



**AIR QUALITY CONTROL ADVISORY COUNCIL**  
**AGENDA**  
**June 12, 2023**

<https://meet.goto.com/659680389>

**You can also dial in using your phone.**  
United States (Toll Free): 1 877 309 2073  
**Access Code:** 659-680-389

9:00 a.m.      Welcome and Introductions      John Quinn, Advisory Council Chair  
Chris Hoagland, Air and Radiation  
Director

9:15 a.m.      Approval of Meeting Minutes      John Quinn

**Action Items:**

9:25 a.m.      Advanced Clean Trucks      Tim Shepherd / Justin Mabrey  
COMAR 26.11.43

**Briefings:**

10:00 a.m.      EV Infrastructure update      Dan Janousek / Tim Shepherd

10:15 a.m.      Building Energy Performance Standards      Mark Stewart

10:30 a.m.      2023 Clean Air Progress Report      Kelsey Sisko

11:00 a.m.      Adjourn

Next Meeting Dates:  
September 11, 2023, December 11, 2023



## Facts About ...

### Adoption of COMAR 26.11.43

### Advanced Clean Trucks Program

5/24/23

Adoption of California's Advanced Clean Trucks Rule.

#### Purpose

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The purpose of this proposed action is to adopt implementing regulations for California's Advanced Clean Trucks (ACT) Program under COMAR 26.11.43

#### Submission to EPA as Revision to Maryland's State Implementation Plan (SIP)

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The Advanced Clean Trucks Program will be submitted to the U.S. Environmental Protection Agency (EPA) for approval as part of Maryland's State Implementation Plan (SIP).

#### Background

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The Clean Air Act established the framework for controlling harmful emissions from mobile sources. At the time, California had already established its own emission standards for mobile sources, and so was granted the sole authority to continue adopting vehicle emission standards, so long as they were at least as protective as the standards set by EPA.

The harmful emissions from Medium- and Heavy-Duty Trucks (MHD) pose a serious threat to both public health and climate change. Recognizing this, California has adopted the Advanced Clean Trucks regulation that aims to reduce on-road emissions from the MHD Truck sector to a greater extent than the current EPA standards.

Section 177 of the Clean Air Act allows other states to adopt the California standards if they are identical. The Clean Trucks Act of 2023 requires the Maryland Department of the Environment (MDE) to exercise this authority and adopt regulations implementing the California Advanced Clean Truck Program in Maryland. MDE will adopt implementing regulations through incorporation by reference of the applicable California regulations.

The Clean Trucks Act of 2023 reinforces the state's ongoing commitment to reducing climate pollutants in order to reach the nation-leading goal of achieving a 60% reduction in greenhouse gas emissions by 2031. Transportation accounts for over 40% of the GHG emissions in Maryland and MHD trucks account for about a third of those emissions. The emissions from MHD trucks continue to increase even as other sectors decrease. On-road diesel trucks are the largest contributor to NOx emissions in Maryland.

Maryland has been a California Clean Car state since 2011. Under the Clean Cars Program, Maryland has required light-duty manufacturers to deliver more zero emission vehicles (ZEVs) as a growing percentage of their overall fleet. This rule proposes to adopt California's ZEV emission standards that apply to vehicles greater than 8,500 pounds gross vehicle weight rating.



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This rulemaking will reduce the emissions of CO2 and other climate pollutants from the transportation sector by incorporating by reference California’s ACT. As required by the Clean Trucks Act of 2023, the Department is proposing to incorporate by reference the portions of the ACT regulation pertaining to the requirements that manufacturers increase their sales of zero-emission MHD vehicles. The Department will establish a regulatory program with an identical purpose to California’s ACT regulation.

#### Sources Affected and Location

This regulatory program will apply to manufacturers that sell vehicles in Maryland that have a gross vehicle weight rating over 8,500 pounds.

#### Requirements

Manufacturers of vehicles in weight Class 2b-8 must meet a sales requirement beginning with the 2027 model year. The sales requirement means that a certain percentage of vehicles in class 2b-8 must be zero emission. The sales percentage requirement gradually increases through the 2035 model year and varies by vehicle class.

Beginning with the 2027 model year, manufacturers subject to this rule would incur deficits for each vehicle sold. These deficits must be met with credits generated from selling MHD ZEV or near zero emission vehicles (NZEVs).

Medium- and heavy-duty ZEV and NZEV credits may be generated, banked, and traded in Maryland by manufacturers. Excess credits generated would have a limited lifetime to ensure MHD ZEVs are sold in Maryland. Manufacturers subject to this rule must report sales information and credit trade information annually to the Department to demonstrate compliance.

