits and how long do manufacturers have to make them up?

A manufacturer that retires fewer ZEV or NZEV credits than required to meet its credit obligation in a given model year must make up the deficit by the end of the next model year. This carry forward deficit cannot be satisfied with NZEV credits. (Note: CARB initiated a rulemaking in November 2023 to allow manufacturers to make up deficits over three years instead of one year.)

Does the ACT regulation allow “pooling” as compliance flexibility?

CARB plans to initiate a rulemaking in calendar year 2025 to allow pooling under the ACT regulation. Pooling is a compliance flexibility that allows manufacturers to transfer excess credits earned in one state to satisfy deficits generated in another state. In effect, pooling allows manufacturers to use credits earned in one state to comply with ZEV sales requirements in another state. Under the ACC II ZEV regulation, the pooling provision includes a declining cap that is phased out over time. Additional details on the ACT pooling compliance flexibility will be added once CARB completes that rulemaking.

ACT Compliance Reporting

What information is required from manufacturers to report their annual sales under the ACT regulation?

Within 90 days following the end of each model year, manufacturers are required to report the following information for each on-road vehicle produced and delivered for sale in the state:

- 1) Vehicle identification number (VIN) for each vehicle;
- 2) Vehicle weight class;
- 3) Whether the vehicle type is a tractor, yard tractor, or is another vehicle type;
- 4) Fuel and drivetrain type;
- 5) The volume produced and delivered for sale in California for the vehicle type; and
- 6) If a NZEV, the tested all-electric range of the vehicle.

How are credit transfers reported by manufacturers under the ACT regulation?

A manufacturer that transfers to or receives ZEV or NZEV credits from another manufacturer must submit an annual report of all credit trades, transfers, and transactions within 90 days following the end of each model year. Manufacturers that transfer or receive ZEV or NZEV credits must submit a letter or document signed by authorized agents of both parties to the transaction that includes:

- 1) Corporate name of credit transferor;
- 2) Corporate name of credit transferee;
- 3) Number of ZEV credits transferred for each model year, rounded to the nearest tenth;
- 4) Number of NZEV credits transferred for each model year, rounded to the nearest tenth; and
- 5) Indicate whether the ZEV or NZEV credits are Class 7-8 tractor credits, or other credits.

How long do manufacturers have to keep records required by the ACT regulation?

Manufacturers must keep all reporting records for eight years from the end of the model year the vehicles were produced.

How will California and Section 177 states verify reported sales of zero-emission trucks?

Manufacturers must submit to CARB's ACT reporting system inventories of ZEV and NZEVs delivered and sold to an ultimate purchaser (CARB initiated a rulemaking in November 2023 to clarify that credits are earned when a new on-road vehicle is delivered for sale in a Section 177 state). California and the Section 177 states will verify reported sales by cross referencing VIN data with state registration and/or inspection and maintenance records to ensure vehicles are placed in service in the reported state of sale. If vehicle sales cannot be verified, California and the Section 177 states will follow-up with manufacturers to confirm or rectify credit submissions.

How should manufacturers report early action ZEV and NZEV credits for Section 177 states adopting the ACT regulation?

CARB's ACT reporting template for model year 2021 vehicles provided manufacturers the option to report vehicle sales information as a single file for the following states: California, Massachusetts, New Jersey, New York, Oregon, and Washington. Staff from states that have adopted the ACT regulation will have access to CARB's ACT reporting system to view and retrieve early action ZEV and NZEV sales data reported for their state.

Do business-to-business sales agreements qualify for ZEV and NZEV credits as long as the upfitted³ vehicle is registered in a Section 177 state?

Yes, business-to-business sales agreements of upfitted new vehicles sold to an ultimate purchaser and placed in service in an ACT state must be tracked and verified by the manufacturer for all ZEV and non-ZEV sales. Upfitters themselves are considered to be secondary vehicle manufacturers and are not subject to ACT compliance requirements.

ZEV Technical Feasibility and Market Readiness

What types of trucks are currently suitable for electrification?

