



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

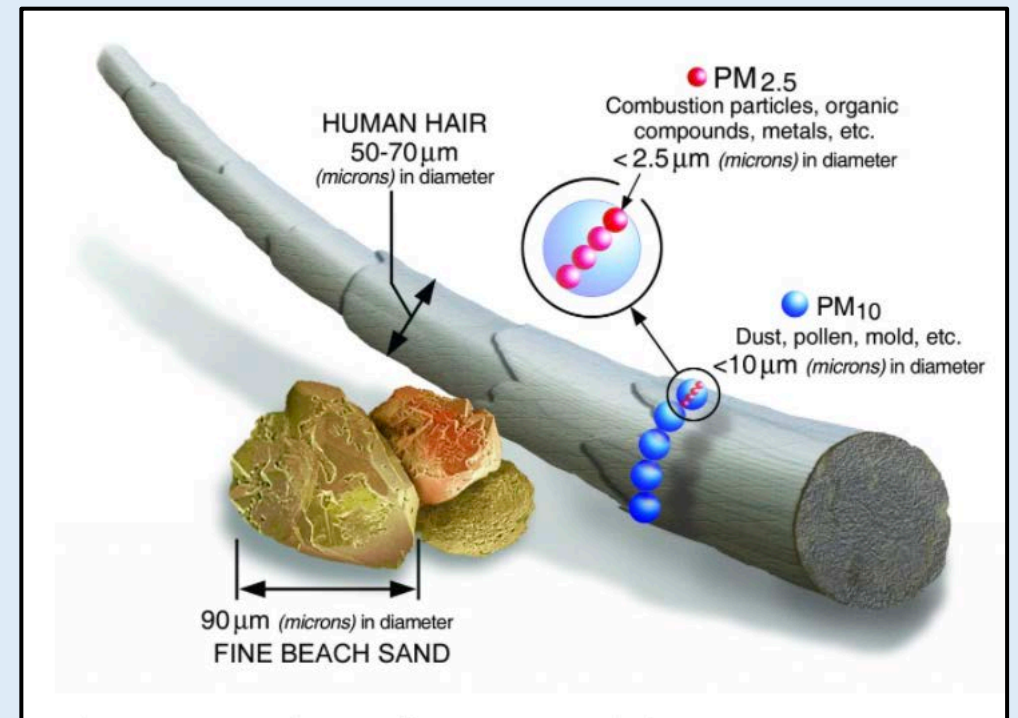
- Ozone, particulate matter (PM), carbon monoxide (CO), nitrogen dioxide (NO_x), sulfur dioxide (SO_x)
- Harmful to human health and the environment

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 (SO_x, NO_x)
 - PM formed in the atmosphere has a regional effect

