Proposed Rule 2306
Indirect Source Rule for
New Intermodal Facilities

Working Group Meeting

04/12/2022
10:00 am (PDT)
South Coast AQMD

Join Zoom Webinar Meeting - from PC or Laptop
https://scaqmd.zoom.us/j/98170661356
Zoom Webinar ID: 981 7066 1356
Teleconference Dial In +1 669 900 6833
AGENDA

Health Effects (by Dr. Nichole Quick, MD, MPH)
Recap of Previous Working Group Meetings
Summary of Comment Letters
ISR and Other Regulatory Authorities
ISR Considerations for SCIG and Colton
Next Steps/Staff Contacts
Open Discussion
Health Effects

Dr. Nichole Quick, MD, MPH
Criteria Pollutants

• Ozone, particulate matter (PM), carbon monoxide (CO), nitrogen dioxide (NOx), sulfur dioxide (SOx)

• Harmful to human health and the environment
Particulate Matter (PM)

- Sources of PM
  - Emitted directly: construction sites, unpaved roads, smokestacks, fires, vehicle exhaust
    - Directly emitted PM from diesel vehicles has a local effect
  
- Most fine particles form in the atmosphere as a result of complex reactions of chemicals (SOx, NOx)
  - PM formed in the atmosphere has a regional effect
Health Effects of PM

- Premature death in people with heart or lung disease
- Heart attacks, irregular heartbeat
- Aggravated asthma, decreased lung function
- Increased respiratory symptoms, such as irritation of the airways, coughing or difficulty breathing

https://www.epa.gov/pm-pollution/particulate-matter-pm-basics
Ozone

• Not emitted directly; created by chemical reactions between NOx and volatile organic compounds (VOC) in the presence of sunlight

• Pollutants emitted by heavy duty vehicles, ships, locomotives, cars, power plants, industrial boilers, refineries, chemical plants, and other sources

https://www.epa.gov/ground-level-ozone-pollution/health-effects-ozone-pollution
Health Effects of Ozone

• Inflames and damages the airways

• Coughing, sore throat

• Makes lungs more susceptible to infection

• Aggravates lung diseases such as asthma, emphysema, and chronic bronchitis

• Increases the frequency of asthma attacks

https://www.epa.gov/ground-level-ozone-pollution/health-effects-ozone-pollution
Key Data Sources for Health Effects

• Local data
  • Academic studies
  • CARB – Health Risk Assessments

• Data compilations/tools
  • US EPA – Integrated Science Assessments
  • South Coast AQMD – Air Quality Management Plan
  • California EPA – CalEnviroScreen
US EPA Studies

• Integrated Science Assessment for Particulate Matter

• Integrated Science Assessment (ISA) is a comprehensive evaluation and synthesis of policy-relevant science aimed at characterizing exposures to ambient particulate matter (PM), and health and welfare effects associated with these exposures
  • December 2019
    • Draft Supplement September 2021
CARB Studies

• CARB is charged with protecting the public from the harmful effects of air pollution and developing programs and actions to fight climate change

• Numerous health risk and impact assessments
  • Lifetime cancer risk
  • Railyard Health Risk Assessments
    • Health impacts from diesel exhaust in West Oakland: 2005
• Example: A Public Health Assessment of Residential Proximity to a Goods Movement Railyard

• Loma Linda University

• After adjusting for relevant confounders, a higher prevalence of adverse respiratory health outcomes in the school near the rail yard remained
CalEnviroScreen

• Mapping tool that helps identify California communities that are most affected by many sources of pollution

• Uses environmental, health, and socioeconomic information to produce scores for every census tract in the state

• Scores are mapped so that different communities can be compared

• An area with a high score is one that experiences a much higher pollution burden than areas with low scores
Population characteristics:

- **Asthma**
  - Spatially modeled, age-adjusted rate of emergency department (ED) visits for asthma per 10,000 averaged over 2015-2017

- **Cardiovascular disease**
  - Spatially modeled, age-adjusted rate of ED visits for heart attacks (acute myocardial infarctions) per 10,000 people averaged over 2015-2017

- **Low birth weight**
  - Percent low birth weight averaged over 2009-2015
CalEnviroScreen (continued)
AQMP: Health Benefits

- ~2,500 fewer annual asthma-related emergency room visits
- ~700 fewer annual hospital admissions related to asthma, cardiovascular, or respiratory conditions
- >200,000 fewer annual person-days of work and school absences
- An annual average of 1,600 premature deaths avoided

Public health benefits estimated to be $173 billion cumulatively (2017-2031)
Proposed Rule 2306 Background
Recap of Previous PR 2306 Working Group Meetings

• 3 working group meetings held between July - December 2021
• Working Group #3 covered the following topics:

<table>
<thead>
<tr>
<th>Available Technologies</th>
<th>ZE Infrastructure Concerns</th>
<th>BNSF Comment Letter</th>
<th>Environmental/Community Joint Letter</th>
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The presentation for South Coast AQMD Working Group Meeting #3 - December 3, 2021, can be found at: https://www.aqmd.gov/docs/default-source/rule-book/Proposed-Rules/pr-2306/pr2306_wgm_3_final.pdf?sfvrsn=6
Summary of Comment Letters