Table 1 shows the ZEV Sales Percentage requirements:

**Table 1: ZEV Sales Percentage by Truck Class**

MY	Class 2b-3	Class 4-8	Class 4-8 Tractors
2027	15%	20%	15%
2028	20%	30%	20%
2029	25%	40%	25%
2030	30%	50%	30%
2031	35%	55%	35%
2032	40%	60%	40%
2033	45%	65%	40%
2034	50%	70%	40%
2035+	55%	75%	40%

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### Projected Emission Reductions

Adopting ACT in Maryland will result in a significant reduction of harmful emissions associated with MHD trucks and help Maryland attain its air quality goals. The ACT program will reduce NO<sub>x</sub>, PM<sub>2.5</sub>, and GHG emissions from the mobile source sector as cleaner, zero-emission trucks replace older internal combustion powered vehicles.

In support of Maryland adopting ACT, the International Council on Clean Transportation (ICCT) developed estimates of emissions benefits of Maryland adopting ACT<sup>1</sup>.

**Table 2: Projected Tank-to-Wheel CO<sub>2</sub>e Emission Benefits:**

Year	CO <sub>2</sub> e Reductions (million metric tonnes/year)	Percentage Reduction from Baseline per year
2027	.02	.2%
2030	.07	.7%
2035	.4	4.2%
2040	.8	8.0%
2045	1.18	11.3%
2050	1.49	13.6%

**Table 3: Projected Tank-to-Wheel NO<sub>x</sub> Emission Benefits:**

Year	NO <sub>x</sub> Reductions (short tons/year)	Percentage Reduction from Baseline per year
2027	30	.2%
2030	120	.8%
2035	550	4.1%
2040	1,010	7.5%
2045	1,440	10.4%
2050	1,810	12.4%

<sup>1</sup> <https://theicct.org/benefits-ca-multi-state-reg-data/>



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**Table 4: Projected Tank-to-Wheel PM2.5 Emission Benefits:**

<b>Year</b>	<b>PM2/5 Reductions (short tons/year)</b>	<b>Percentage Reduction from Baseline per year</b>
2027	1	.2%
2030	2	.7%
2035	7	3.0%
2040	11	5.0%
2045	16	7.1%
2050	20	8.6%

**Economic Impact on Affected Sources, the Department, other State Agencies, Local Government, other Industries or Trade Groups, the Public**

MDE anticipates the proposed rulemaking will have a fiscal impact. Entities directly affected by the rule, such as MHD manufacturers, fleet owners and operators, and government agencies among others, will experience increased costs related to the purchase of MHD vehicles. However, the proposed rule will result in more MHD ZEVs in use in Maryland. More ZEVs on the road will help Maryland address its climate emission goals as well as reduce criteria pollutants which have harmful health impacts on the citizens of Maryland.

There are no direct costs anticipated for the public. However, as the rule only applies to truck manufacturers, there may be indirect costs passed on to those who purchase MHD trucks, truck dealers, and the public. The upfront cost of ZEVs is higher than those of conventional vehicles due to higher battery costs and charging infrastructure. Maryland anticipates the initial purchase price of MHD ZEVs will decrease over time as technology advances, battery costs decline, and economy of scale improve.

The California Air Resources Board (CARB) estimates ten large truck manufacturers will sell vehicles affected by the rules. Utilities will also be affected by the rule due to an increased demand for electricity for ZEV trucks and may also require utilities to upgrade their electrical distribution network.

When taking into account reduced fuel and maintenance costs, MHD ZEVs are expected to have a total cost of ownership less than that of conventionally fueled trucks.

The proposed rulemaking will result in increased compliance costs, however, incentives on both the state and federal level can help reduce this cost by lowering the purchase price, thereby reducing the incremental cost, as well as reducing the cost of charging equipment.



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The costs and benefits associated with Maryland's adoption of ACT were estimated by applying a scaling factor to California's estimates<sup>2</sup>. The Department compared annual vehicle miles traveled of MHD trucks in Maryland to California and calculated a scaling factor of 0.22. Using this scaling factor, the Department was able to estimate the economic impact of this program. The scaling factor was applied to incremental ZEV costs, Phase 2 GHG compliance savings, vehicle maintenance costs, maintenance bay upgrade costs, midlife service costs, electric vehicle supply equipment infrastructure and maintenance costs, and transition and workforce development costs.

The incremental cost of requiring MHD ZEV sales in Maryland is estimated at \$1.9 billion from 2027-2040. State and federal incentives can help reduce this compliance cost. Phase 2 GHG compliance savings are estimated to be \$125 million in Maryland from 2027-2040.