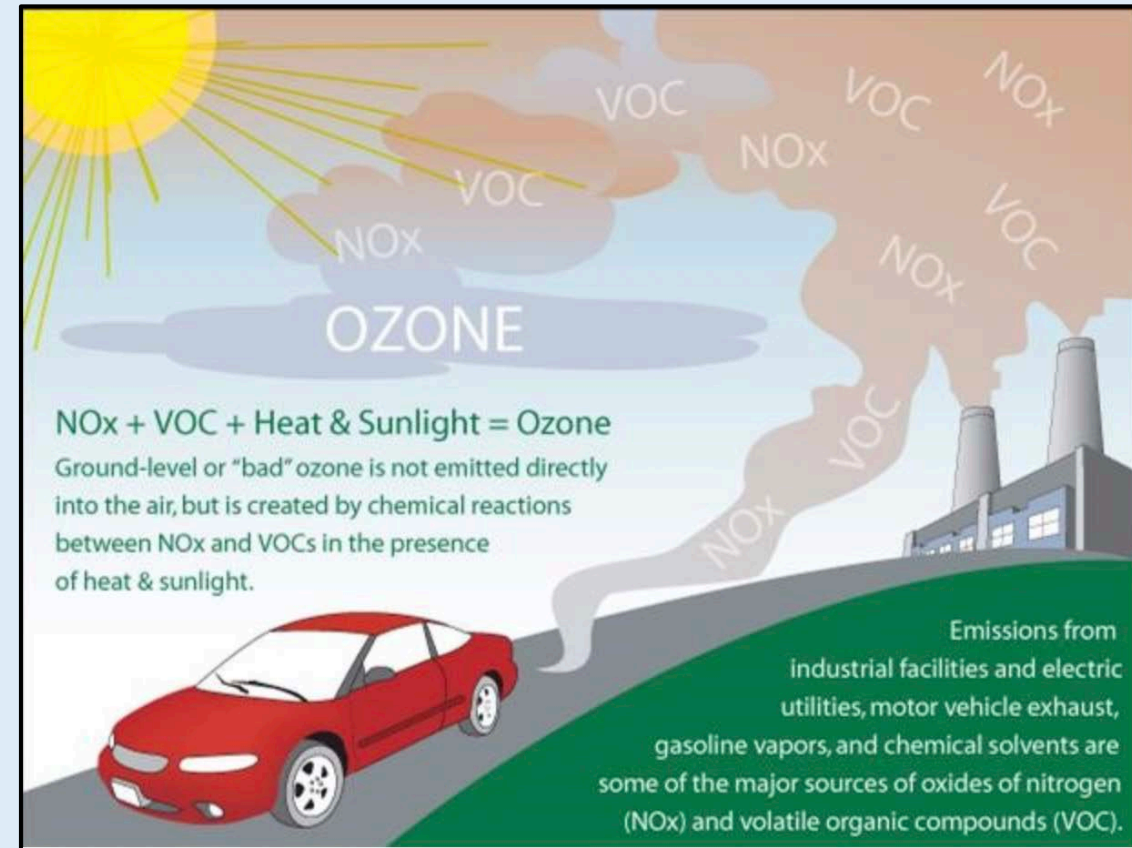
Health Effects of PM

- 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

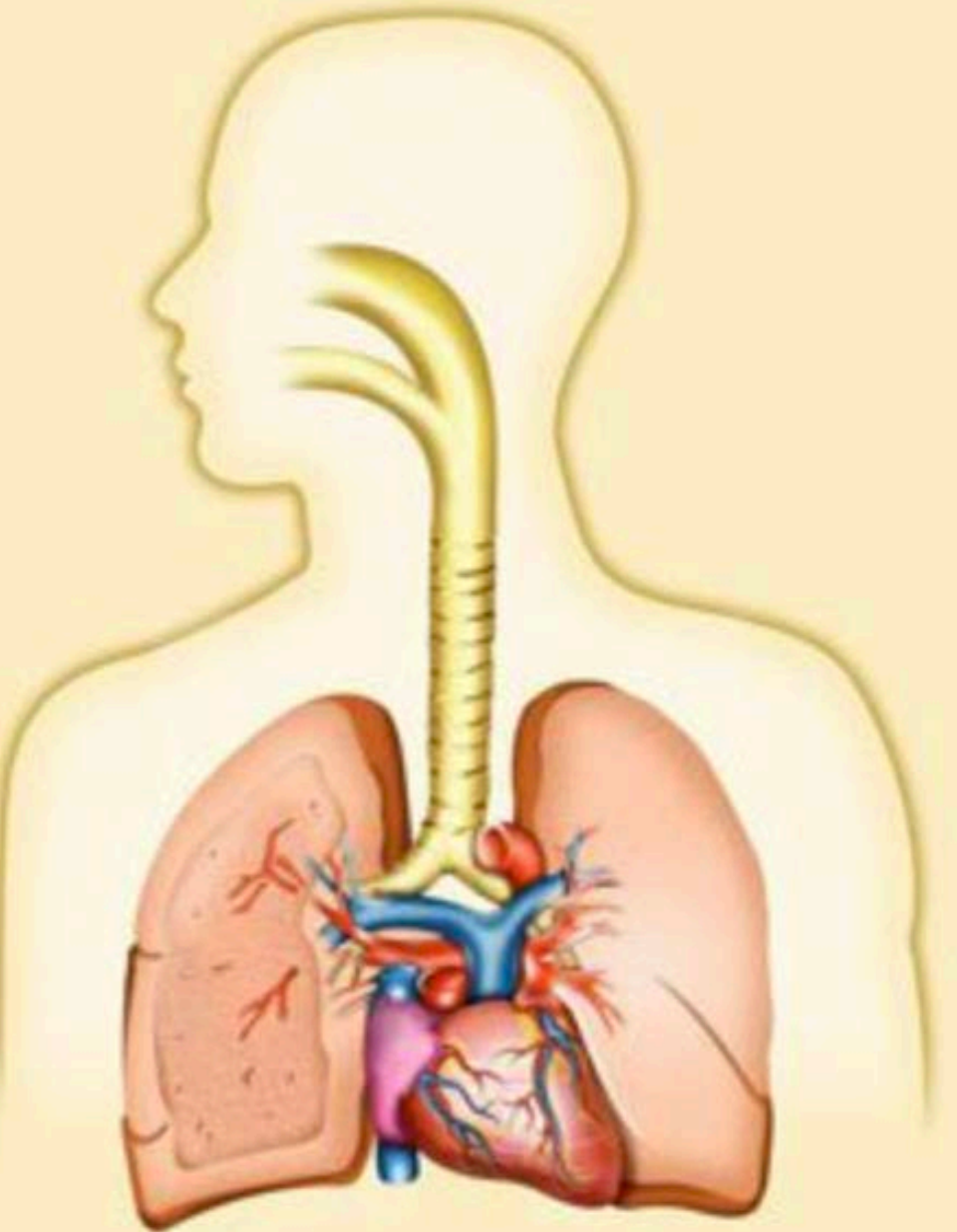


Ozone

- Not emitted directly; created by chemical reactions between NO_x 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