BNSF

- Anticipating SCIG to reduce existing levels of pollutant emissions due to:
  - Replacing existing higher-polluting industrial activities on a brownfield site
  - Reduced truck trips on I-710
- Committed to investing in tech demo projects that may reduce emissions in the near-term
- Anticipating use of ZE CHE* for Colton yard
- Requesting staff to assess feasibility of NZE/ZE technologies for commercial deployment

*CHE: cargo handling equipment

Environmental & Community

- Requesting South Coast AQMD and staff to:
  - Make public health central to rulemaking
  - Expedite rule development
  - Require 100% ZE for new intermodal railyards, with integrated charging systems
  - Have robust community engagement during rulemaking

Comment Letters for PR 2306 can be found at:
Indirect Source Rule
Concept Development
Developing a Rule Concept

Key Considerations

Air Quality Impacts from New Rail Yards

State/Federal Regulations and Authority
Availability/feasibility of technology
Business model of industry
Key Emission Sources for Rail Yards

New intermodal facilities have the potential to have substantial NOx emissions

- **Locomotives**
  - US EPA & CARB
  - Switchers and Line-Haul Locomotives

- **Cargo Handling Equipment**
  - US EPA & CARB
  - Yard Trucks, Gantry Cranes, Top/Side Picks, Forklifts, etc.

- **Drayage Trucks**
  - US EPA & CARB
  - Heavy-duty trucks in the Drayage Truck Registry

- **Transportation Refrigeration Unit**
  - US EPA & CARB
  - Trailer and Railcar TRUs

South Coast AQMD Indirect Source Authority
Goal of ISR for New Intermodal Rail Yards

• Reduce emissions from rail yard sources to assist in meeting federal and state air quality standards throughout the region

• Reduce air quality impacts to communities near new rail yards disproportionately impacted by existing environmental burdens
Key Existing Requirements of Rail Yard Emission Sources

- **CARB: (1998 MOU)**
  Locomotive NO\textsubscript{x} Fleet Average Emissions Agreement in the South Coast Air Basin – *Meet a Tier 2 NO\textsubscript{x} emission standard by 2010 (and through 2030)*

- **CARB: Cargo Handling Equipment (CHE) Regulation**
  *effective date December 31, 2006 with compliance deadlines to 2017*

- **CARB: Truck and Bus Regulation**
  *effective December 2008 with final phase-in period in 2023*

- **CARB: TRU Airborne Toxic Control Measure (ATCM)**
  *2011 Amendments with compliance dates to 2020*
## CARB Proposed Regulatory Actions

### Locomotives

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<tr>
<th>Key Components*</th>
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<td>Establish and annually fund a spending account (SA) for emissions occurring in prior year</td>
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<td>SA funds are to purchase Tier 4 or cleaner locomotives until 2030, transitioning to ZE-only purchases by 2035, and the development of ZE technologies and infrastructure</td>
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<td>Starting in 2030 only locomotives less than 23 years old may operate in California</td>
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<td>Idling restrictions consistent with US EPA requirements</td>
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**CARB Board consideration:** tentative for Fall 2022

- **2017 CARB petition to US EPA for a Tier 5 locomotive standard (supported by South Coast AQMD)**

*Proposed regulation in development and requirements may change before being considered by CARB Board*
CARB Proposed Regulatory Actions

Drayage Trucks

- Beginning November 1, 2023, all drayage trucks registering for the first time must be ZE.
- Existing non-zero emission trucks must visit a regulated seaport or intermodal railyard at least once each calendar year, to remain compliant.
- All drayage trucks must be ZE by 2035.
- Existing non-zero emission trucks must be retired after the later of two guidelines:
  - They can operate for 13 years from their engine model year or
  - The earlier of 18 years or 800,000 miles - from when the original engine was certified.

* Additional CARB actions also impacting heavy-duty truck emissions: Truck and Bus, Heavy-Duty Omnibus Regulation, Heavy Duty I/M, and Advanced Clean Trucks.
CARB Proposed Regulatory Actions
Transport Refrigeration Units

CA Governor’s Executive Order N-79-20: Off-road ZE by 2035 where feasible

TRU Regulation - Phase I
- ZE truck TRU turnover starting in 2023
- 100% ZE truck TRUs by 2029
- PM emission standards for all other TRUs of MY 2023+ align with EPA Tier 4 Final Off-Road for >25 hp

TRU Regulation - Phase II
- Assessing ZE technologies for other TRUs including trailer and railcar TRUs
- CARB Board consideration 2025
Carbana Proposed Regulatory Actions

Cargo Handling Equipment

ZE Cargo Handling Equipment Regulation

- CARB Board consideration 2024
- Potentially applicable to all CHE at intermodal rail yards
- Proposed implementation schedule for new equipment with effective dates beginning in 2026
- Over 90% deployment of ZE by 2036

