2022 AQMP Mobile Source Working Group Meeting

December 16, 2020

Cleaning The Air That We Breathe...
1. Welcome and Introductions
2. Introduction to 2022 AQMP Mobile Source Working Groups
3. An Overview of CARB’s Mobile Source Strategies
4. Update on South Coast AQMD Facility-Based Mobile Source Measures
5. Zero Emissions Charging Infrastructure
6. Open Discussion
7. Closing Remarks
Agenda Item #1

Welcome and Introductions
Agenda Item #2

Introduction to 2022 AQMP Mobile Source Working Groups
Background – 2015 Ozone Standard

- In 2015, the U.S. EPA strengthened the National Ambient Air Quality Standards (NAAQS) for ozone to 70 parts per billion (ppb)
- Nonattainment classifications for South Coast Air Basin and Coachella Valley

<table>
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<tr>
<th>Standard</th>
<th>Level</th>
<th>South Coast Classification</th>
<th>Coachella Valley Classification</th>
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<td>1979 1-hour Ozone</td>
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<td>Attainment</td>
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*Voluntary reclassification from severe to extreme in July 2019
## Key SIP Elements and Due Dates for 2015 Ozone Standard

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<td>Attainment Demonstration</td>
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Section 185 Fee Program (Failure to attain)

2022 AQMP
2037 Attainment Carrying Capacity

- 2016 AQMP modeling indicated that 70 ppb carrying capacity was approximately 70 TPD
- Final carrying capacity to reflect updated emissions inventory and modeling as well as recent ozone air quality trends
- Working hypothesis of 70-75 TPD used to develop control strategies
- New carrying capacity is expected to be in 55-85 TPD range
2037 Attainment Working Draft

Baseline SCAB NOx Emissions (tpd): 0.0 - 300.0

- Stationary and Area
- Cars/Light-Duty Trucks/SUVs/Motorcycles
- Medium-Duty & Heavy-Duty Gas Trucks
- Heavy-Duty Diesel Vehicles
- Aircraft
- Locomotives
- Ocean Going Vessels
- Commercial Harbor Craft
- Recreational Boats
- Off-Road Equipment and Vehicles
- Carrying Capacity

Carrying Capacity: 55-85 tpd
Overall Control Approach for Attaining 2015 Ozone Standard

- Extensive transition to cleanest feasible technologies in mobile and stationary sources
- Regulatory measures; Incentive programs
- Eliminate/minimize reliance on 182(e)(5) measures
- Seek legislative authority where applicable
- Seek new sources of funding for new/existing incentive programs
- Work closely with state and local governments to maximize reductions from residential and commercial buildings
2022 AQMP Control Measures

• CARB’s Updated SIP State Strategy for South Coast Air Basin
  • Mobile Sources
  • Consumer Products
• South Coast AQMD Control Measures
  • Stationary Sources
  • Mobile Sources
• SCAG’s 2020 Regional Transportation Plan (RTP)/Sustainable Communities Strategy (SCS) and Transportation Control Measures (TCM)
**Legal Authority and Responsibility**

- **Federal**
  - Federal Sources
    - (Aircraft, OGVs, Locomotives)

- **State**
  - CARB SIP Strategy
    - (Mobile Source – On-Road Vehicles and Off-Road Equipment, and Consumer Products)

- **Regional**
  - South Coast AQMD
    - (Stationary and Local Mobile Source Control Strategy)
  - SCAG
    - (Regional Transportation Plan and Transportation Control Measures)

- In 2018, 84% of NOx comes from mobile sources
Mobile Source Measure Development

- Scenarios & Programmatic Concepts
- Technology mixes needed for attainment

2020 Mobile Source Strategy

- CARB State SIP Strategy
- South Coast AQMD Mobile Source Measures

SIP Measures

- Inclusion of State Measures / Commitments in the AQMP

2022 AQMP
2022 AQMP Mobile Source Working Groups

- Four targeted categories:
  - Ocean Going Vessels
  - Aircraft
  - Trucks
  - Construction & Industrial Equipment

- January/February 2021: Kickoff meetings with meetings monthly or every other month
- June/August 2021: Draft/final control measures

