



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) 900-6833

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

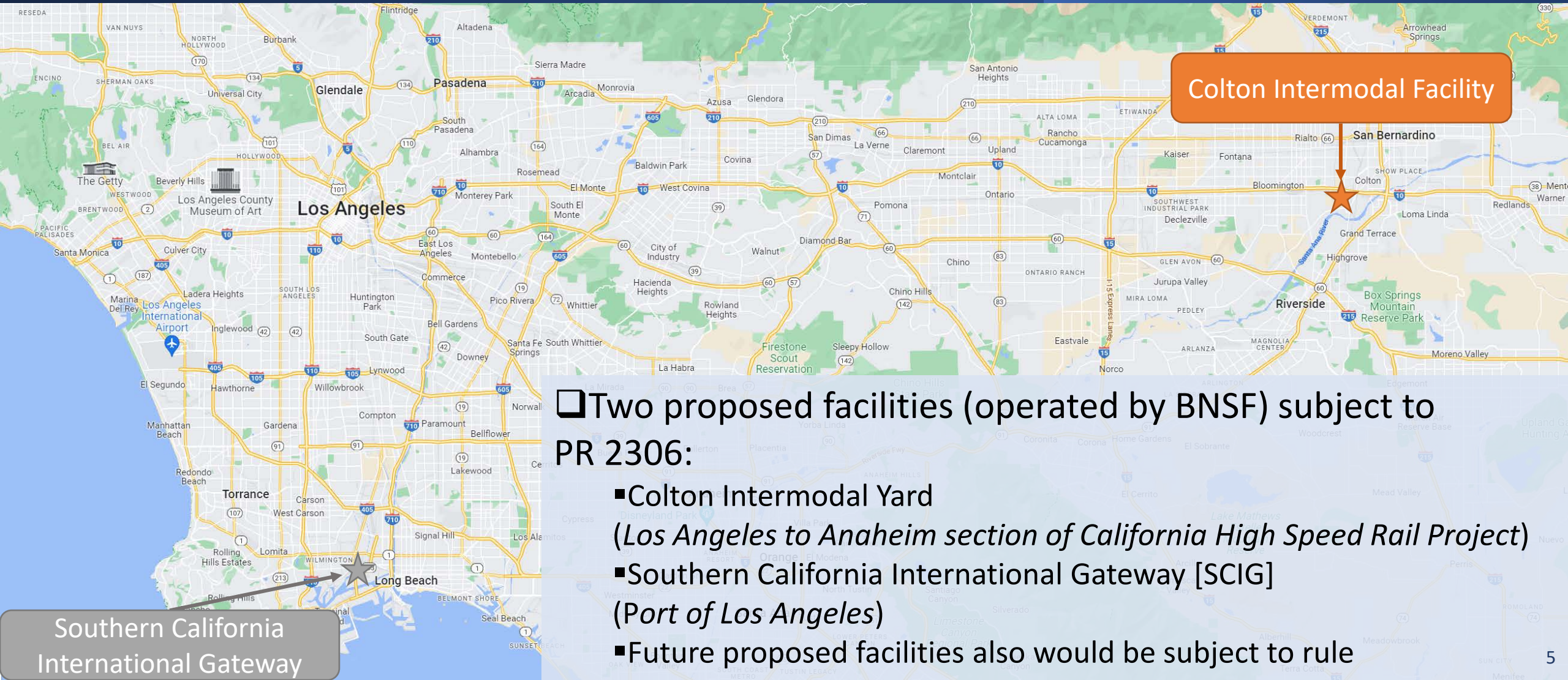
Recent Discussions and Meetings

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

Proposed Intermodal Facilities



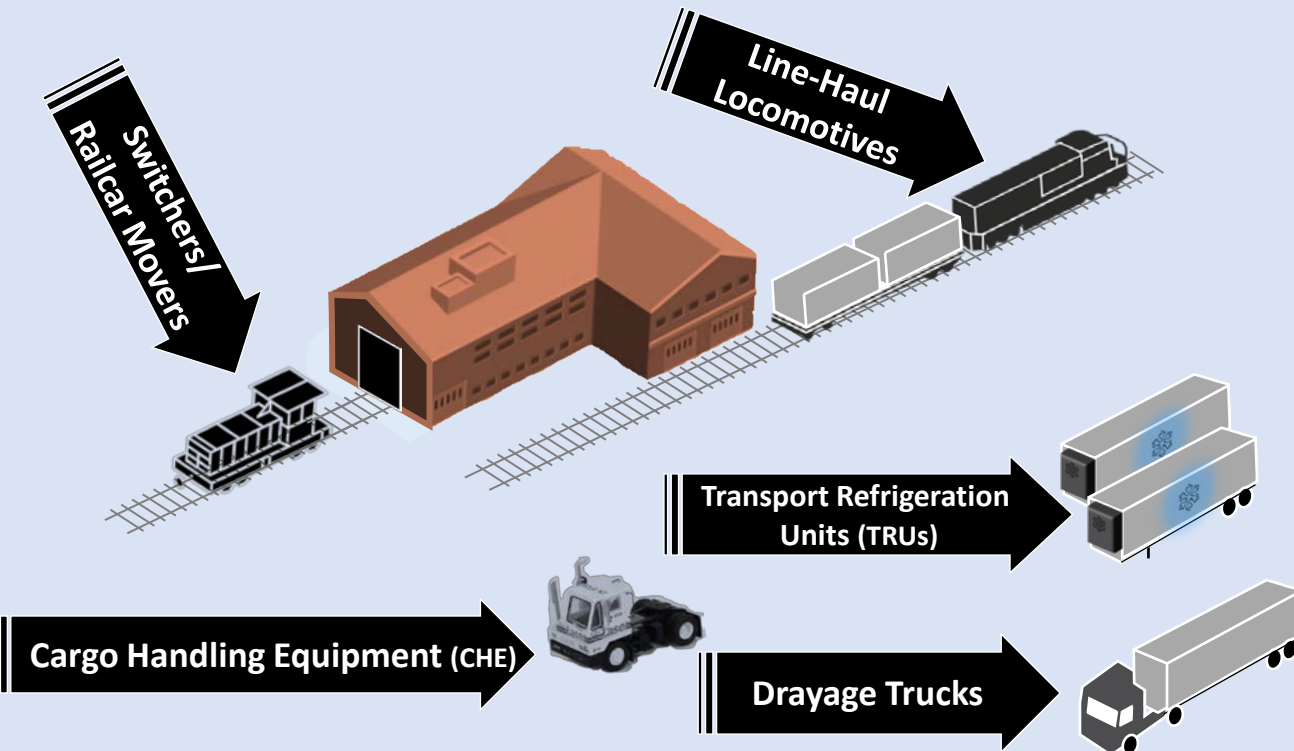