Fuel cost savings are expected due to the replacement of diesel and gasoline with electricity and hydrogen fuel. Fuel cost savings are estimated to be \$2.75 billion in Maryland from 2027-2040. The maintenance cost of battery electric vehicles is expected to be lower compared to diesel and gasoline fueled vehicles due to fewer moving parts and reduced routine maintenance such as oil changes. Reduced vehicle maintenance costs are estimated to result in additional savings of \$825 million from 2027-2040.

In order to accommodate new vehicle technologies, maintenance facilities will require upgrades to safety equipment, diagnostic tools, and other electric vehicle servicing equipment. The cost to upgrade maintenance facilities is estimated to be \$122 million from 2027-2040.

Medium- and heavy-duty vehicles often have their main propulsion components rebuilt or replaced about halfway through their lifecycle. This midlife cost includes engine rebuild for diesel vehicles, battery pack replacement for battery electric vehicles, and fuel cell stack refurbishment for hydrogen fuel-cell vehicles. The estimated midlife costs for MHD ZEV vehicles are expected to total \$199 million from 2027-2040.

ZEV vehicles require specialty fueling infrastructure. Battery electrics require electric supply equipment, including upgrades to service panels and utility connections. Hydrogen fuel cells require high pressure hydrogen fueling stations to refill hydrogen storage tanks. The estimated refueling infrastructure installation and maintenance costs are expected to be \$2.1 billion from 2027-2040.

There are costs associated with transitioning to a new technology. Transitional and workforce development costs are estimated to be \$7 million from 2027-2040.

The Advanced Clean Trucks regulation does not require fleet owners to purchase ZEV trucks. However, those that do chose to purchase ZEV trucks will incur higher upfront costs as well as costs related to refueling infrastructure. These costs are expected to be mostly offset by reduced operating costs thanks to cheaper fuel and reduced maintenance. State and federal incentives have the potential to further reduce the increased upfront costs, however, the Department is not making any assumptions with regard to incentives since the funding availability of incentives per year and by

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<sup>2</sup> <https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2019/act2019/30dayattc.pdf>



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truck class is ever-changing. As required by The Clean Trucks Act of 2023, the Department will complete a needs assessment to assess the electrical capacity needed to meet the demands of the regulation as well as the purchase incentives necessary to successfully implement the regulation.

It is estimated that battery-electric technologies will reach total cost of ownership parity with diesel-powered vehicles by the 2024 MY for some applications.

MDE will require additional resources to administer the Advanced Clean Trucks Program. The Department will need staff to oversee the development and implementation of the program. Beginning with the 2027 model year, MHD truck manufacturers are required to submit compliance reports to the Department detailing the credit deficits they've incurred as well as the credits generated by selling ZEV trucks or purchasing ZEV credits from other manufacturers to offset their deficits. Staff are needed to verify compliance reports and oversee the credit, banking, and trading program available for manufacturers to meet compliance.

### Economic Impact on Small Businesses

Small businesses that choose to purchase ZEV trucks will face the same impacts as other ZEV truck consumers. ZEV Trucks have higher initial costs compared to diesel trucks, but reduced fuel and maintenance costs, along with other benefits and incentives, will reduce this initial burden. The ACT regulation does not mandate ZEV purchases, therefore, small businesses will be able to decide for themselves if purchasing a ZEV truck makes financial sense based on their own business model.

### Is there an Equivalent Federal Standard to this Proposed Regulatory Action?

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No.

### Documents to be Incorporated by Reference

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A new chapter of COMAR (26.11.43) is being proposed with four sections. Six new Incorporated by Reference documents will be added to COMAR 26.11.43.02

The six new incorporated documents are:

*Title 13, California Code of Regulations (CCR), Division 3, Chapter 1, Article 2, §1963 Advanced Clean Trucks Purpose, Applicability, Definitions, and General Requirements, as effective March 15, 2021.*

*Title 13, California Code of Regulations (CCR), Division 3, Chapter 1, Article 2, §1963.1 Advanced Clean Trucks Deficits, as effective March 15, 2021.*



Maryland  
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the Environment

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*Title 13, California Code of Regulations (CCR), Division 3, Chapter 1, Article 2, §1963.2 Advanced Clean Trucks Credit Generation, Banking, and Trading, as effective March 15, 2021.*

*Title 13, California Code of Regulations (CCR), Division 3, Chapter 1, Article 2, §1963.3 Advanced Clean Trucks Compliance Determination, as effective March 15, 2021.*

*Title 13, California Code of Regulations (CCR), Division 3, Chapter 1, Article 2, §1963.4 Advanced Clean Trucks Reporting and Recordkeeping, as effective March 15, 2021.*