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

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

Local Studies

- 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

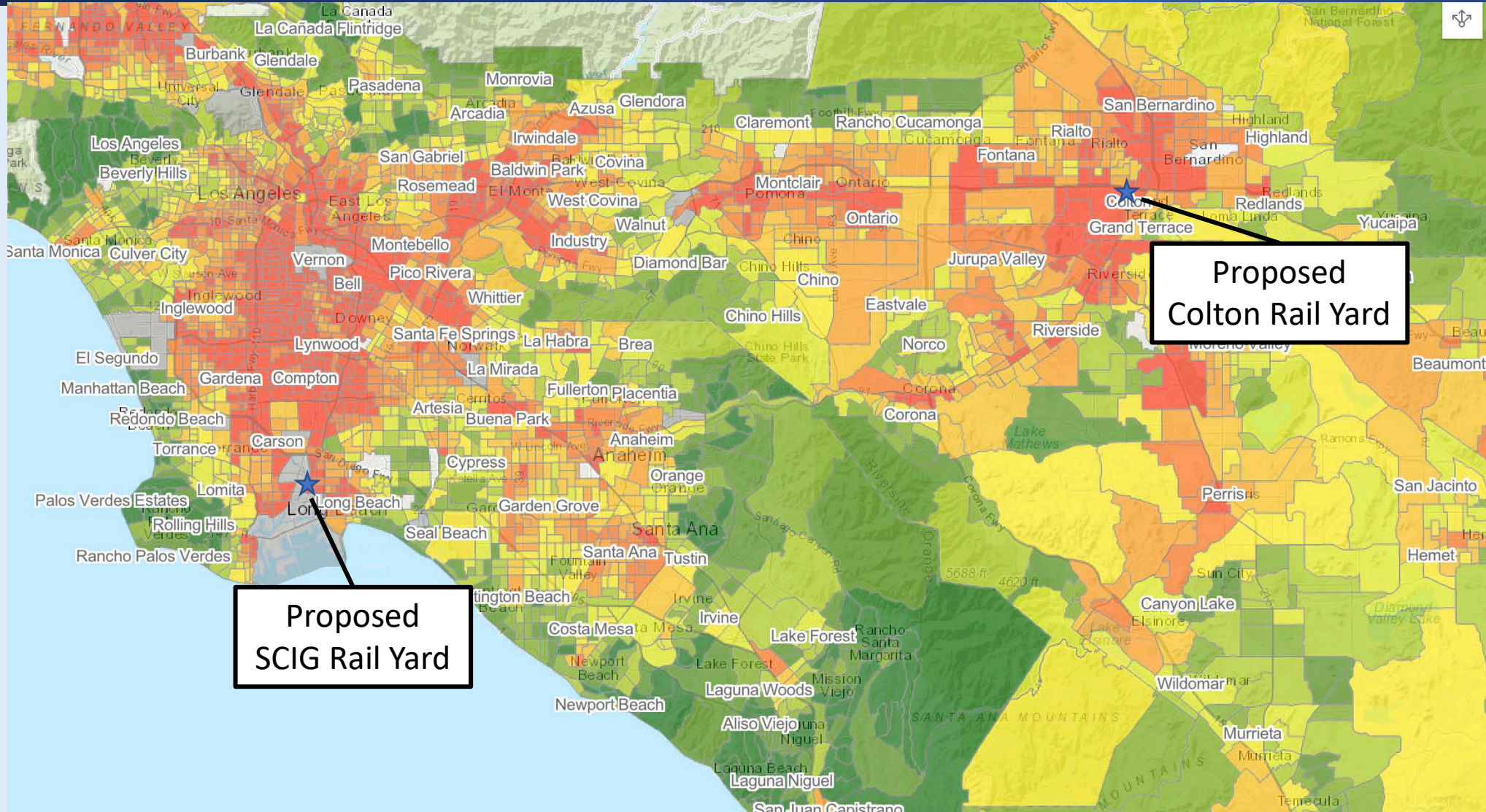
CalEnviroScreen

- 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

CalEnviroScreen (continued)