Colton Intermodal Facility

Southern California International Gateway

- ☐ 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

Understanding Business Operation and Emission Sources

Key Intermodal Railyard Emission Sources

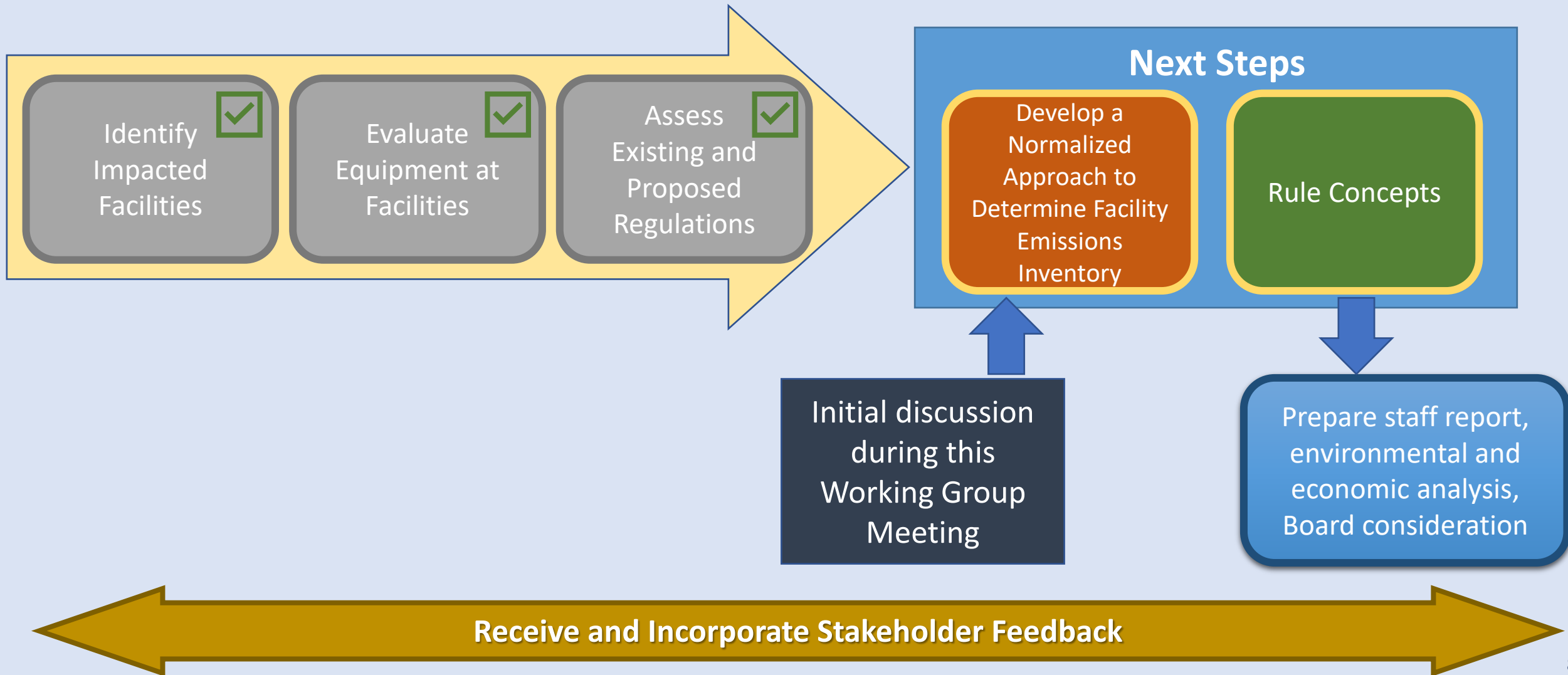


- ❑ Intermodal railyards have emission sources from both on-site operations and mobile sources attracted to the facility
 - The facility has ownership over CHE and ownership/lease agreements for locomotives
 - Drayage trucks and TRUs are owned and operated by outside parties (e.g., third-party logistics)
- ❑ 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



