Proposed Rule 2306 - Indirect Source Rule for New Intermodal Facilities

Working Group Meeting #6

08/10/2022
09:00AM (PST)
SOUTH COAST AQMD

Join Zoom Webinar Meeting - from PC or Laptop
https://scaqmd.zoom.us/j/93189919510
Zoom Webinar ID: 931 8991 9510
Teleconference Dial In (669) 990-6833
Agenda

Summary of June Working Group Meeting

Recent Discussions and Meetings

Proposed Intermodal Facilities

Proposed Rule 2306 Development

Determining Emissions Inventory for New Facilities

Next Steps

Discussion
Summary of June Working Group Meeting

- Technology and Infrastructure Considerations
- Intermodal Facility Operations and Owner/Operator Relationships
- Opportunities for Emission Reductions at New Intermodal Facilities
- Timeline of Rule Development
Recent Discussions and Meetings

Meetings with Local Community Members and Environmental Justice Organizations

Discussions with CARB on Proposed Regulations

Discussions with Other State and Local Agencies Impacted by the Proposed Rule
Two proposed facilities (operated by BNSF) subject to PR 2306:

- Colton Intermodal Yard (Los Angeles to Anaheim section of California High Speed Rail Project)
- Southern California International Gateway [SCIG] (Port of Los Angeles)
- Future proposed facilities also would be subject to rule
Intermodal railyards have emission sources from both on-site operations and mobile sources attracted to the facility:

- The facility has ownership over CHE and ownership/lease agreements for locomotives
- Drayage trucks and TRUs are owned and operated by outside parties (e.g., third-party logistics)

Assessing the intermodal railyard business model is key to developing a workable ISR.
ISR Must be Compatible with Upcoming Proposed CARB Regulations

- Each rule from CARB is in various stages of development
  - Potential timelines for implementation varies for each rule
- The 2022 Draft CARB Scoping Plan states goals for 100% ZE sales
  - 2035 for new line-haul locomotives
  - 2030 for all other locomotives
- Key proposed rules and potential CARB Board Hearing dates
  - Advanced Clean Fleets (fleet rule for in-use drayage trucks)
    - 1st CARB Board Hearing - Oct. 2022
  - Locomotives (fleet rule for in-use locomotives)
    - 1st CARB Board Hearing - Nov. 2022
  - Transport Refrigeration Units (trailers and railcars)
    - CARB Board Hearing – 2025
  - Cargo Handling Equipment
    - CARB Board Hearing - 2024
PR 2306 Development

Next Steps

- Develop a Normalized Approach to Determine Facility Emissions Inventory
- Rule Concepts

Initial discussion during this Working Group Meeting

Prepare staff report, environmental and economic analysis, Board consideration

Receive and Incorporate Stakeholder Feedback

Identify Impacted Facilities
Evaluate Equipment at Facilities
Assess Existing and Proposed Regulations

Initial discussion during this Working Group Meeting
Determining Emissions Inventory for New Facilities

- Evaluating 2012 SCIG EIR Methodology
  - Initial EIR assumptions based on available data at time of publication which are now outdated

- Updating SCIG Methodology with Current Emission Factors
  - Adjusting to latest emission factors and fleet compositions

- Develop Standardized Approach to Calculate Emissions Inventory for New Facilities Based on Analysis
Emissions analysis shown here from 2021 RDEIR by POLA only includes sources that would visit/operate at the SCIG railyard

Colton Intermodal EIR not yet released

- Projected NOx emissions from locomotives and drayage trucks account for a significant portion of the emissions inventory for SCIG
- The projected emissions inventory from the SCIG RDEIR** is based on emission factors from 2013
  - Updating to current emission factors would provide a more accurate depiction of emission values for the project

** 2021 Revised Draft EIR for SCIG did not update the emissions estimates from 2013 Final EIR
Methodology for calculating locomotive emissions as laid out in the 2013 SCIG Final EIR involves the following assumptions:

- Fleet Composition (updating in PR 2306 analysis)
- Locomotive Emission Factor (updating in PR 2306 analysis)
- Speeds, Distance Traveled, and # of Trains per Day (no change)

Locomotive emission factors are calculated based on locomotive tier:

- Each locomotive has 8 throttle (notch) settings as well as settings for idle and dynamic brake
- Each notch setting has a unique emission factor
The 2013 Final EIR for SCIG calculated locomotive emissions for the following:

- Onsite emissions from line haul locomotives and switchers
- Offsite locomotive emissions for:
  - Trips on east and west portions of the Alameda Corridor
  - Trips from BNSF Hobart Yard to border of South Coast Air Basin

Staff will be utilizing same distance and train trip assumptions for emissions inventory assessment of PR 2306

### Assumptions for SCIG

<table>
<thead>
<tr>
<th>Onsite Trains</th>
<th>2023</th>
<th>3 Trains per Day</th>
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</thead>
<tbody>
<tr>
<td>2035</td>
<td>8 Trains per Day</td>
<td></td>
</tr>
<tr>
<td>2046</td>
<td>8 Trains per Day</td>
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<table>
<thead>
<tr>
<th>Offsite Trains (W Alameda Corridor)</th>
<th>2023</th>
<th>3 Trains per Day</th>
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</thead>
<tbody>
<tr>
<td>2035</td>
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<td>2046</td>
<td>8 Trains per Day</td>
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<tr>
<th>Offsite Trains (E Alameda Corridor)</th>
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<th>3 Trains per Day</th>
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<tbody>
<tr>
<td>2035</td>
<td>8 Trains per Day</td>
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<td>2046</td>
<td>8 Trains per Day</td>
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<table>
<thead>
<tr>
<th>Offsite Trains (Hobart to SCAB Border)</th>
<th>2023</th>
<th>3 Trains per Day</th>
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<tbody>
<tr>
<td>2035</td>
<td>8 Trains per Day</td>
<td></td>
</tr>
<tr>
<td>2046</td>
<td>8 Trains per Day</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Distance E Alameda Corridor</th>
<th>16.6 Miles</th>
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</thead>
<tbody>
<tr>
<td>Distance W Alameda Corridor</td>
<td>16.6 Miles</td>
</tr>
<tr>
<td>Distance Hobart to SCAB Border (Round Trip)</td>
<td>168.4 Miles</td>
</tr>
</tbody>
</table>
Southern California International Gateway
Fleet Composition Assumptions

- Emission factors for locomotives used in the SCIG Final EIR based on assumptions of national locomotive fleet composition assumed by EPA in its 2008 Rulemaking\(^1\)
- CARB recently updated its locomotive inventory based on more recent railroad activity data
- Staff is updating SCIG assumptions with the locomotive projections from CARB\(^2\)

<table>
<thead>
<tr>
<th>Locomotive Fleet Mix</th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
<th>2023</th>
<th>2030</th>
<th>2035</th>
<th>2042</th>
<th>2046</th>
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<tbody>
<tr>
<td>Tier 0</td>
<td>2.66%</td>
<td>5.00%</td>
<td>2.42%</td>
<td>5.00%</td>
<td>2.06%</td>
<td>4.00%</td>
<td>1.70%</td>
<td>4.00%</td>
</tr>
<tr>
<td>Tier 0+</td>
<td>26.42%</td>
<td>5.00%</td>
<td>23.76%</td>
<td>5.00%</td>
<td>21.26%</td>
<td>5.00%</td>
<td>18.90%</td>
<td>5.00%</td>
</tr>
<tr>
<td>Tier 1</td>
<td>0.00%</td>
<td>1.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Tier 1+</td>
<td>9.06%</td>
<td>29.00%</td>
<td>8.72%</td>
<td>29.00%</td>
<td>8.38%</td>
<td>29.00%</td>
<td>7.90%</td>
<td>29.00%</td>
</tr>
<tr>
<td>Tier 2</td>
<td>0.00%</td>
<td>6.00%</td>
<td>0.00%</td>
<td>5.00%</td>
<td>0.00%</td>
<td>4.00%</td>
<td>0.00%</td>
<td>4.00%</td>
</tr>
<tr>
<td>Tier 2+</td>
<td>23.63%</td>
<td>28.00%</td>
<td>22.78%</td>
<td>29.00%</td>
<td>21.96%</td>
<td>31.00%</td>
<td>21.20%</td>
<td>32.00%</td>
</tr>
<tr>
<td>Tier 3</td>
<td>11.77%</td>
<td>20.00%</td>
<td>11.51%</td>
<td>20.00%</td>
<td>11.19%</td>
<td>20.00%</td>
<td>10.80%</td>
<td>20.00%</td>
</tr>
<tr>
<td>Tier 4</td>
<td>26.46%</td>
<td>6.00%</td>
<td>30.81%</td>
<td>6.00%</td>
<td>35.15%</td>
<td>6.00%</td>
<td>39.50%</td>
<td>7.00%</td>
</tr>
</tbody>
</table>