For other mobile source categories, ongoing public engagement processes conducted by CARB and/or South Coast AQMD will be relied upon (e.g., locomotives)
2022 AQMP Overall Schedule

Preliminary 2018 emissions inventory
January 2020

Draft control measures
June/August 2021

Release Draft AQMP
Late Fall 2021

CARB Board Hearing
July 2022

April 2021
Updated base and future emissions inventory

June/August 2021
Carrying Capacity

June 2022
South Coast AQMD Board Hearing

August 3, 2022
70 ppb Ozone SIP due to EPA

Mobile Source Working Groups
December 2020 – June/August 2021
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Agenda Item # 3
An Overview of CARB’s Mobile Source Strategies
2022 AQMP Mobile Source Working Group

December 16, 2020
Importance of Mobile Source Emissions

**NOx (SCAB)**
- Off-Road Mobile: 37%
- Light Duty Vehicles: 17%
- Heavy Duty Vehicles: 27%
- Stationary: 12%
- Areawide: 3%

**GHG (Statewide)**
- Other Sectors (industrial, electricity generation, etc.): 59%
- Light Duty Vehicles: 28%
- Medium Duty Vehicles: 2%
- Heavy Duty Vehicles: 7%
- Off-Road Mobile: 4%

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South Coast AQMD
Multiple Goals

- **2023**: South Coast & SJV Ozone
- **2024/25**: AB 617 Communities
- **2030**: GHG 40 percent below 1990
- **2031**: South Coast & SJV Ozone
- **2037**: South Coast & SJV Ozone
- **2045**: Carbon Neutrality
- **2050**: GHG 80 percent below 1990
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
Latest Adopted Regulatory Measures

- HD Vehicle Inspection Program (HDVIP)/Periodic Smoke Inspection Program (PSIP)
- Innovative Clean Transit (ICT)
- Ocean-Going Vessels At Berth
- HD Omnibus
- HD Engine Warranty
- Zero Emission (ZE) Airport Shuttle Bus
- Advanced Clean Trucks

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South Coast AQMD
Measures Under Development
Anticipated Adoption: 2021

- Zero Emissions Transport Refrigeration Unit
- Small Off-Road Engines
- Low-Emission Diesel
- Commercial Harbor Craft
- On Road Motorcycle
- Advanced Clean Fleets & ZE Drayage
Measures Under Development
Anticipated Adoption: 2021 – 2024

- **Heavy-Duty Inspection & Maintenance**
- **Locomotives and Railyards**
- **Cargo Handling Equipment**

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<td>Cargo Handling Equipment</td>
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<td>2022</td>
<td>Locomotives and Railyards</td>
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<tr>
<td>2023</td>
<td>Heavy-Duty Inspection &amp; Maintenance</td>
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<tr>
<td>2024</td>
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2020 Mobile Source Strategy Scenarios
2020 Mobile Source Strategy

• Builds on 2016 Mobile Source Strategy
• Conceptual scenario approach
• Identifies technology mixes needed to meet air quality and climate targets
• Meets SB 44 requirements & reflects Governor’s recent ZEV EO
• Informs policy development
Achieving Air Quality and Climate Goals Requires Multiple Tools

- Enhanced Enforcement
- End User Requirements
- Outreach & Education
- Facility Requirements
- Manufacturer Requirements
- Incentive Programs
- Infrastructure Development
On-Road Light-Duty Vehicles
On-Road Light-Duty Vehicles

- Light-duty vehicles (<8,500 lbs. GVWR) are 20% of South Coast mobile source NOx and 68% of GHG emissions Statewide

- **Strategies** for on-road light-duty vehicles (LDVs) include:
  - Enhanced LEV and ZEV regulations through Advanced Clean Cars II for model year 2025 and newer
  - Clean Miles Standard (SB 1014)
  - VMT Reduction
  - Clean Fuels
On-Road Light-Duty Scenario

- ICE (with HEV)
- PHEV
- BEV
- FCEV

8M ZEV + PHEVs*

85% of On-Road Fleet

100% ZEV + PHEV Sales

* ~28% of on-road fleet

Statewide Vehicle Population (millions)
On-Road Light-Duty NOx in South Coast

- MSS – Accelerated Turnover
- MSS 2020
- Baseline

- 6 tpd (36%) in 2031
- 8 tpd (57%) in 2037
On-Road Medium and Heavy-Duty Vehicles
On-Road Medium-Duty Vehicles

- Medium-duty vehicles (8,501 – 14,000 lbs. GVWR) are 5% of mobile source NOx in South Coast and 5% of GHG emissions Statewide.