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

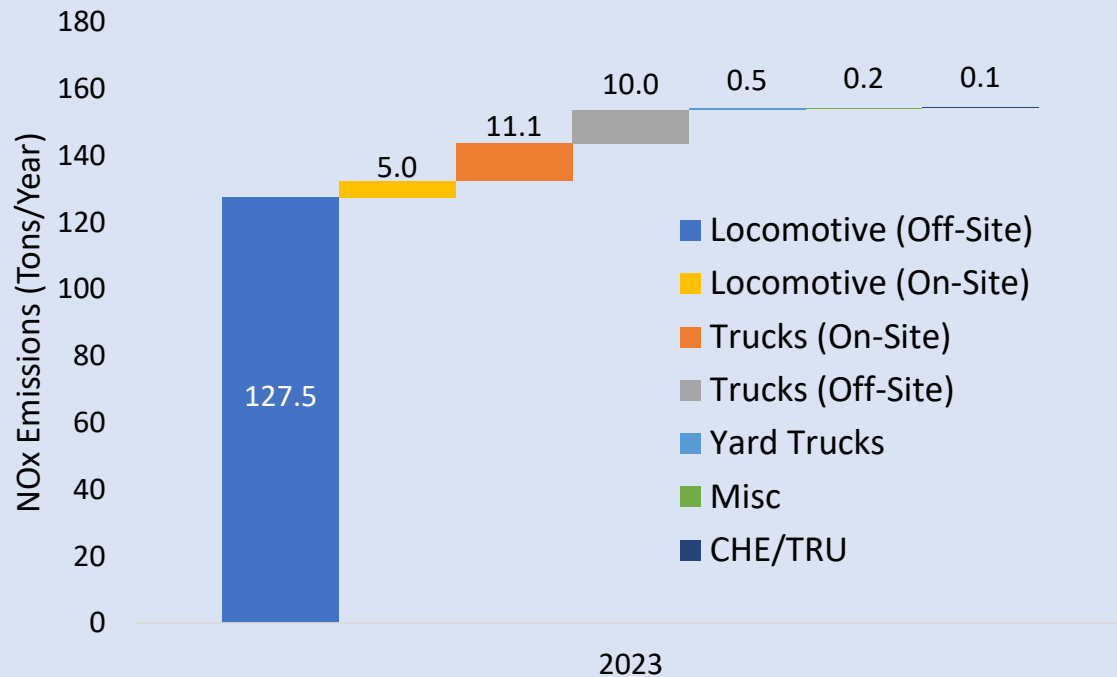
Updating SCIG Methodology with Current Emission Factors

Adjusting to latest emission factors and fleet compositions

Develop Standardized Approach to Calculate Emissions Inventory for New Facilities Based on Analysis

Southern California International Gateway Emissions Inventory

Predicted SCIG Emissions in 2023
(if built as currently proposed)*

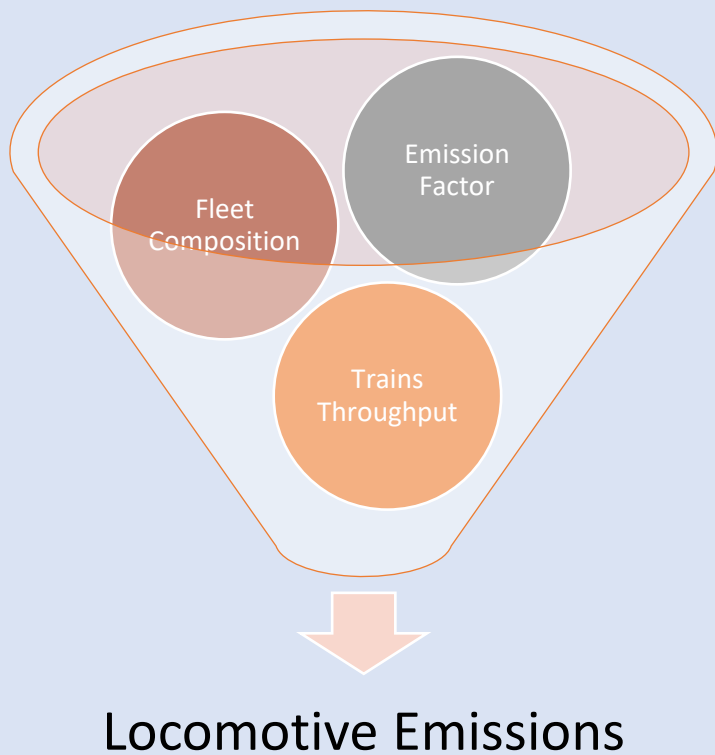


*Emissions analysis shown here from 2021 RDEIR by POLA only includes sources that would visit/operate at the SCIG railyard
Colton Intermodal EIR not yet released

- 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

Southern California International Gateway Locomotives Emissions Calculations



- 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

Southern California International Gateway Train Trip Assumptions

- 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

Onsite Trains	2023	3 Trains per Day
	2035	8 Trains per Day
	2046	8 Trains per Day
Offsite Trains (W Alameda Corridor)	2023	3 Trains per Day
	2035	8 Trains per Day
	2046	8 Trains per Day
Offsite Trains (E Alameda Corridor)	2023	3 Trains per Day
	2035	8 Trains per Day
	2046	8 Trains per Day
Offsite Trains (Hobart to SCAB Border)	2023	3 Trains per Day
	2035	8 Trains per Day
	2046	8 Trains per Day
Distance E Alameda Corridor		16.6 Miles
Distance W Alameda Corridor		16.6 Miles
Distance Hobart to SCAB Border (Round Trip)		168.4 Miles

