CARB’s Objectives

Cut community health risk (support Assembly Bill 617 emission reductions)

Help attain regional air standards (support State Implementation Plan)

Mitigate climate change (support Scoping Plan and Short-Lived Climate Pollutant Reduction Strategy)

Governor’s Executive Order N-79-20
Transition from Combustion

- 100% ZEV sales by 2035
- Full transition to ZEV drayage trucks by 2035
- Full transition to ZEV buses & heavy-duty long-haul trucks by 2045*
- Full transition to ZE off-road equipment by 2035* *where feasible

CARB
Addressing Freight Emissions Through Regulations

- Marine Vessels
- Trucks
- Locomotives
- Transport Refrigeration Units
- Cargo Handling Equipment
- Forklifts
CARB strategies already implemented to cut freight emissions and health risk

<table>
<thead>
<tr>
<th>Trucks</th>
<th>Ships</th>
<th>Locomotives</th>
<th>Equipment</th>
<th>Harbor Craft</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Fuel/engine</td>
<td>• Fuel</td>
<td>• Fuel</td>
<td>• Fuel/engine</td>
<td>• Fuel</td>
</tr>
<tr>
<td>• In-use trucks/turnover</td>
<td>• At berth reductions</td>
<td>• Fleet emission limits</td>
<td>• Port &amp; rail equipment</td>
<td>• Harbor craft engines</td>
</tr>
<tr>
<td>• GHG limits</td>
<td>• Ship incinerator ban</td>
<td>• Diesel soot reduction at railyards</td>
<td>• Forklifts</td>
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<tr>
<td>• Idling and smoke limits</td>
<td></td>
<td></td>
<td>• Airport equipment</td>
<td></td>
</tr>
<tr>
<td>• In-use compliance</td>
<td></td>
<td></td>
<td>• Transport refrigerators</td>
<td></td>
</tr>
</tbody>
</table>

Incentives to demonstrate & deploy cleaner models
Addressing Freight Emissions
At the Port of Oakland
Coordinating Statewide Freight Policies

- Multiple Air Quality Improvement, Public Health, and GHG Reduction Plans
- Core strategies
  - Zero-emissions everywhere feasible
  - Improved efficiency
  - Cleaner fuels and cleaner combustion everywhere else
Infrastructure Deployment is Crucial

State Agencies

- Governor’s Office of Business & Economic Development (GO-Biz)
- CA Energy Commission (CEC)
- CA Public Utilities Commission (CPUC)
- CA Independent System Operator (CaISO)
- CA Building Standards Commission (CBSC)
- Housing and Community Development (HCD)
- CA Department of Transportation (CalSTA)

CARB’s ZEV Infrastructure Collaboration Partners

- End Users
- Communities
- Utilities & Hydrogen Suppliers
- Infrastructure Providers
- Local Government
- Federal Government
- ZEV Manufacturers

CARB
New CARB Freight Regulatory Actions (1st Board hearing dates shown)

Zero-Emission Requirements

- Truck Certification
- Ocean-Going Vessels at Berth
- Advanced Clean Trucks (Manufacturing)

- 2019
- Truck Omnibus
- Truck Inspection and Maintenance

- 2020
- Zero-Emission Transport Refrigeration Units (trucks)
- Commercial Harbor Craft

- 2021
- Advanced Clean Truck Fleets (Including Drayage)
- Locomotives
- Forklifts

- 2022
- Locomotives

- 2023

- 2024+
- Port and Railyard Cargo Handling Equipment
- Zero-Emission Transport Refrigeration Units (trailers/containers)

Cleaner Combustion Requirements

Updated: 6/20/22
Trucks
Truck and Bus Regulation Overview

- Applies to all heavy-duty diesel vehicles operating in California
  - PM filters 2012-2016
  - 2010 model year engines by 2023
- Compliance statistics
  - 85% upgraded to 2010 engines 1,580,000
  - Upgrades still needed for about 36,900, California registered and up to 192,400 out-of-state trucks

Fact Sheets: https://ww2.arb.ca.gov/our-work/programs/truck-bus-regulation/truck-and-bus-regulation-fact-sheets
Transition to Heavy-Duty Zero-Emissions

- Innovative Clean Transit (2018)
  - Zero-emission fleet by 2040
- Zero Emission Airport Shuttle Bus (2019)
  - Zero-emission fleet by 2035
- Zero Emission Powertrain Certification (2019)
- Advanced Clean Trucks (2020)
  - Requires manufacturers to sell increasing percent of 2024-2035
- Advanced Clean Fleets (ACF) 2022 - Tentative)
  - Plans to require the transition of truck and bus fleets to zero-emission by 2035
  - Includes drayage truck fleets

Innovative Clean Transit: [https://www.arb.ca.gov/msprog/ict/ict.htm](https://www.arb.ca.gov/msprog/ict/ict.htm)
Zero-Emission Airport Shuttle Bus: [https://www.arb.ca.gov/msprog/asb/asb.htm](https://www.arb.ca.gov/msprog/asb/asb.htm)
Advanced Clean Fleets: [https://ww2.arb.ca.gov/sites/default/files/2022-03/ACF%20Fact%20Sheet_ADA.pdf](https://ww2.arb.ca.gov/sites/default/files/2022-03/ACF%20Fact%20Sheet_ADA.pdf)
Drayage Truck Proposal
Considerations