*Title 13, California Code of Regulations (CCR), Division 3, Chapter 1, Article 2, §1963.5 Advanced Clean Trucks Enforcement, as effective March 15, 2021.*

# **Title 26 DEPARTMENT OF THE ENVIRONMENT**

## **Subtitle 11 AIR QUALITY**

### **Chapter 43 Advanced Clean Trucks Program**

**Authority:** Environment Article, §§1-404, 2-102, 2-103, 2-301, 2-1102, and 2-1103, 2-1103.1, Annotated Code of Maryland

#### **.01 Purpose.**

The purpose of this chapter is to implement the requirements of the Maryland Clean Trucks Act of 2023 by establishing regulations implementing California's Advanced Clean Truck regulation.

#### **.02 Incorporation by Reference.**

A. In this chapter, the following documents are incorporated by reference.

B. Documents Incorporated.

(1) Title 13, California Code of Regulations (CCR), Division 3, Chapter 1, Article 2, §1963 Advanced Clean Trucks Purpose, Applicability, Definitions, and General Requirements, as effective March 15, 2021.

(2) Title 13, California Code of Regulations (CCR), Division 3, Chapter 1, Article 2, §1963.1 Advanced Clean Truck Deficits, as effective March 15, 2021.

(3) Title 13, California Code of Regulations (CCR), Division 3, Chapter 1, Article 2, §1963.2 Advanced Clean Trucks Credit Generation, Banking, and Trading, as effective March 15, 2021.

(4) Title 13, California Code of Regulations (CCR), Division 3, Chapter 1, Article 2, §1963.3 Advanced Clean Trucks Compliance Determination, as effective March 15, 2021.

(5) Title 13, California Code of Regulations (CCR), Division 3, Chapter 1, Article 2, §1963.4 Advanced Clean Trucks Reporting and Recordkeeping, as effective March 15, 2021.

(6) Title 13, California Code of Regulations (CCR), Division 3, Chapter 1, Article 2, §1963.5 Advanced Clean Trucks Enforcement, as effective March 15, 2021.

C. In all provisions of CCR Title 13 incorporated by reference, replace the year "2021" with the year "2027," except at 13 CCR §1963.2(g) and 13 CCR §1963.2(e).

D. Unless specifically excluded by this chapter, when a provision of the CCR is incorporated by reference, all notes, comments, appendices, diagrams, tables, forms, figures, publications, and cross-references are also incorporated by reference.

#### **.03 Definitions**

A. In General.

(1) In this chapter, the following terms have the meanings indicated.

(2) Any term that is not defined in this regulation shall be as defined in the California documents incorporated by reference in Regulation .02 of this chapter.

(3) Definitions in the California documents shall prevail in any case of discrepancy.

B. Terms Defined.

(1) "California Air Resources Board" or "CARB" means the agency, or its successor agency, established and empowered to regulate sources of air pollution in the State of California, including motor vehicles, pursuant to the California Health & Safety Code §39003, as amended or supplemented.

(2) "CCR" means the California Code of Regulations.

(3) "Class 2b-3" means an on-road vehicle with a GVWR that is 8,501 pounds up to 14,000 pounds.

(4) "Class 2b-3 group" means the group of all on-road vehicles with a GVWR that is 8,501 pounds up to 14,000 pounds.

(5) "Class 4" means an on-road vehicle with a GVWR that is 14,001 pounds up to 16,000 pounds.

(6) "Class 4-8 group" means the group of all on-road vehicles with a GVWR that is 14,001 pounds and above, including "yard tractors" as defined in 13 CCR §1963(c)(20), except for a "tractor" as defined in 13 CCR §1963(c)(18).

(7) "Class 5" means an on-road vehicle with a GVWR that is 16,001 pounds up to 19,500 pounds.

(8) "Class 6" means an on-road vehicle with a GVWR that is 19,501 pounds up to 26,000 pounds.

(9) "Class 7" means an on-road vehicle with a GVWR that is 26,001 pounds up to 33,000 pounds.

(10) "Class 7-8 tractor group" means a group of on-road vehicles, that have a GVWR 26,001 pounds and above, including all vehicles that meet the definition of "tractor" as defined in 13 CCR §1963(c)(18), except "yard tractors" as defined in 13 CCR §1963(c)(20).

(11) "Class 8" means an on-road vehicle with a GVWR that is 33,001 pounds and above.

(12) "Department" means the Maryland Department of the Environment.