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 Rulemaking¹
- CARB recently updated its locomotive inventory based on more recent railroad activity data
- Staff is updating SCIG assumptions with the locomotive projections from CARB²

Locomotive Fleet Mix

Locomotive Model	2020		2021		2022		2023		2030		2035		2042		2046	
	EPA	CARB	EPA	CARB	EPA	CARB	EPA	CARB	EPA	CARB	EPA	CARB	EPA	CARB	EPA	CARB
Tier 0	2.66%	5.00%	2.42%	5.00%	2.06%	4.00%	1.70%	4.00%	0.30%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Tier 0+	26.42%	5.00%	23.76%	5.00%	21.26%	5.00%	18.90%	5.00%	6.60%	2.00%	1.93%	0.00%	0.01%	0.00%	0.00%	0.00%
Tier 1	0.00%	1.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Tier 1+	9.06%	29.00%	8.72%	29.00%	8.38%	29.00%	7.90%	29.00%	3.90%	29.00%	1.91%	20.00%	0.29%	5.00%	0.07%	1.00%
Tier 2	0.00%	6.00%	0.00%	5.00%	0.00%	4.00%	0.00%	4.00%	0.00%	1.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Tier 2+	23.63%	28.00%	22.78%	29.00%	21.96%	31.00%	21.20%	32.00%	14.50%	37.00%	8.53%	37.00%	3.01%	19.00%	1.56%	10.00%
Tier 3	11.77%	20.00%	11.51%	20.00%	11.19%	20.00%	10.80%	20.00%	8.30%	21.00%	6.16%	19.00%	2.83%	11.00%	1.76%	11.00%
Tier 4	26.46%	6.00%	30.81%	6.00%	35.15%	6.00%	39.50%	7.00%	66.30%	9.00%	81.46%	24.00%	93.86%	64.00%	96.60%	78.00%

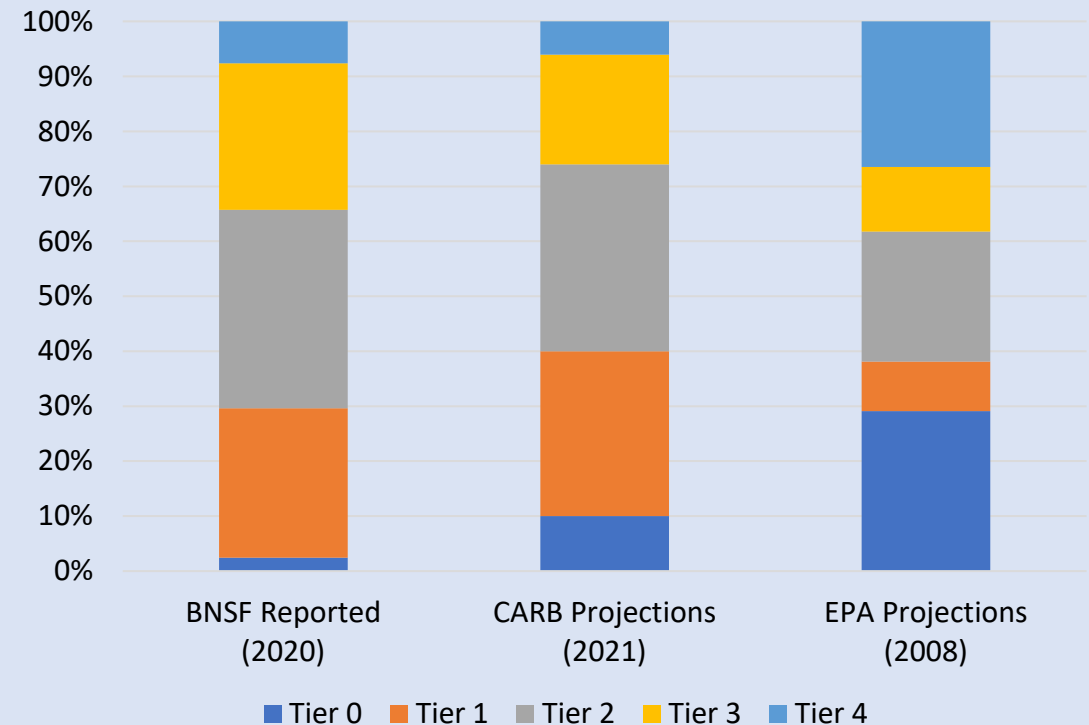
¹2012 Port of Los Angeles Final Environmental Impact Report: <https://www.portoflosangeles.org/environment/environmental-documents>