- **Strategies** for medium-duty vehicles (MDVs) include:
  - Zero-emission technology transformation starting in 2024
    - Advanced Clean Trucks – adopted in June 2020
    - Advanced Clean Fleets – expected in late 2021
  - Enhanced LEV regulations through ACC II
  - Continued energy efficiency improvements (e.g., Phase 3)
Medium-Duty Vehicles Scenario

- 100% of sales are zero emissions vehicles (ZEVs) in 2035
On-Road Medium-Duty in South Coast

- The scenario will result in NOx emissions that are 1 and 11 percent lower from the current baseline in 2031 and 2037, respectively.

![Graph showing NOx emissions over time with 0.1 tpd (2%) in 2031 and 0.3 tpd (16%) in 2037 compared to baseline.]

CARB
On-Road Heavy-Duty Vehicles

- Heavy-duty vehicles (above 14,000 lbs. GVWR) are 32% of mobile source NOx in South Coast and 16% of statewide mobile source GHG emissions

- **Strategies** for heavy-duty vehicles (HDVs) include:
  - Zero-emission technology starting in 2024
    - Advanced Clean Trucks (ACT) – adopted
    - Advanced Clean Fleets and ZE Drayage – expected in late 2021
  - Cleaner combustion (i.e., HD Omnibus) – adopted
  - HD Inspection & Maintenance – expected in late 2021
  - Continued energy efficiency improvements
  - Use of renewable fuels
Heavy-Duty ZEV Phase-In Assumptions

- 100% ZEV CA fleet purchases by 2035
- **Delivery and drayage fleets:**
  100 percent ZEV sales starting with model year 2024
- **Vehicle categories with low annual mileage or return-to-base operation:**
  Similar phase-in schedule as the innovative clean transit regulation
- **Other vocational and tractor vehicle categories:**
  ZEV phase-in matches ACT requirements until model year 2030, after which ZEV sales assumptions ramp up to 100 percent sales in 2035
On-Road Heavy-Duty Scenario

HD Omnibus & Fed. 0.02 g
HD ZEV (w/Accelerated Turnover)

20% 27% 22%
24% 48% 77%

2031 2037 2045

CA-Cert.: Omnibus
Accelerated Turnover to ZEVs
MY 2024+ HD ZEVs

Federal Cert.: 0.02 g

On-Road HD
On-Road Heavy-Duty NOx in South Coast

- MSS 2020 - No Accelerated Turnover
- MSS 2020 - With Accelerated Turnover
- Baseline

*These numbers include reductions from HD Omnibus and ACT regulations. The two regulations result in 14.2 tpd of NOx reduction in South Coast air basin by 2037.
Off-Road Vehicles and Equipment
Off-Road Sector

- Off-road NOx contribution in South Coast
  - 37% in 2017
  - 44% in 2022, surpassing on-road as the largest contributor

South Coast NOx Emission Distribution in 2017

- On-Road
  - 48%
- Stationary & Area
  - 15%
- Construction
  - 10%
- OGV
  - 100 nm
  - 9%
- PERP
  - 3%
- Trains
  - 4%
- Aircraft
  - 4%
- TRU Ag
  - 2%
- CHC CHE
  - 2%
- Pleasure Craft
  - 2%
- SORE
  - 2%
Guiding Principles for Off-Road Control Strategies

- Zero Emission Wherever feasible
- Cleaner Combustion Technology
- Accelerated Turnover
- Hybridization & Renewable Fuels
Ocean-Going Vessels (OGVs)

- **Emissions Contribution:** 20 percent of mobile source NOx in 2037
- **Adopted Rule:** Expansion of at-berth rule to cover more vessel types resulting in 2.8 tpd of NOx in South Coast air basin by 2037
- **MSS Scenario:** Address transit, anchorage and maneuvering emissions
  - Replace Tier 0/1/2 visits with Tier 3 or retrofitted Tier 2 visits by 2031
  - Introduce Tier 4 marine standards in 2028