- 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



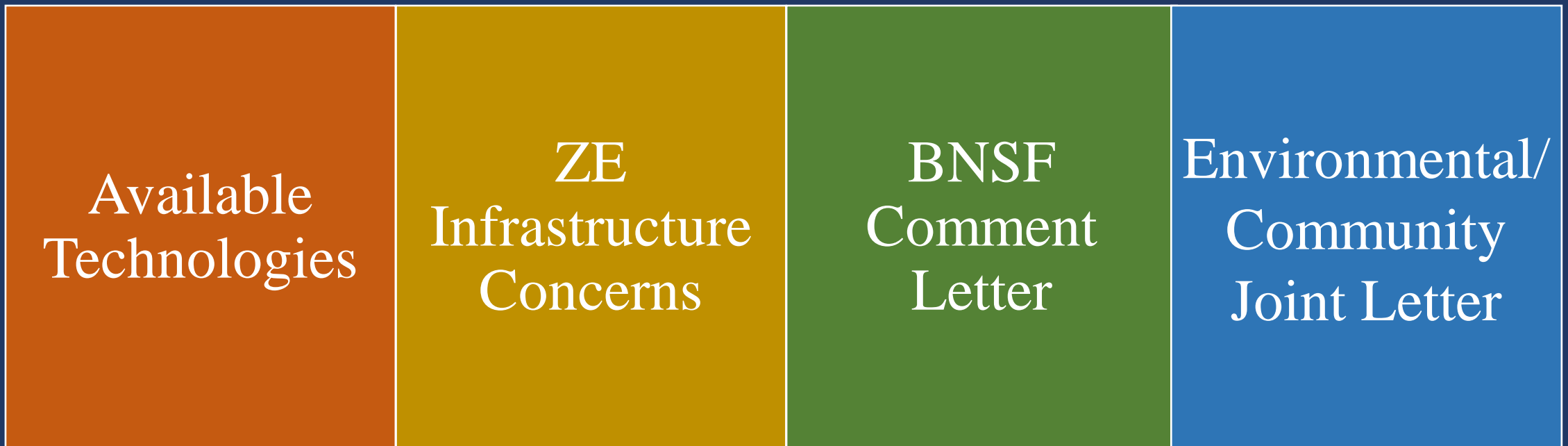
An annual
average of 1,600
premature
deaths avoided

**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:



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:

<http://www.aqmd.gov/home/rules-compliance/rules/scaqmd-rule-book/proposed-rules/rule-2306/comment-letters>

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_x Fleet Average Emissions Agreement in the South Coast Air Basin –
Meet a Tier 2 NO_x emission standard by 2010 (and through 2030)



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



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



- ❖ **CARB: TRU Airborne Toxic Control Measure (ATCM)**
2011 Amendments with compliance dates to 2020

CARB Proposed Regulatory Actions

Locomotives

Key Components*

Establish and annually fund a spending account (SA) for emissions occurring in prior year	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	Starting in 2030 only locomotives less than 23 years old may operate in California	Idling restrictions consistent with US EPA requirements
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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

Proposed Drayage component of the Advanced Clean Fleets Regulation*

- 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

CARB Proposed Regulatory Actions

Transport Refrigeration Units

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

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

CARB 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

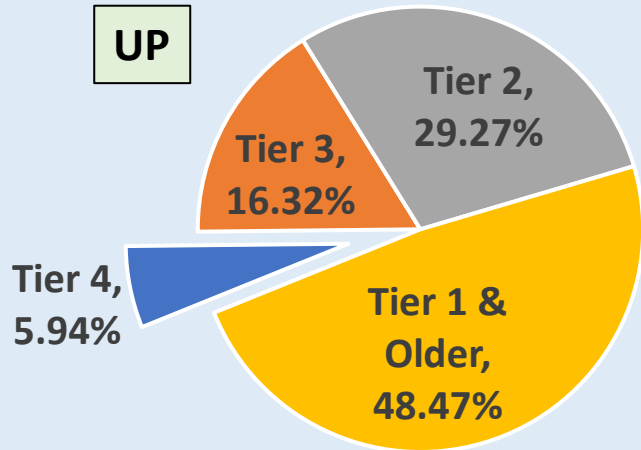
- Street sweeping for fugitive dust
- Electric gantry cranes
- LNG-fueled yard trucks