²2021 Line-Haul Locomotive Emissions Inventory: 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)

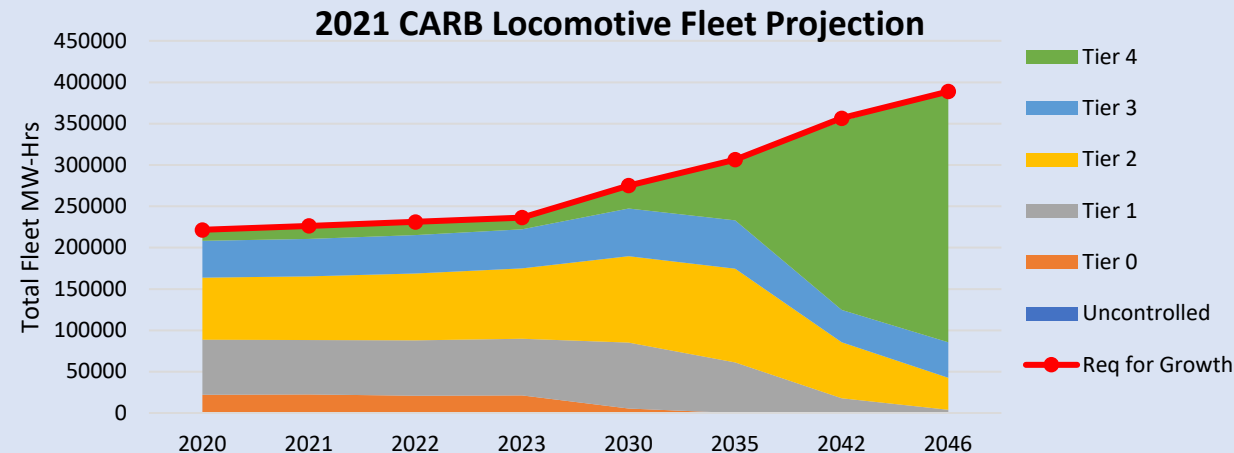
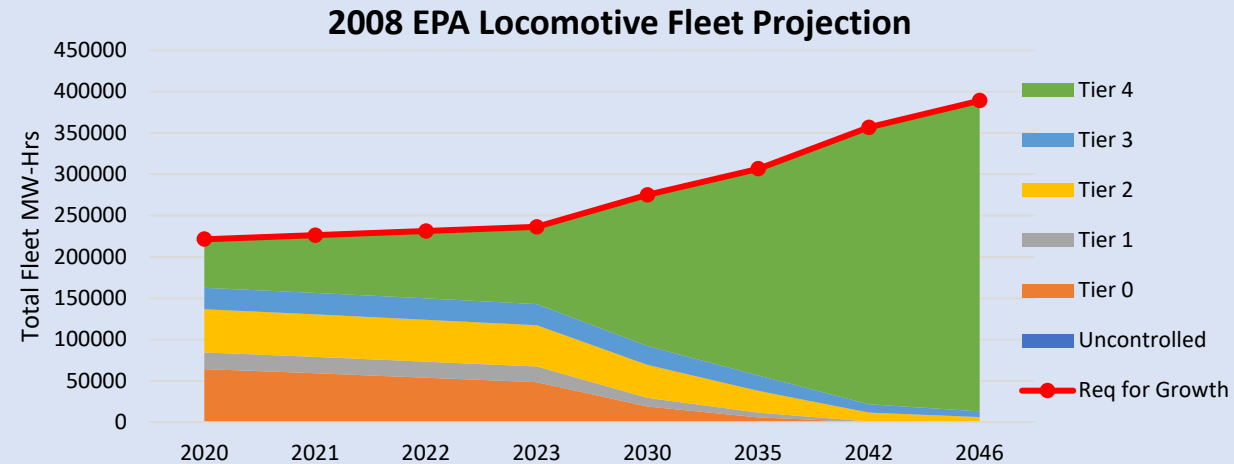
- BNSF annually reports fleet composition data as part of the 1998 Memorandum of Understanding (MOU) with CARB
 - Projected state and federal fleet compositions differ from real-world data
- EPA projections anticipated higher turnover to Tier 4 locomotives in 2020
- BNSF's reported fleet composition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

