Overview of Governor’s Executive Order

Board of Directors Special Meeting
October 21, 2020

Damian Breen, Deputy Air Pollution Control Officer Technology
Overview

• Governor’s Executive Order N-79-20 Highlights

• Intersection with Air District Programs

• Market and Technology Status

• Challenges and Opportunities
Executive Order Highlights

- Zero Emissions Vehicles (ZEV) and Infrastructure
- Transit and Infrastructure
- Workforce Transition
- Transition Away from Fossil Fuels
Executive Order Highlights

- Passenger car and light-duty truck sales will be 100% zero-emission by 2035
- Drayage trucks operations will be 100% zero-emission by 2035 where feasible
- Off-road vehicles and equipment will be 100% zero-emission by 2035 where feasible
- Medium- and heavy-duty truck and bus operations will be 100% zero-emission by 2045 where feasible
- California Air Resources Board (CARB) will develop rules consistent with State and Federal law, considering technological feasibility and cost effectiveness
Executive Order Highlights

- Develop a ZEV Market Development Strategy by January 31, 2021
- Ensure new and used ZEVs are available to all Californians
- Accelerate deployment of affordable fueling infrastructure, focusing on low-income and disadvantaged areas
- Perform biannual assessments of infrastructure to support ZEV adoption
Executive Order Highlights

- Where feasible, build towards an integrated statewide rail and transit network to provide seamless and multimodal transportation for all, including:
  - Bicycle, pedestrian, and micro transit improvements
  - Focus on disadvantaged communities

- Consider ZEV and other infrastructure as part of building projects where appropriate
• Develop a “Just Transition Roadmap” by July 15, 2021, which will focus on a transition away from fossil fuels to achieve carbon neutrality by 2045
Executive Order Highlights

- Expedite regulations to repurpose and transition upstream and downstream oil production facilities
- As part of regulatory action, take into consideration community and labor participation, and protect public health, safety, and the environment
- Develop an action plan by July 15, 2021
- CARB to propose strategies to continue to reduce carbon intensity of fuels beyond 2030
Executive Order Highlights

- Develop strategies to remediate and expedite closure of oil extraction sites by July 15, 2021
- Enforce requirements, so oil extractors are responsible for site clean up
- Propose strengthened health and safety rules that protect the public and workers from the impacts of oil extraction activities
Legend:

Country/regional, ban sales of gasoline/diesel vehicles
- By 2025
- By 2040
- By 2030
- TBD

Country/regional, all zero emission vehicles
- By 2050

State, reduce petroleum consumption by 50%
- By 2030

City, diesel vehicle ban
- 2018-2025

C40 cities with pledges for zero emissions
- By 2030
Intersection with Air District Programs

- Climate Strategy
- Equity and Assembly Bill (AB) 617 Programs
- Grants and Incentives
- Technology Implementation Office
- Permitting and Enforcement
- Strategic Partnerships
Equity and AB 617 Programs

- Disproportionate health impacts along transportation corridors and near high-emission sources
- Diesel PM is a contributing factor to health impacts in every community
- Mobile sources account for 45 percent of exposure disparity for the Black populations, and 37 percent of exposure disparity for people in disadvantaged communities
- West Oakland Community Emissions Reductions Plan identifies suite of strategies to deploy ZEVs
- AB 617 Grant funds currently targeted at Diesel PM reductions
Grants and Incentives

- Clean Air Vehicles & Equipment
  - Light-duty fleet vehicles & infrastructure
  - Med- & heavy-duty trucks & buses
  - Shorepower & freight handling equipment
  - Caltrain electrification

- Alternative Transportation
  - Shuttle & Rideshare
  - Shared Autonomous Vehicles
  - Bikeways
  - Bicycle parking

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Bay Area Air Quality Management District
Grants & Incentives – Clean Cars for All

Low-income residents* in communities disproportionately burdened by pollution** who turn in older vehicle

Advanced Technology
• Purchase or lease
• Hybrid, plug-in hybrid, electric vehicle, fuel cell electric vehicle
• Home charger or portable charger and public charging for plug-in and electric vehicles

Mobility Options
• Public Transit Card (PEX Visa)
  • Clipper, bike sharing
• Electric bicycles and carsharing (future options)

* ≤400% Federal Poverty Level
** CalEnviroScreen 3.0
Technology Implementation Office

- 4,000 residential battery systems
- 100 battery-boosted EV fast chargers
- 10 all-hydrogen fuel cell ferries
- 150 renewable microgrids on municipal buildings
- 60 road plates generating electricity
- 2,600,000 tons of aggregate in concrete

Total Greenhouse Gas Reductions: 500,000 MTCO₂
Timeframe: 5 years
Permitting and Enforcement

• Off-Road Equipment
• Changes to Oil Production Facilities
• Changes to Petroleum Refineries
• Enforcement of ARB Regulations
Strategic Partnerships

- State Agencies
- Regional Partners
- Transit Agencies
- Communities
- Industry Groups
• Airport Shuttles – 100% ZEV by 2035

• Trucks – ZEV sales by 2035:
  o 55% of Class 2b – 3, 75% of Class 4 – 8, and 40% of tractors

• Shorepower – Ocean Going Vessels at Berth
  o Container, reefer, and cruise vessels: 2023, Auto carrier: 2025; Tanker vessels: 2025 (Los Angeles and Long Beach) and 2027 (Northern California)

• Transit buses – 100% new purchases ZEV by 2029

• Passenger Cars and Light Duty Trucks – ZEV “Credits” – 8% of Sales by 2025
"Between 2020 and 2030, EVs will become cheaper to own than ICE cars on an unsubsidized basis" - Bloomberg
Market and Technology Status
Light-Duty Vehicles

Number of EVs Registered in Bay Area by Year (Cumulative)

- **2019 Bay Area Vehicle Statistics**
  - **EVs:** 203,260
  - **All Cars:** 5,465,494
The 9,500 public charging ports are located across a total of 1,923 charging station locations.
Market and Technology Status
Trucks and Buses

• Four (4) largest Truck Manufactures in USA bringing ZEV to market in 2022 timeframe

• Both Battery and Hydrogen Drive trains being explored

• 149 different vehicle types eligible for State Heavy Duty Voucher

• Commitments by delivery companies to go “carbon neutral”
Market and Technology Status
Off-road Vehicles and Equipment

• Most challenging
  o Construction and grading
  o Cargo handling
  o Agriculture
  o Backup Power
  o Water Pumps
  o Rail?
  o Aviation?

• New Technologies emerging but significantly more work needed
<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
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</table>
| Light-Duty Cars & Fueling Stations | >1,600 cars  
>5,000 charging stations  
Bike Sharing  
Car Sharing  
Shared autonomous vehicles |
| Shared & Connected Vehicles    | >300 Medium & Heavy-Duty Vehicles |
| On-Road Trucks and Buses       | ~160 cargo handling & airport ground support equipment  
Caltrain  
>250 Lawn & Garden |
| Off-Road & Rail                | 14 Berths at Port of Oakland |
| Shore Power                    |  
>50 residential electric heat pumps |
| Wood Smoke                     |  
Wood Smoke |
Challenges and Opportunities

**Challenges**
- California’s Legal Standing
- Cost - $15 to $30 billion over next five (5) years
- Grid and Power Issues

**Opportunities**
- Technology Coming into Market Quickly
- Green Jobs and Economy
- Possibility of Federal Stimulus