\(^1\)2012 Port of Los Angeles Final Environmental Impact Report: [https://www.portoflosangeles.org/environment/environmental-documents](https://www.portoflosangeles.org/environment/environmental-documents)
\(^2\)2021 Line-Haul Locomotive Emissions Inventory: [https://ww2.arb.ca.gov/sites/default/files/2021-02/2021_line_haul_locomotive_emission_inventory_final.pdf](https://ww2.arb.ca.gov/sites/default/files/2021-02/2021_line_haul_locomotive_emission_inventory_final.pdf)
Southern California International Gateway
Fleet Composition Assumptions (Cont’d)

- BNSF annually reports fleet composition data as part of the 1998 Memorandum of Understanding (MOU) with CARB
  - Projected state and federal fleet compositions differ from real-world data
- EPA projections anticipated higher turnover to Tier 4 locomotives in 2020
- BNSF’s reported fleet composition shows a larger representation of Tier 1-3 locomotives in operation
  - CARB projections more consistent with actual data
Southern California International Gateway
Fleet Composition Assumptions (Cont’d)

• A core assumption for SCIG’s locomotive emissions calculation is based on fleet composition projections
• EPA Fleet projections assumed a higher Tier 4 adoption rate when compared to recent fleet projections
  • Assumptions made with EPA fleet projections resulted in lower overall potential locomotive emissions from SCIG

Total fleet MH-Hrs based on total fleet MW-Hrs reported by BNSF in 2020 with annual increase of 2.18% according to CARB assumptions for industry growth: https://ww2.arb.ca.gov/sites/default/files/2021-02/2021_line_haul_locomotive_emission_inventory_final.pdf
Southern California International Gateway
Locomotive Emission Factor Assumptions

• SCIG Final EIR utilized emission factors available at the time for existing locomotive classes for emission factor calculations of Tiers 0, 1, and 2
• Emissions data for rebuilds of Tier 0, 1, and 2 as well as Tiers 3 and 4 were not available at the time of the report, so the following emissions ratios were used based on the EPA estimated emission factors (EPA, 2009)³:

<table>
<thead>
<tr>
<th>Locomotive Tier</th>
<th>NOx Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>0+ / 0</td>
<td>0.837</td>
</tr>
<tr>
<td>1+ / 1</td>
<td>1.000</td>
</tr>
<tr>
<td>2+ / 2</td>
<td>0.900</td>
</tr>
<tr>
<td>3 / 2</td>
<td>0.900</td>
</tr>
<tr>
<td>4 / 2</td>
<td>0.182</td>
</tr>
</tbody>
</table>

Staff adjusted the emissions ratios to reflect the latest revisions of line haul locomotive standards from the US EPA:

<table>
<thead>
<tr>
<th>Locomotive Tier</th>
<th>NOx Emission Standard (g/bhp-hr)(^4) (^5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tier 0</td>
<td>9.5</td>
</tr>
<tr>
<td>Tier 0+</td>
<td>8.0</td>
</tr>
<tr>
<td>Tier 1</td>
<td>7.4</td>
</tr>
<tr>
<td>Tier 1+</td>
<td>7.4</td>
</tr>
<tr>
<td>Tier 2</td>
<td>5.5</td>
</tr>
<tr>
<td>Tier 2+</td>
<td>5.5</td>
</tr>
<tr>
<td>Tier 3</td>
<td>5.5</td>
</tr>
<tr>
<td>Tier 4</td>
<td>1.3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Locomotive Tier</th>
<th>NOx Ratio (From SCIG EIR)</th>
<th>NOx Ratio (Updated)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0+ / 0</td>
<td>0.837</td>
<td>0.842</td>
</tr>
<tr>
<td>1+ / 1</td>
<td>1.000</td>
<td>1.000</td>
</tr>
<tr>
<td>2+ / 2</td>
<td>0.900</td>
<td>1.000</td>
</tr>
<tr>
<td>3 / 2</td>
<td>0.900</td>
<td>1.000</td>
</tr>
<tr>
<td>4 / 2</td>
<td>0.182</td>
<td>0.236</td>
</tr>
</tbody>
</table>


Staff calculated SCIG locomotive emissions inventory with updated fleet composition data and emission factors while maintaining remaining methodology used in the SCIG 2013 Final EIR.