![Graph showing SC NOx Emissions from All OGV Modes: MSS Scenario](image-url)
Aircraft

- **Emissions Contribution**: 11 percent of mobile source NOx in 2037
- U.S. EPA standards are technology-following and not stringent enough
- **MSS Scenario**:
  - Operational efficiency improvement: de-rated take-offs, reduce power/time during taxiing
  - Transition to zero emission auxiliary power units (APUs)

SC NOx Emissions from Aircraft

- 5 tpd NOx reduction in 2037
**Locomotives**

- **Emissions Contribution:** 7 percent of mobile source NOx in 2037
- CARB is developing regulatory concepts to reduce emissions from locomotives
- **MSS Scenario:**
  - Tier 5 locomotive standard in 2028
  - Accelerated turnover of all line-hauls to Tier 4/5
  - Replace Tier 0/0+ switchers in railyards with Tier 4/5 by 2030

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**Off-Road – Federal & International Sources**

SC Locomotive Energy Use: MSS Scenario

SC NOx Emissions from Locomotives: MSS Scenario

**Tier 4 only accounts for 4% of loco activity in 2018**
**Small Off-Road Engines (SORE)**

- **Emissions Contribution:** 8 percent of mobile source NOx in 2037, and a significant source of statewide ROG emissions
- CARB is pursuing regulatory measures toward full electrification
- **MSS Scenario:** all new sales will be zero-emission starting in 2025 (except for federal preempted equipment)

*SC ROG & NOx Emissions from SORE*

- 40 tpd ROG & NOx reduction in 2037

*Lawn & Garden and Light Commercial only*
Transport Refrigeration Units (TRUs)

- **Emissions Contribution:** 6 percent of mobile source NOx in 2037
- **Rule Concepts:**
  - Transition diesel truck TRUs to zero emission
  - Stricter diesel PM standard for newly manufactured TRUs in the remaining categories
- **MSS Scenario:** Transition to zero emission TRUs from 10% in 2024 to 100% in 2033
Airport Ground Support Equipment (GSE) & Forklifts

- **Emissions Contribution**: 3 percent of mobile source NOx in 2037
- **MSS Scenario**: full electrification by 2034 for GSE and Forklifts
  - **GSE**: currently 34% electric
  - **Forklifts**: electrification more suitable for moderate/low lift capacity forklifts, lift capacity threshold under development

Off-Road – Zero-Emission

SC NOx Emissions from GSE

- SIP Baseline
- 0.65 tpd NOx reduction in 2037

SC NOx Emissions from Forklift

- SIP Baseline
- 4.6 tpd NOx reduction in 2037
Recreational Watercraft

- **Emissions Contribution**: 3 percent of mobile source NOx in 2037, and a significant source of statewide ROG emissions

- **MSS Scenario**: More stringent THC+NOx standards along with electrification of outboard engines (<19 kW) and personal watercraft
**Cargo Handling Equipment (CHE)**

- **Emission Contribution:** 2 percent of mobile source NOx in 2037
- Regulation being developed by CARB to reduce emissions from on-site seaport and intermodal railyard equipment
- **MSS Scenario:** begin transition to full electric operation in 2026

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**SC CHE Population: MSS Scenario**

- **Electric**
- Tier 4f
- Tier 4i
- Tier 3
- Tier 2
- Tier 1
- Tier 0

**SC CHE NOx Emissions: MSS Scenario**

- 1.24 tpd NOx reduction in 2037
- SIP Baseline

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**Off-Road – Zero-Emission**

CARB

South Coast AQMD
**Construction, Industrial & Mining**

- **Emission Contribution:** 10 percent of mobile source NOx in 2037
- **Current regulation** allows continued use of Tier 0 to Tier 2 indefinitely if meeting Fleet Average requirements
- **MSS Scenario:** full turnover of Tier 0/1/2 equipment by 2033

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*SC NOx Emissions from Construction: MSS Scenario*

- The 2020 MSS assumes Tier 5 implementation as early as 2028 for non-federally preempt equipment, and possibly in 2030 for preempt equipment. This will bring further emissions reduction in the construction sector.