• Impacts to disadvantaged communities
  • Intermodal seaports and railyards under the current Drayage Truck Regulation are all located within ~1 mile of a disadvantaged community

• Existing Drayage Truck Requirements
  • Sunsets December 31, 2022
  • Trucks will have to meet 2010 MY (model year) engine standards beginning in 2023
Drayage Truck Proposal Requirements (Part of Advanced Clean Fleets)

• Transition all Class 7 and 8 drayage trucks operating at California’s intermodal seaports or railyards to full zero-emission by 2035

• After January 1, 2024, only zero-emission trucks are eligible to be added to the CARB online system

• Trucks must visit a California seaport or railyard at least once each calendar year to remain in the CARB online system

• Seaport and railyard reporting requirements
Timeline for Transitioning Drayage Trucks to Zero-Emission

Proposed Requirements and Compliance Deadlines
The proposed Advanced Clean Fleet Regulation contains the following requirements and compliance deadlines for drayage trucks.

**2023**
- Drayage trucks that are not zero-emission (ZE), with a 2010 or newer engine model year, can register in the CARB Online System.

**2024**
- Trucks previously registered with CARB prior to 2023 will be grandfathered into the new system.
- Only zero-emission vehicles (ZEVs) can register in the CARB Online System.
- Non ZE drayage trucks must visit a regulated seaport or intermodal railyard at least once each calendar year, to remain in the CARB Online System (annual visit requirement).

**2025**
- Non-ZEV reporting and additional compliance requirements
- Trucks 12 years and older must report their odometer mileage.
- Non-compliant drayage trucks will be removed from the CARB Online System by March 31st of each calendar year.
- Non-compliant drayage trucks include:
  - Vehicles that have met their minimum useful life*.
  - Vehicles that have not met their annual visit requirement.

**2035**
- All drayage trucks must be equipped with and operate a zero-emission powertrain.
- Full transition to ZE drayage trucks

*Minimum Useful Life: The later of thirteen years from engine certification or 800,000 miles traveled or 18 years from engine certification (whichever comes earlier of the later two). For example, a drayage truck with a 2012 certified engine will begin annually reporting odometer mileage in 2024. If that truck has not exceeded 800,000 miles traveled by 2025, it can remain in the CARB Online System. That truck would then be removed from the system after it first reaches either 800,000 miles traveled or 18 years. If the truck reached 800,000 miles traveled before 2025, it will be removed from the system by March 31st of that year.
Locomotives
16

**Railyard**

- **Locomotives**
  - Turn over older engines
  - Reduce idling
  - Limit remanufacturing

- **Cargo Handling Equipment**
  - Transitioning to ZE

- **Forklifts**
  - Transitioning to ZE

- **Drayage Trucks**
  - Transitioning to ZE

- **Truck Fleets**
  - Transitioning to ZE

- **TRUs**
  - Transitioning to ZE

[Diagram of rail yard with various transportation vehicles and arrows indicating transition to ZE technologies.]
## Draft Truck vs Train Emissions Analysis

<table>
<thead>
<tr>
<th></th>
<th>Total PM$_{2.5}$ Emissions in Communities within 20 Miles of the Ports</th>
<th>Total NO$_x$ Emissions in Communities within 20 Miles of the Ports</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2020</td>
<td>2030</td>
</tr>
<tr>
<td>Trucks</td>
<td>0.50</td>
<td>0.23</td>
</tr>
<tr>
<td>Typical trains</td>
<td>1.10</td>
<td>0.91</td>
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<tr>
<td>Tier 4 &amp; 5 (Tier 4)</td>
<td>0.12</td>
<td>0.12</td>
</tr>
<tr>
<td>Tier 4 &amp; 5 (Tier 5)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

All emissions are in pounds.
Draft In-Use Locomotive Regulation

- Establish a Spending Account
- Impose In-Use Operational Requirements
- Eliminate unnecessary idling
- District level reporting and recordkeeping
Locomotive Regulation Timeline

- **March/April 2023**: 2nd Board Hearing
  - November 2023
    - Historic Locomotive Low Use Exemptions
    - Alternative Compliance Plans (ACP)
    - Hardship Extensions

- **January 2026 – 2027**: Tech Feasibility Report #1

- **January 2023**: Railroads Start Tracking MWhs
- **October 2023**: Effective Date

- **January 1, 2024**: Reporting Begins

- **January 2031-2032**: Tech Feasibility Report #2

- **January 1, 2030+**: In-Use Operational Requirements Waivers

- **July 1, 2024+**: Annual Reporting & Administrative Payment July 1 2024+

- **In-Use Operational Waivers 2030+**

- **Alternative Compliance Plans & Hardship Extensions 2023+ (3 to 5-year increments)**
Transport Refrigeration Units (TRU)
Transport Refrigeration Units (TRU)