Next Step: Consider potential impact of CARB’s proposed In-Use Locomotive Regulation.
**SCIG EIR Assumptions for Other Equipment Categories**

<table>
<thead>
<tr>
<th>Drayage Trucks</th>
<th>Cargo-Handling Equipment</th>
<th>Transport Refrigeration Units</th>
<th>LNG Yard Trucks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modeling Used in SCIG EIR</td>
<td>EMFAC 2011</td>
<td>OFFROAD 2007</td>
<td></td>
</tr>
</tbody>
</table>

### Assumptions from SCIG EIR

**Drayage Trucks**
- Diesel-fueled
- On-site emissions based on activity with 10% at 10mph; 80% at 25mph; 10% at 55mph
- Off-site emissions based on vehicle speed and distance
- MY 2010 or newer for trucks going to and from Port terminals in 2023 and beyond

**Cargo-Handling Equipment**
- Equipment
  - Cranes
  - Excavators
  - Forklifts
- Fuel Sources
  - Gasoline
  - LFG
  - Ultra Low Sulfur Diesel
- General Industrial Equipment
- Sweepers

**Transport Refrigeration Units**
- Electric plug-in power supplied on-site
- Modeled at 0.13% of SCIG container volume
- Diesel run time of 30 minutes

**LNG Yard Trucks**
- Turn time 20 minutes per cycle; 18 hours per day
- Max of 10 LNG yard trucks operating per day
Union Pacific Press Release for 600 Remanufactured Locomotives Up to Tier 2 (No Commitment to Tier)

- Upgrades will take place over the next three years, and are expected to extend locomotive life
- Question if remanufacturing delays tier 4 fleet modernization?
- Question if less total locomotives in operation, will there be overall less megawatt-hours of work?

Reporting Requirements

- Facility-specific data for locomotive activity based on tier distribution is not readily available for the public to access
- ISR reporting requirements can assist in transparency between the facilities and sensitive receptors about emissions

Additional Considerations for ISR


7Associated Press 2022, Union Pacific to spend $1B to upgrade 600 older locomotives: https://apnews.com/article/technology-nebraska-pollution-fuel-efficiency-85d30af43f5dfdf3b517897981689e4c
Next Steps

- Continue to Estimate Emissions Inventory For New Facilities
- Develop Draft Rule Concept and Design
- Continue to Hold Working Group Meetings and Receive Stakeholder Feedback
- Prepare Staff Report, Socioeconomic Report, and Environmental Assessment
- Bring Rule Package to the South Coast AQMD Governing Board for Consideration in 1st Quarter of 2023
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.
# Staff Contacts

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Phone Number</th>
<th>Email Address</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
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<td><a href="mailto:Eshen@aqmd.gov">Eshen@aqmd.gov</a></td>
</tr>
<tr>
<td>Ian MacMillan</td>
<td>Assistant Deputy Executive Officer</td>
<td>909-396-3244</td>
<td><a href="mailto:Imacmillan@aqmd.gov">Imacmillan@aqmd.gov</a></td>
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<table>
<thead>
<tr>
<th>Sign up for the mailing list at:</th>
<th><a href="https://www.aqmd.gov/sign-up">https://www.aqmd.gov/sign-up</a> (select “Proposed Rule 2306”)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Email us at:</td>
<td><a href="mailto:RailyardISR@aqmd.gov">RailyardISR@aqmd.gov</a></td>
</tr>
<tr>
<td>For more information, visit:</td>
<td><a href="https://www.aqmd.gov/fbmsm">www.aqmd.gov/fbmsm</a> (click into “Railyard and Intermodal Facilities”)</td>
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