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*Off-Road - Accelerated turnover*
Commercial Harbor Craft (CHC)

- **Emission Contribution:** 2 percent of mobile source NOx in 2037
- **Rule Concepts:**
  - Turn over all vessels except for commercial fishing to cleanest engines and retrofit with DPF
  - Hybridization for new excursion boats and tugs; zero-emission for short-run ferries starting in 2023
- **MSS Scenario:**
  - Introduce Tier 4 standard in 2024, and Tier 5 in 2027 for all vessels
  - Hybridization for all excursion boats and tugs; zero-emission for 20% ferries starting by 2030

SC NOx Emissions from CHC: MSS Scenario

- 3 tpd of NOx Reduction in 2037
Cleaner Off-Road Engine Standards

- **Off-Road Tier 5**
  - 50%-90% NOx & PM reduction from Tier 4F
  - Implementation from 2028 - 2030

- **Additional standards:** Off-Road on-board diagnostic (OBD) and GHG standards

![NOx Emission Reduction from Tier 5](image-url)

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<td>2050</td>
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**NOx Reduction (tpd)**

- Non-Preempt
- Preempt
Interagency Coordination on Infrastructure

- Zero-emission technology for both on- and off-road sectors requires streamlined infrastructure build-out
- Staff have been working with CEC, CPUC, and GoBiz throughout development of the 2020 MSS
- Results from the 2020 MSS are being incorporated into the CEC’s technical analysis for AB 2127 report
Potential Benefits

2020 Mobile Source Strategy

NO\textsubscript{x} Emissions

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<td>2031</td>
<td>73% below 2017</td>
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<td>2037</td>
<td>82% below 2017</td>
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Greenhouse Gas Emissions*

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<td>2045</td>
<td>76% below 2020</td>
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*well-to-wheel, excluding aviation

85 percent of passenger vehicles ZEV & PHEV in 2045

77 percent of heavy-duty fleet ZEVs in 2045

November 2020 Draft

CARB

South Coast AQMD
2037 NOx Reductions from MSS Concepts in South Coast Air Basin

Baseline MSS Control 2037

- Cars/Light-Duty Trucks/SUVs/Motorcycles
- Medium-Duty & Heavy-Duty Gas Trucks
- Heavy-Duty Diesel Vehicles
- Aircraft
- Locomotives
- Ocean Going Vessels
- Commercial Harbor Craft
- Recreational Boats
- Off-Road Equipment and Vehicles
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General inquiries on CARB’s 2020 Mobile Source Strategy
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Agenda Item #4

Update on Facility Based Mobile Source Measures
Facility Based Mobile Source Measures

- Aimed at reducing emissions from mobile sources associated with facilities (indirect sources)
  - E.g., trucks visiting warehouses or ports
- Governing Board established direction for 5 categories of FBMSMs
  - Airports
  - Ports
  - New/redevelopment
  - Warehouses
  - Rail yards

MOUs
Further research regulatory/non regulatory options
Regulations (Indirect Source Rules)
Memorandum of Understanding Approach

- Enforceable agreement to achieve emission reductions from implementation of clean air plans
- Emission reductions must meet criteria for SIP credit
  - Surplus
  - Quantifiable
  - Permanent
  - Enforceable
- South Coast AQMD backstops any shortfall
Regulatory Approach

- South Coast AQMD can create and enforce rules to regulate Indirect Sources
- Important considerations for ISR
  - Limits on legal authority (air district-state-federal, court decisions, preemption, etc.)
  - Implementation
    - Complicated relationships between facility owners, operators, cargo owners, truckers, etc.
    - Rule must be feasible for industry, and enforceable by air district
- Cost of regulation
  - Cleaner vehicles (purchase price, fuels, infrastructure, incentives, etc.)
  - Health impact on community from emissions

An “Indirect Source” is a facility that “attracts mobile sources”
• Develop MOU between SCAQMD and Ports of Los Angeles and Long Beach to achieve emission reductions

• Based on emission reduction benefits associated with implementation of Ports 2017 CAAP measures with initial focus on:
  • Clean Trucks Program
  • Cargo Handling Equipment Procurement Planning