CA Governor’s Executive Order N-79-20: Off-road ZE by 2035 where feasible
Key Milestones for New Rail Yards

Southern California International Gateway (SCIG)

- Revised DEIR released 2021
- No construction date set
  - Original project was already intended to be open
- Full capacity anticipated by 2035 from DEIR

Colton Intermodal Facility

- Release of Draft EIR anticipated mid- to late 2022
- High Speed Rail “Colton Component” construction as early as 2023
- Not contingent on HSR project construction
Air Quality Components of Proposed Rail Yard Projects

**SCIG Rail Yard Proposal**
- Street sweeping for fugitive dust
- Electric gantry cranes
- LNG-fueled yard trucks

**Colton Rail Yard Proposal**
- Electric gantry cranes
- Electric straddle carriers
- Electric yard trucks
Emissions Today vs. Future Commitments

**Railroads Stated SHORT TERM GOALS**
- UP to purchase a total of 20 battery-electric locomotives from Wabtec and Progress Rail
- UP to begin phasing in use of biodiesel and renewable diesel fuel
- BNSF pursuing battery-electric and hydrogen fuel cell tech demos

**Railroad Stated LONG TERM GOALS**
- UP Climate Action Plan to achieve net zero by 2050
- BNSF committed to 30% GHG emissions reductions by 2030

**UP Locomotive Fleet** – 8,205 total; 4,602 operating within the District
**BNSF Locomotive Fleet** – 8,000 total; 4,927 operating within the District

*Data displays 2020 data. UP: Union Pacific; BNSF: Burlington Northern Santa Fe Corp.*
Rapid But Uneven Technological Advancement Towards Zero Emissions

**ZE Charging/Fueling Infrastructure Development**

- **Locomotives**
  - Varying by operation

- **Drayage Trucks**
  - Varying by TRU types
  - Varying by duty cycle

- **TRUs**
  - Varying by TRU types

- **Cargo Handling Equipment**
  - 100% ZE

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1. [https://ww2.arb.ca.gov/sites/default/files/2020-06/final_rail_tech_assessment_11282016%20-%20ADA%2020200117.pdf](https://ww2.arb.ca.gov/sites/default/files/2020-06/final_rail_tech_assessment_11282016%20-%20ADA%2020200117.pdf)
2. [https://ww2.arb.ca.gov/our-work/programs/transport-refrigeration-unit](https://ww2.arb.ca.gov/our-work/programs/transport-refrigeration-unit)
3. [https://ww2.arb.ca.gov/sites/default/files/2021-08/210909acfdraftdrayage.pdf](https://ww2.arb.ca.gov/sites/default/files/2021-08/210909acfdraftdrayage.pdf)
Remaining Opportunities* for Emission Reductions from Rail Yard Operations

- Locomotives Cleaner than Tier 2 (Potential for ZE in some applications)
- ZE Cargo Handling Equipment
- ZE Yard Trucks for All New Rail Yards
- Route Trucks Away from Sensitive Receptors
- Accelerate Turnover for Cleaner Truck Technologies
- Infrastructure for ZE Charging/Fueling

*Actions would need to occur earlier than would be required under state and federal requirements
### Facility Caps
- XX% below baseline emissions *(SJVPACD approach)*
- <XX pounds of emissions per day per facility
- <XX pounds of emissions per goods throughput unit or sq. ft.

### SOON Program Approach
- Indirect sources must apply for incentive funds and use them if available

### Local Govt. Measure
- Local govt. programs/ordinances can potentially be put directly into SIP
- Similar approach available in Rule 2202

### Points-Based Program
(e.g., Warehouse ISR)
- Facilities must earn Points using a menu of actions
- Custom plan approach also allowable

### Onsite Best Management Practices
- Utilize ZE equipment onsite
- ZE fueling/charging infrastructure
- Solar/energy storage

### Mitigation Fee
- Pay a mitigation fee if other compliance options not chosen
- Collected funds incentivize cleaner equipment in community

*Other rule concepts also possible*
Next Steps

- Continued Rule Concept Development to Be Discussed Next Meeting
- Visits to New Rail Yard Sites and Local Communities
- Stakeholder Group Meetings and Other Public Engagement Activities
- Regular reporting to South Coast AQMD Mobile Source Committee (next mtg is 4/15/22)
### Proposed Rule 2306

<table>
<thead>
<tr>
<th>Staff Contact</th>
<th>Title &amp; Contact Information</th>
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Sign up for the mailing list at: [https://www.aqmd.gov/sign-up](https://www.aqmd.gov/sign-up) (select “Proposed Rule 2306”)

For more information, visit: [www.aqmd.gov/fbmsm](http://www.aqmd.gov/fbmsm) (click into “Railyard & Intermodal Facilities”)
Open Discussion

ZOOM:
- Click on the “Raise Hand” button at the bottom of your screen.

TELECONFERENCE:
- Dial *9 to “raise your hand”

Your name will be called when it is your turn to speak and the meeting host will unmute your line.