• Used to control the environment of temperature-sensitive products transported in trucks, trailers, railcars, or shipping containers
• Existing regulation requires TRU owners to upgrade to cleaner equipment over time
  • Most TRUs are still diesel-powered
• Staff are developing two rulemakings to transition diesel-powered TRUs to zero-emission

https://ww2.arb.ca.gov/our-work/programs/transport-refrigeration-unit
Part 1: Zero-Emission Truck TRUs
Adopted in February 2022

• Key Elements
  • Zero-emission truck TRUs
  • PM standard for newly-manufactured non-truck TRU engines
  • Lower global warming potential refrigerant

• Next Steps
  • U.S. EPA authorization
  • Implementation
Non-Truck TRUs

- Domestic Shipping Container TRU
- TRU Generator Set
- Trailer TRU
- Railcar TRU
Part 2: Zero-Emission Non-Truck TRUs

- Zero-emission Technology Assessment
  - Workshop - May 17th
  - Publish 2022
- Second rulemaking
  - Outreach begins - 2022
  - 1st Board hearing - 2025
Other Freight Activities
Ocean-Going Vessels (OGV)

- CARB has two regulations addressing OGVs
  - At-Berth Regulation
  - Clean Fuels Regulation
- OGVs are challenging to regulate
- CARB is assessing a regulation for OGVs in transit

Fact Sheet – At-Berth: https://ww2.arb.ca.gov/sites/default/files/2020-08/External%20At-Berth%20Fact%20Sheet%20August%202020%20ADA_0.pdf
Fact Sheet – Clean Fuels: https://ww2.arb.ca.gov/sites/default/files/2020-10/marine_notice_2020-2_final_ADA.pdf
Commercial Harbor Craft (CHC)

- CHC includes a wide range of vessels, barges, and dredges
- Proposed regulation amendments adopted early 2022
- New amendments take effect 2023

Fact Sheet: https://ww2.arb.ca.gov/news/carb-passes-amendments-commercial-harbor-craft-regulation
Cargo Handling Equipment (CHE)

- Equipment used at seaports and railyards to move containers and freight
- 2011 amendments established accelerated turnover requirements
- Proposed regulation will transition ports and railyards to 100% zero-emission

Fact Sheet: https://ww2.arb.ca.gov/resources/documents/cargo-handling-equipment-regulation-transition-zero-emissions
CEQA Review

• Comment on freight-related projects such as warehouses, ports and railyards

• Suggested mitigation measures include:
  • Zero-emissions infrastructure
  • Plug-in capable TRUs
  • Zero-emission service equipment
  • Expedite transition to zero-emission vehicles
Questions?
Federal Mobile Sources Update

Mobile Source and Climate Impacts Committee Meeting
July 28, 2022

Alan Abbs
Legislative Officer
aabbs@baaqmd.gov
Presentation Outcome

Staff will provide an update on current federal regulatory activities related to mobile sources.
Presentation Outline

• New Heavy-Duty Engine and Vehicle Standards
• Regulations for Emissions from Aircraft Engines
• Regulations for Lead Emissions from Aircraft
• Advanced Clean Car Program
Presentation Requested Action

None; informational only.
Heavy-Duty Truck Rule

• On March 28, 2022, the U.S. Environmental Protection Agency (EPA) published proposed rule: Control of Air Pollution from New Motor Vehicles: Heavy-Duty Engine and Vehicle Standards.

• Proposes stronger nitrogen oxide (NOx) and greenhouse gas (GHG) standards to reduce pollution from heavy-duty vehicles and engines starting in MY 2027.

• Consistent with President Biden’s Executive Order 14037.

• EPA intends to finalize this proposal before the end of 2022.
Emissions from Aircraft Engines

• On February 3, 2022, EPA published proposed rule: *Control of Air Pollution From Aircraft Engines: Emission Standards and Test Procedures*.

• Equivalent to the engine standards adopted by the United Nations’ International Civil Aviation Organization (ICAO) in 2017 and 2020 and would apply to both new type design aircraft engines and in-production aircraft engines.

• Scheduled public hearing pending.
Lead Emissions from Aircraft

• EPA is now evaluating, under the Clean Air Act, whether emissions of lead from piston-engine aircraft cause or contribute to air pollution that endangers public health or welfare – this action is collectively referred to as the “endangerment finding.”

• EPA plans to issue a proposed endangerment finding in 2022 for public review and comment and issue any final endangerment finding in 2023.
Advanced Clean Cars Program

• On April 28, 2021, the EPA solicited public input on reconsideration of its 2019 action withdrawing a 2013 Clean Air Act (CAA) waiver of preemption for California’s GHG emission standards and zero-emission vehicle (ZEV) sale mandate, which are part of California’s Advanced Clean Car (ACC) program.

• On March 14, 2022, the EPA issued a Notice of Decision that rescinds its 2019 action. This means that the CAA waiver granted to California to implement its ACC program in 2013 is back in force.

• Consistent with President Biden’s Executive Order 13990.
Questions / Discussion