• Potential new incentive programs for ocean-going vessels
Draft MOU Elements

1 - Drayage Trucks
   ▪ Implement Clean Trucks Program

2 - Cargo Handling Equipment (CHE)
   ▪ Accelerate Zero Emission (ZE) and Near Zero Emission (NZE) CHE deployment with a 100% ZE CHE goal by 2030

3 - Ocean-Going Vessels (OGV)
   ▪ Reduce OGV emissions through new and enhanced incentive programs: Vessel Speed Reduction, Green Ship Incentives and Clean Ship Program

4 - Harbor Craft
   ▪ Develop incentive program to upgrade harbor crafts with cleanest engines

5 - Locomotives
   ▪ Increase on-dock rail cargo moves to 35% and seek to utilize cleanest locomotives
Clean Trucks Program

- Only CAAP measure in the MOU with potential SIP creditable emission reductions in 2023
- Truck rate ($10/TEU) will be charged on trucks with loaded containers at port terminal gates
- Revenues collected will be used to fund truck replacements with clean trucks (zero and near-zero emission trucks)

Ports planned implementation of Clean Truck Program on hold due to COVID-19 pandemic
• MOU on hold as implementation of Clean Truck Program is uncertain
  • Ports cite to economic uncertainty as cargo volumes declined sharply Q1 2020
  • Cargo volumes have subsequently rebounded

• Will resume once pathway for the Clean Truck Program is clear
Airports

• Establish MOU between South Coast AQMD and each airport to achieve SIP-creditable emission reductions
• Covers five commercial airports in the region
Airports MOU Process

- Each airport developed an air quality improvement plan/measures (AQIP/AQIM)
- AQIP/AQIM includes strategies to reduce emissions from non-aircraft airport sources

**AQIP/AQIM**

**MOUs**

- South Coast AQMD developed a MOU with each commercial airport to reduce emissions
- MOUs are based on the airports’ SIP creditable AQIP/AQIM measures

**SIP Credits**

- South Coast AQMD to work with EPA to get SIP credits for AQIP/AQIM measures
- If emission reductions not fully achieved, South Coast AQMD covers the shortfall
AQIP/AQIM Measures

• Specific measures vary among airports, reflecting uniqueness of each airport
• Common measures for ground support equipment, airport-owned fleet, improvement in passenger traffic and infrastructure
• Performance targets for measures vary among airports
• Emission reduction benefits estimated for quantifiable measures
## Total NOx SIP Credits from SIP Creditable AQIP/AQIM Measures

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Airports – Current Status

• Governing Board adopted MOUs in December 2019
• Airports are implementing measures according to the MOUs
New Development and Redevelopment

- Staff directed to continue to develop rule concepts, timelines, cost and benefit estimates

- The Governing Board expressed key concerns about:
  - Types of projects affected (e.g. affordable housing projects)
  - Effects on real-estate prices
  - Job and economic impacts

- Based on Board direction staff:
  - Held additional Working Group meetings
  - Met with industry representatives and environmental groups
  - Reviewed data regarding composition of construction equipment fleets
  - Surveyed the Working Group on investigative approaches to identify emission reduction costs
New Development and Redevelopment

- Promising emission reduction strategies are being pursued by projects to mitigate CEQA-related air quality impacts
- As an early action, staff is considering voluntary CEQA mitigation programs, for example

**CEQA Air Quality Mitigation Fund**

Projects could voluntarily contribute to a SCAQMD fund that would be used to implement emission reduction projects to reduce a project’s regional and/or local impacts.

**Update SCAQMD CEQA Mitigation Guidelines**

Encourage net-zero developments, clean construction policies, installation of charging/fueling infrastructure, etc.
Warehouses

- Governing Board directed staff to pursue ISR
  - Staff also directed to conduct economic impact study of a potential rule
- Staff conducted extensive outreach to the warehouse industry to better understand the varied and complex business models within the industry

Warehouses have varying control over trucks visiting their facility

Variable relationship between cargo owners, warehouse operators, and warehouse owners
Warehouse ISR – Key Constraints

“We want a strong ISR, with zero emissions.”