**2020 Average Fleet Composition
Breakdown**



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:

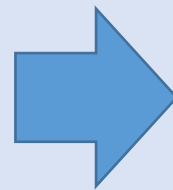
Locomotive Tier	NOx Ratio
0+ / 0	0.837
1+ / 1	1.000
2+ / 2	0.900
3 / 2	0.900
4 / 2	0.182

³2015 Port of Oakland Seaport Emissions Inventory: [Port of Oakland 2015 Seaport Emissions Inventory Final-11Oct2016.pdf](#)

Southern California International Gateway Locomotive Emission Factor Assumptions (Cont'd)

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

Locomotive Tier	NOx Emission Standard (g/bhp-hr) ^{4 5}
Tier 0	9.5
Tier 0+	8.0
Tier 1	7.4
Tier 1+	7.4
Tier 2	5.5
Tier 2+	5.5
Tier 3	5.5
Tier 4	1.3



Locomotive Tier	NOx Ratio (From SCIG EIR)	NOx Ratio (Updated)
0+ / 0	0.837	0.842
1+ / 1	1.000	1.000
2+ / 2	0.900	1.000
3 / 2	0.900	1.000
4 / 2	0.182	0.236

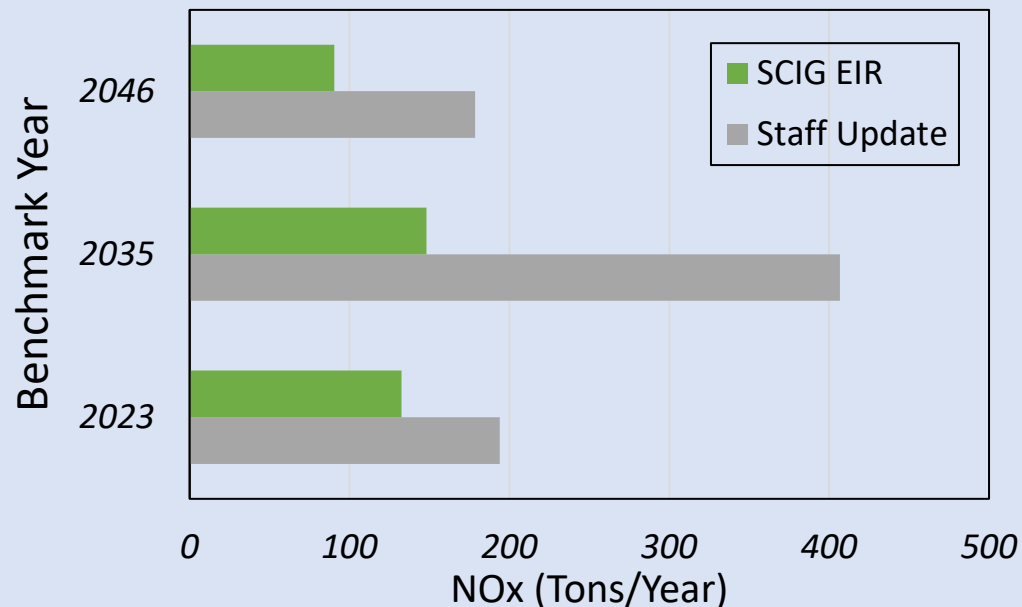
⁴Title 40 CFR, Chapter I, Subchapter U, Part 1033: <https://www.govinfo.gov/content/pkg/FR-2008-06-30/pdf/R8-7999.pdf>