(13) "Executive Officer" means the Executive Officer of the California Air Resources Board as used in California-adopted statutes, regulations, and procedures related to the California Standards. This meaning is extended for purposes of the application of California Standards in Maryland to include the Secretary, who shall act as the agent of the California Executive Officer in Maryland.

(14) "GVWR" means the same as the term "gross vehicle weight rating" as defined at 13 CCR §1963(c).

(15) "Model year (MY)" means the following: For tractors and vocational vehicles with a date of manufacture on or after January 1, 2021, the vehicle's model year is the calendar year corresponding to the date of manufacture; however, the vehicle's model year may be designated to be the year before the calendar year corresponding to the date of manufacture if the engine's model year is also from an earlier year. Note that 40 Code of Federal Regulations (CFR) §1037.601(a)(2), as amended October 25, 2016, limits the extent to which vehicle manufacturers may install engines built in earlier calendar years.

(16) "NZEV" means the same as the term "near-zero-emission vehicle" as defined at 13 CCR §1963(c).

(17) "Ultimate purchaser" means in respect to any vehicle, the first person who in good faith purchases a new motor vehicle for purposes other than resale and registers it with the Maryland Motor Vehicle Administration.

(18) "ZEV" means the same as the term "zero-emission vehicle" as defined at 13 CCR §1963(c).

#### **.04 Applicability and Exemptions**

##### **A. Applicability**

(1) Except as provided in §B of this regulation, this chapter applies to all manufacturers that produce 2027 and subsequent model year on-road vehicles over 8,500 pounds GVWR for sale in Maryland that are subject to the California Advanced Clean Truck regulation.

(2) Beginning with model year 2026, any manufacturer that produces on-road vehicles over 8,500 pounds GVWR may generate, bank, and trade ZEV and NZEV credits pursuant to 13 CCR §1963.2, as incorporated by reference herein.

(3) In the event that there are inconsistencies or duplications in the requirements of the provisions incorporated by reference from the CCR and the rules set forth in this chapter, the provisions incorporated by reference from the CCR shall prevail.

##### **B. Exemptions. This chapter does not apply to the following vehicles:**

(1) An emergency vehicle;

(2) A vehicle defined as an "excluded bus" pursuant to 13 CCR §1963(c)(11); and

(3) A vehicle designed exclusively for off-highway use.

#### **.05 Advanced Clean Trucks Reporting and Recordkeeping.**

**A. Sales Reporting.** Beginning with the 2027 model year, and no later than 90 days following the end of each model year, a manufacturer must report the following information to the Department for each on-road vehicle produced and delivered for sale in Maryland for each model year, except as provided in 13 CCR §1963.4(e):

(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) Volume produced and delivered for sale in Maryland for the vehicle type; and

(6) If the vehicle is a NZEV, the tested all-electric range of the vehicle.

##### **B. Credit Transfer Reporting.**

(1) A manufacturer that transfers to or receives ZEV or NZEV added credits from another manufacturer must submit to the Executive Officer an annual report of all credit trades, transfers, and transactions.

(2) The Department will not recognize any credit transfers until the report is received.

(3) Reports must be submitted no later than 90 days following the end of each model year to demonstrate compliance.

(4) 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 summarizing the transfer, which must include the following:

(a) Corporate name of credit transferor;

(b) Corporate name of credit transferee;

(c) Number of ZEV credits transferred for each model year, rounded to the nearest tenth according to 13 CCR §1963.2(c);

(d) Number of NZEV credits transferred for each model year, rounded to the nearest tenth according to 13 CCR §1963.2(c); and

(e) Indicate whether the ZEV or NZEV credits are Class 7-8 Tractor credits, or other credits.

C. Class 2b-3 Credit Declaration. A manufacturer that generates ZEV or NZEV credits from the Class 2b-3 group must submit no later than 90 days following the end of each model year a declaration to the Executive Officer which includes:

(1) The number of on-road vehicles produced and delivered for sale in Maryland to generate credits according to 13 CCR §1963.2; and

(2) The number of on-road vehicles produced and delivered for sale in Maryland to generate credits according to 13 CCR §1962.2.

D. Retention of Records. Records of reported information required in 13 CCR §1963.4 and documentation showing vehicle delivery to the ultimate purchaser at a location in Maryland must be kept by manufacturers for the Department to audit for a period of eight (8) years from the end of the model year the vehicles were produced.

E. Grouped Sales Reporting.

(1) Manufacturers may optionally submit information required in 13 CCR §1963.4(a) grouped by categories for vehicles that are not ZEVs or NZEVs without providing individual VINs.

(2) If exercising this option, manufacturers must still retain records available for The Department to audit including the individual VINs according to 13 CCR §1963.4(d).