“We warehouses don’t control trucks.”

Community

Truck Emissions Must Be Reduced

Industry

Air District Does Not Have Authority To Directly Regulate Private Trucks
Overview of Proposed Warehouse ISR

Requirements

Earn WAIRE Points Annually

Reporting

Applicability
- Owners and operators of warehouses >100,000 sf
- Owners are only subject to reporting, but they can voluntarily earn points
- Operators only leasing <50,000 sf for warehousing activities are just subject to limited reporting

Warehouse Actions and Investments to Reduce Emissions (WAIRE) Menu
- Mitigation Fee
- Custom WAIRE Plan
- Limited transferring/banking with early or over-compliance

Warehouse Operations Notification
- Initial Site Information Report
- Annual WAIRE Report
<table>
<thead>
<tr>
<th>Action/Investment</th>
<th>Action/Investment Details</th>
<th>Reporting Metric</th>
<th>Annualized Metric</th>
<th>WAIRE Points per Annualized Metric</th>
<th>Discounted WAIRE Points Subparagraph (d)(6)(A)</th>
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<tbody>
<tr>
<td><strong>Acquire ZE/NZE Trucks in Warehouse Operator Fleet</strong></td>
<td>ZE Class 8</td>
<td>Number of trucks</td>
<td>One truck acquired</td>
<td>126</td>
<td>126</td>
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<tr>
<td></td>
<td>ZE Class 4-7</td>
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<tr>
<td></td>
<td>ZE Class 2b-3</td>
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<tr>
<td></td>
<td>NZE Class 8</td>
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<td>55</td>
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<td>NZE Class 4-7</td>
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<tr>
<td><strong>ZE/NZE Truck Visits</strong></td>
<td>ZE Class 8</td>
<td>Number of visits</td>
<td>365 truck visits</td>
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<td>NZE Class 8</td>
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<td>NZE Class 4-7</td>
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<tr>
<td><strong>Acquire ZE Yard Truck</strong></td>
<td>Number of yard trucks</td>
<td>One yard truck acquired</td>
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<tr>
<td><strong>Use ZE Yard Truck</strong></td>
<td>Hours of use</td>
<td>1,000 hours</td>
<td>291</td>
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<tr>
<td><strong>Install Onsite ZE Charging or Fueling Infrastructure</strong></td>
<td>Level 5 EVSE Purchase</td>
<td>Number of EVSE purchased</td>
<td>One EVSE purchased</td>
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<tr>
<td></td>
<td>Level 4 EVSE Purchase</td>
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<td></td>
<td>Level 3 EVSE Purchase</td>
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<tr>
<td></td>
<td>Level 2 EVSE Purchase</td>
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<td>TRU Plug EVSE Purchase</td>
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<td>Begin construction on Level 3, 4, or 5 charger project</td>
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<tr>
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<td>Begin construction on Level 2 charger project</td>
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<td></td>
<td>Begin construction on TRU Plug project</td>
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<td>Finalize Level 3, 4, or 5 charger project</td>
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<td>Finalize Level 2 charger project</td>
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<td></td>
<td>Finalize TRU Plug project</td>
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<td></td>
<td>Hydrogen (H₂) Station</td>
<td>Daily capacity of station in kilograms (kg)</td>
<td>One 700 kg/day station construction project</td>
<td>1,680</td>
<td>1,680</td>
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<tr>
<td><strong>Use Onsite ZE Charging or Fueling Infrastructure</strong></td>
<td>Vehicle Charging</td>
<td>Kilowatt-hours (kWh) of dispensed electricity</td>
<td>165,000 kWh</td>
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<td>24</td>
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<td>TRU Charging</td>
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<td>10,658 kWh</td>
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<td>H₂ Station Usage</td>
<td>Kg of dispensed H₂</td>
<td>6,152 kg</td>
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<td>25</td>
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<td><strong>Install Onsite Solar Panels</strong></td>
<td>Rooftop</td>
<td>Size of system in kW</td>
<td>100 kW system</td>
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<td></td>
<td>Carport</td>
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<td><strong>Use Onsite Solar Panels</strong></td>
<td>Energy production in kWh</td>
<td>165,000 kWh</td>
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<tr>
<td><strong>Install High-Efficiency Filters or Filter Systems in Residences, Schools, Daycares, Hospitals, or Community Centers</strong></td>
<td>Install Stand-Alone System</td>
<td>Number of systems installed</td>
<td>25 systems</td>
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<td></td>
<td>Install Filters</td>
<td>Number of filters installed</td>
<td>200 filters</td>
<td>51</td>
<td>51</td>
</tr>
</tbody>
</table>
Additional Details on Warehouse ISR