⁵Title 40 CFR, Chapter I, Subchapter U, Appendix I to Part 1033: <https://www.ecfr.gov/current/title-40/chapter-I/subchapter-U/part-1033/appendix-Appendix%20I%20to%20Part%201033>

Draft Results of Staff Update to SCIG Locomotive Emissions Estimate

- 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

Total Locomotive Emissions from SCIG



SCIG Locomotive NOx Emissions (Tons/Year)

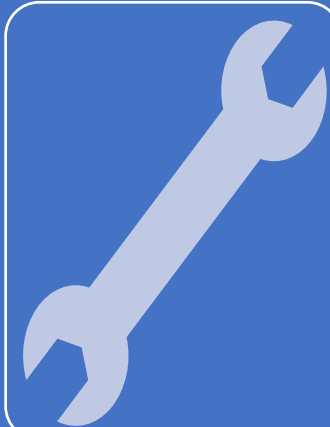
	2023	2035	2046
SCIG Final EIR	132	148	90
Staff Update	194	407	179

Next Step: Consider potential impact of CARB's proposed In-Use Locomotive Regulation

SCIG EIR Assumptions for Other Equipment Categories

Drayage Trucks	Cargo-Handling Equipment	Transport Refrigeration Units	LNG Yard Trucks
Modeling Used in SCIG EIR			
EMFAC 2011			OFFROAD 2007
Assumptions from SCIG EIR			
<ul style="list-style-type: none"> • 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 	<p>Equipment</p> <ul style="list-style-type: none"> • Cranes • Excavators • Forklifts <p>Fuel Sources</p> <ul style="list-style-type: none"> • Gasoline • LFG • Ultra Low Sulfur Diesel 	<ul style="list-style-type: none"> • Electric plug-in power supplied on-site • Modeled at 0.13% of SCIG container volume • Diesel run time of 30 minutes 	<ul style="list-style-type: none"> • Turn time 20 minutes per cycle; 18 hours per day • Max of 10 LNG yard trucks operating per day

Additional Considerations for ISR



Union Pacific Press Release⁶ for 600 Remanufactured Locomotives Up to Tier 2 (No Commitment to Tier)⁷

- 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

⁶Union Pacific Press Release: https://www.up.com/aboutup/community/inside_track/up-wabtec-agreement-it-220726.htm?aqfc=InsideTrack&aqfm=HomePage&aqfs=UP.com

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

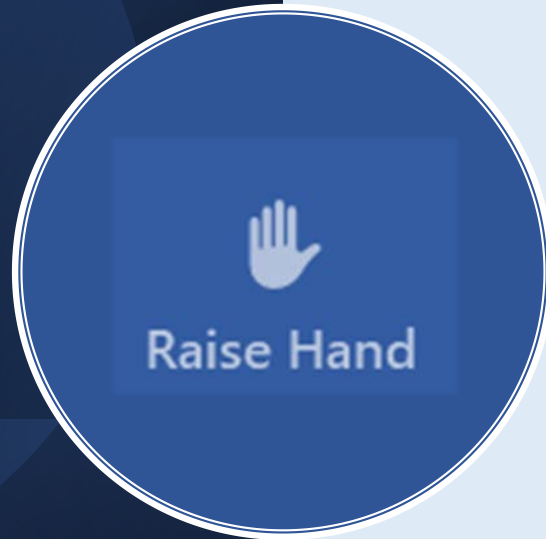
Develop Draft Rule Concept and Design

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.

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For more information, visit: www.aqmd.gov/fbmsm (click into “Railyard and Intermodal Facilities”)