Vision for Zero Emission Transportation

Public Workshop Series to Commence Development of the 2022 Scoping Plan Update

June 10, 2021
Clean Air Goals

2023: South Coast & SJV Ozone

2030: GHG 40 percent below 1990

2037: South Coast & SJV Ozone

2050: GHG 80 percent below 1990

2024/25: South Coast & SJV PM2.5

2031: South Coast & SJV Ozone

2045: Carbon Neutrality

AB 617 Communities
California Mobile Source Contribution

- 40% · Transportation
- 21% · Industrial
- 15% · Electric Power
- 10% · Commercial & Residential
- 7% · Agriculture
- 5% · High-GWP
- 2% · Waste

- 76% · Mobile
- 19% · Stationary
- 5% · Areawide

425.3 MMT CO₂e
2018 TOTAL CA EMISSIONS

1,110 tpd of NOx
2020 CA NOx Emissions
Executive Order N-79-20

100% ZEV sales by 2035

Full transition to ZEV short-haul/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
2020 Mobile Source Strategy

- Builds on 2016 Mobile Source Strategy
- Conceptual scenario approach
- Identifies technology mixes needed to meet toxics, air quality and climate targets
- Reflects Governor’s recent ZEV EO
- Informs policy development
Community Focus

- Low-income communities and people of color are disproportionately affected by both mobile and stationary source pollution.
- Communities seek rapid transition to zero-emissions technology in and near communities.
Technology Mixes in a Nutshell

**Passenger Vehicles:** 100% ZEV and PHEV sales in 2035, along with ~25% reduction in statewide VMT per capita by 2035 relative to 2005.

**Heavy Duty Vehicles:** 100% CA fleet purchases being ZEV starting in 2035 combined with cleaner combustion (Omnibus, HD I/M, EPA CTI) in near term.

**Smaller Off-Road (e.g., forklifts, TRU, SORE):** Full transition to zero-emission by 2035 for most off-road sectors with smaller engines.

**Heavier Off-Road (e.g., marine, construction, locomotive):** Zero-emission wherever feasible, and cleaner combustion engines along with low-carbon fuels in hard-to-electrify sectors.
California’s Clean Car Future

- 2025: 2 million ZEVs + 1 million PHEVs
- 2030: 5.7 million ZEVs + 2.3 million PHEVs
- 2045: 23 million ZEVs + 5 million PHEVs

100% ZEV & PHEV Sales
Future of California’s Heavy Duty Trucks

2030: 172 thousand ZEVs, 149 thousand Clean Combustion
2035: 361 thousand ZEVs, 243 thousand Clean Combustion
2045: 828 thousand ZEVs, 243 thousand Clean Combustion

Statewide Heavy Duty Vehicle Population (Thousands)

- Zero Emissions Trucks
  - Battery-Electric & Hydrogen Fuel Cell Electric
- Internal Combustion Engines
  - 2010 Technology
- Clean Combustion & Low NOx Certified Trucks

CARB
Beyond ZEVs: The Need to Reduce VMT

- Complete communities lead to better public health outcomes
- Conversion of natural and working lands for development impedes California’s ability to store carbon
- Lack of affordable housing and transportation options reinforces racial and economic injustices and lengthens commutes
- Even under EO N-79-20, 30 percent of cars will still burn gasoline in 2045
- Getting cars off the road reduces congestion
Need for Zero-Emission Infrastructure Planning

- A reliable infrastructure system is essential for zero emission technologies to achieve widespread growth
- Infrastructure needs, charging standards/connections, and power capacity needs vary widely, and are under various stages of development by source category
- Collaborate and engage facilities, utilities, and other agencies in zero-emission planning discussions
### Potential Statewide Benefits

**2020 Mobile Source Strategy**

<table>
<thead>
<tr>
<th>Diesel PM Emissions</th>
<th>NO\textsubscript{X} Emissions</th>
<th>GHG Emissions*</th>
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<tbody>
<tr>
<td>2031 66% below 2017</td>
<td>2031 75% below 2017</td>
<td>2037 82% below 2017</td>
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- **85 percent** of passenger cars ZEV & PHEV in 2045
- **77 percent** of heavy-duty fleet ZEVs in 2045

*well-to-wheel, excluding aviation
Evolution of a Concept

Concept
Measure
Regulation / Program
Emissions Reductions

2020 Mobile Sources Strategy

5-10 years
We have ambitions for a future with

- Zero emission technologies
- Sustainable transportation & healthy communities
- Carbon neutrality, with 100% clean electricity by 2045
Contacts and Resources

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Resources


California Greenhouse Gas Emissions Inventory: https://ww2.arb.ca.gov/our-work/programs/ghg-inventory-program