To date, the largest medium- and heavy-duty ZEV deployments have targeted replacement of urban delivery vans, drayage trucks, and transit and school buses. These applications are well suited for early deployment because they have shorter, fixed daily duty-cycles and return to a centralized fleet depot each day, which enables fleet operators to strategically deploy vehicles and manage vehicle charging operations. Many components of electric powertrains are the same across multiple platforms. Thus, investments in these first-to-market applications are speeding the transfer of technology to more challenging and less market-ready applications, like regional freight trucks and long-haul tractor trailers.

³ An upfitted vehicle is a new vehicle that has undergone alterations to meet unique fleet specifications. Examples include turning the bed of a truck into a platform to haul machinery or attaching a hydraulic boom with a bucket for raising workers to elevated areas.

Are any zero-emission trucks commercially available? How will manufacturers meet these requirements?

There are currently over 190 different models of zero-emission vans, trucks, and buses available from 66 different manufacturers available for sale in the U.S.⁴ Most trucks and vans operate less than 100 miles per day and several zero-emission configurations are available to serve that need. As technology advances, zero-emission trucks will become suitable for more applications. Most major truck manufacturers, such as Daimler and Volvo, have introduced or have announced plans to introduce market ready zero-emission trucks in the near future. Manufacturers that cannot meet the requirements have the option to purchase excess credits from other manufacturers.

How do battery electric trucks perform in wintry weather?

Battery electric vehicles (BEVs) generally have a lower center of gravity than internal combustion engine vehicles, making their weight more evenly distributed. As a result, BEVs gain traction more easily and demonstrate superior handling on snow- and ice-covered roads. Additionally, many BEVs have dual motors on the front and back axles, making for better maneuverability in wintry conditions. High BEV sales in Iceland and Norway speak to the ability of BEVs to perform in extreme winter climates.

How do cold temperatures impact an electric truck's driving range?

Similar to fuel economy for internal combustion engine vehicles, cold temperatures can reduce the driving range of BEVs. Electric range varies in response to several factors, including driver behavior, use of cabin climate controls, tire selection, etc. Manufacturers continue to innovate and pursue improvements in battery technology and range, driven by strong market pressures to deliver longer-range vehicles at lower prices. For example, Volvo's electric trucks utilize "Ready to Run" technology that enables drivers to remotely pre-heat the battery and truck cabin before the duty cycle to help maintain optimal battery performance when in operation, even in extreme cold temperatures. Technological advancements that continue to improve cold weather operation, and range in general, are expected to progress along with adoption.

Is there enough charging infrastructure to support the increasing number of on-road electric trucks we'll see as manufacturers ramp up vehicle production and sales to comply with ACT?

In the near term, it is anticipated that the majority of charging infrastructure deployed to support electric trucks will be located at fleet depot locations. More and more utilities across the country are administering fleet advisory services and make-ready programs to help accelerate the buildout of charging infrastructure needed to support widespread truck electrification. Further, in addition to new federal funding for corridor charging available under the Infrastructure Investment and Jobs Act, the ACT regulation provides market certainty that will help unlock additional charging infrastructure investments from utilities and charging station developers, including at public charging locations along interstate highway routes.

⁴ CALSTART (2024): Drive to Zero's Zero-emission Technology Inventory (ZETI) Tool Version 9.0 Available online at <https://globaldrivetozero.org/tools/zero-emission-technology-inventory/>.

Is there any funding to support the deployment of medium- and heavy-duty ZEVs?

Yes, the Inflation Reduction Act of 2022 provides federal tax credits for commercial electric vehicles (EVs) (Section 45W – Credit for Qualified Commercial Clean Vehicles) and allocates \$1 billion to states, municipalities, Indian tribes, or non-profit school transportation associations to replace Class 6 and 7 vehicles with EVs. The commercial EV tax credit is capped at \$7,500 for vehicles with a GVWR less than 14,000 pounds and capped at \$40,000 for vehicles with a GVWR greater than 14,000 pounds. The Inflation Reduction Act also provides \$60 million for EPA’s Diesel Emission Reduction Act Program and \$2.25 billion to deploy zero-emission technology at port facilities.

ACT states are also investing hundreds of millions of dollars in vehicle purchase incentives for electric trucks and buses, which can be stacked with federal incentives, and are also investing in and leveraging federal funding for charging infrastructure.