Colton Rail Yard Proposal

- Electric gantry cranes
- Electric straddle carriers
- Electric yard trucks

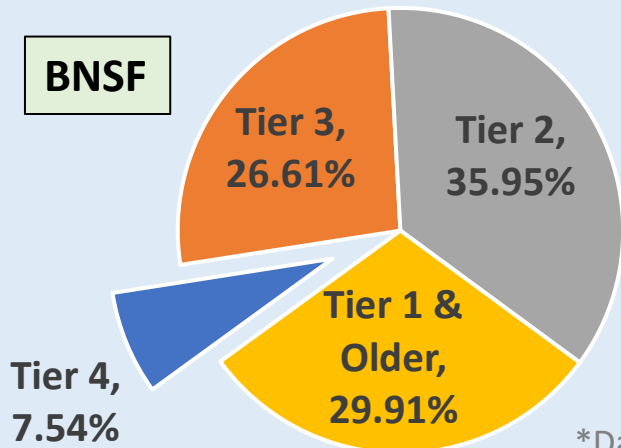
Emissions Today vs. Future Commitments

UP



% MW-hrs. by EPA Engine Tier

BNSF



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

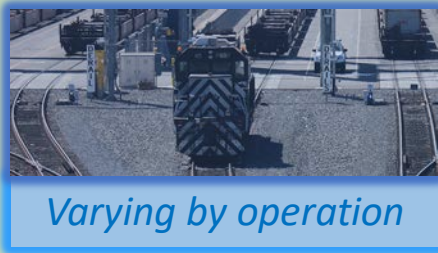
UP Locomotive Fleet – 8,205 total; 4,602 operating within the District
BNSF Locomotive Fleet – 8,000 total; 4,927 operating within the District

*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 ¹



TRUs ²



Drayage Trucks ³



Cargo Handling Equipment ⁴



¹ 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>

³ <https://ww2.arb.ca.gov/sites/default/files/2021-08/210909acfdraftdrayage.pdf>

⁴ https://cleanairactionplan.org/download/239/cargo-handling-equipment/5151/2021-che-report-v21-final-master-draft_3-01-22.pdf

⁵ <https://www.aqmd.gov/docs/default-source/technology-research/annual-reports-and-plan-updates/2020-annual-report-2021-plan-update.pdf?sfvrsn=8>

Remaining Opportunities* for Emission Reductions from Rail Yard Operations

*Actions would need to occur earlier than would be required under state and federal requirements

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

Examples of Indirect Source Rule Concepts Potentially Applicable for New Rail Yards

Facility Caps

- XX% below baseline emissions (*SJVAPCD 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)

Staff Contacts

Proposed Rule 2306

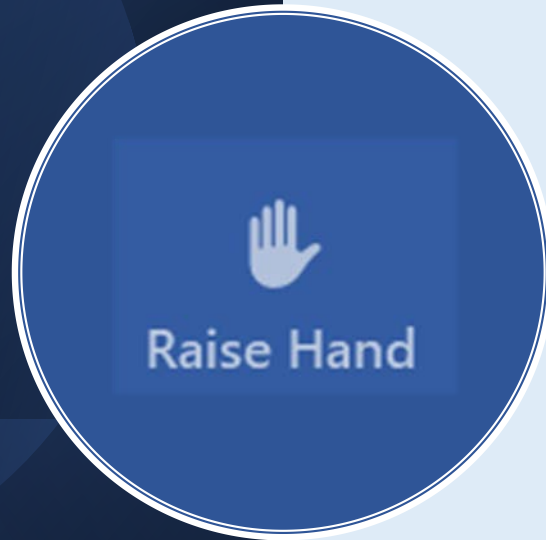
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Sign up for the mailing list at: <https://www.aqmd.gov/sign-up> (select “Proposed Rule 2306”)
For more information, visit: www.aqmd.gov/fbmsm (click into “Railyard & Intermodal Facilities”)

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.