• WAIRE Mitigation Program will be administered by South Coast AQMD and funded by warehouse operators choosing to pay mitigation fee
  • Program will provide incentivize funds for zero and near-zero emissions trucks and zero emissions charging/fueling infrastructure for the communities near the warehouse that paid the mitigation fee
• Compliance information reported by facilities will be made available publicly on South Coast AQMD website
• WAIRE Program Implementation Guidelines will accompany PR2305 and will provide additional details on compliance procedures
Rule Development Process

• Additional information available here:
  www.aqmd.gov/fbmsm and

• Board consideration anticipated late 1st quarter 2021
Railyards

- Proposed Indirect Source Rule (ISR) for Locomotives
  - CARB & South Coast AQMD jointly held community workshops to discuss concepts to reduce emissions from locomotives and railyards (Nov. & Dec. 2019)

### Differing Authorities

<table>
<thead>
<tr>
<th>Authority</th>
<th>Regulated Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>US EPA</td>
<td>Can regulate locomotive engine emission standards</td>
</tr>
<tr>
<td>CARB</td>
<td>Can regulate locomotive activities within California</td>
</tr>
<tr>
<td>South Coast</td>
<td>Indirect source authority</td>
</tr>
</tbody>
</table>
Railyard Proposed Concepts

CARB Concepts

1. Establish a Locomotive Emissions Reduction Spending Account
   ❖ Funding provided by railroads

2. In-Use Locomotive Remanufacture Limit
   ❖ Would allow only one remanufacture using older engine technologies

3. Adopt U.S. EPA 30 Minute Idling Limit
   ❖ Provide local enforceability

4. Genset Repurposing
   ❖ Replace older switchers at smaller railroads with cleaner, used switchers from BNSF/UP

South Coast AQMD Concepts

1. ISR to reduce exposures from locomotive maintenance and service emissions

2. Require facility-specific engineering plans for zero emissions operations

3. New incentive program focused on cleanest locomotive use over replacement

4. Evaluate new monitoring approaches for in-use locomotives
Railyard Next Steps

- CARB proceeding with rulemaking, planning on 2022 adoption
- South Coast AQMD targeting bringing rule to the Governing Board Summer 2021
Zero Emissions Charging Infrastructure

AGENDA ITEM #5
Background

- CARB Mobile Source Strategy ZE vehicles/equipment in South Coast:
  - Off-road: ~90,000 (mostly TRUs)
  - On-road: ~7,000,000 (LD), ~85,000 (MD), ~175,000 (HD)

- Four key fueling challenges for ZE vehicles/equipment
  1. Fueling locations (quantity, locations, plug standards, etc.)
  2. Fuel supply (adequate quantity, resiliency, electrical grid impacts, etc.)
  3. Fuel prices (cost relative to alternatives, price stability, etc.)
  4. Scaling up fueling infrastructure (customer vs. public needs, fuel type, etc.)
Many Statewide and Regional Entities Working on ZE Infrastructure

... and more
What is South Coast AQMD Doing to Improve the ZE Infrastructure Ecosystem?

- Developing Indirect Source Rules for Warehouses and Rail Yards that include specific components on ZE infrastructure
- Working with Energy Commission to develop energy demand forecast that includes ZE vehicles at a scale needed to meet air quality attainment standards
- Funding projects that include ZE infrastructure
- Address infrastructure needs in 2022 AQMP
Next Steps

- ZE infrastructure discussions included within mobile source working groups

- Separate working groups possible as part of 2022 AQMP development focusing solely on ZE infrastructure

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AQMPMobileSources@aqmd.gov

General inquiries on CARB’s 2020 Mobile Source Strategy
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