



Proposed Rule 2304
Indirect Source Rule for Commercial Marine
Ports – Container Terminals
Working Group Meeting

Technical Discussion on Ocean Going Vessels
and Cargo Handling Equipment

February 22, 2024, 1:00 PM PST

Port of Long Beach
1st Floor Multipurpose Room
415 W. Ocean Blvd.,
Long Beach, CA 90802

Agenda

Introductions and Opening Remarks

Staff Presentation

Breakout Session – Ocean Going Vessels (OGV)

Report Back Out and Group Discussion

Break

Breakout Session – Cargo Handling Equipment (CHE)

Report Back Out and Group Discussion

Closing Remarks

Working Group Meeting Focus: Strategies to Further Reduce Emissions at the Ports

Further emission reductions are needed at the Ports

- Goal of holding this series of Working Group Meetings is to discuss potential strategies that can achieve additional emission reductions from port sources

Important to obtain technical stakeholder feedback on strategies

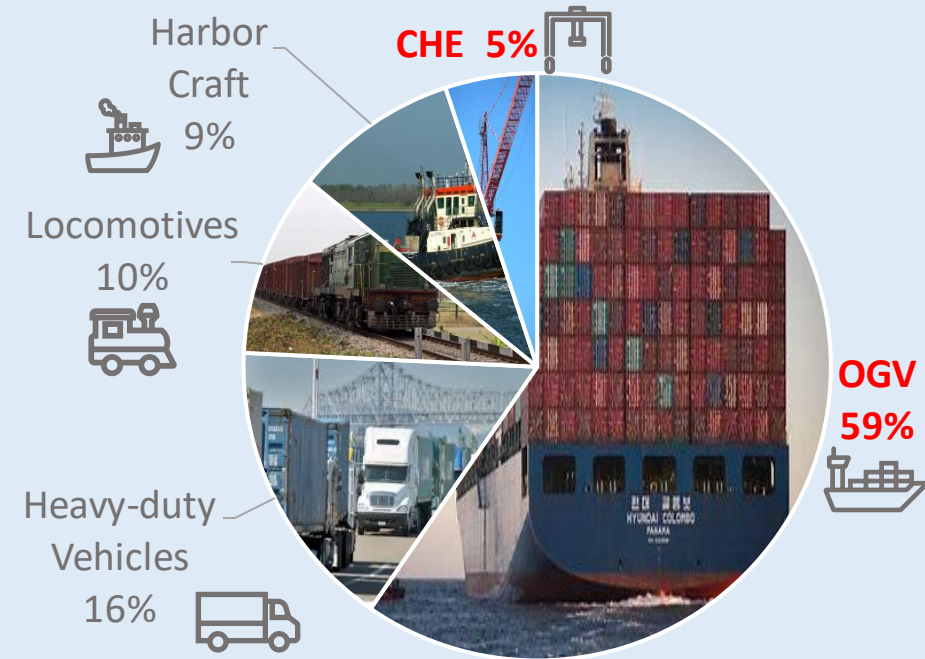
Discussion today:

- Breakout groups to discuss mechanisms to further reduce OGV and CHE emissions at the San Pedro Bay Ports
- Technical details focusing on constraints, opportunities, and community benefits and impacts

Port Source Emissions at San Pedro Bay Ports



Diesel Particulate Matter Emissions
Average Daily Total: **0.59 tons**

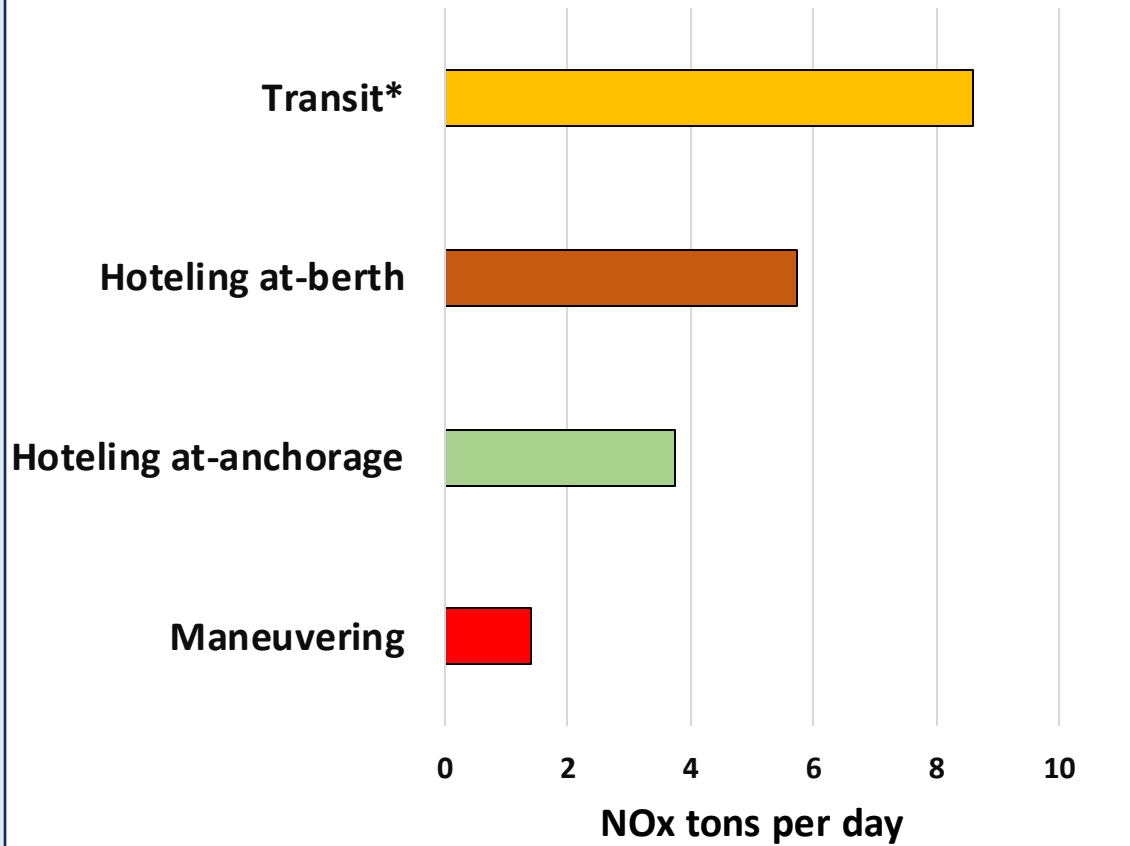


NOx Emissions
Average Daily Total: **36 tons**

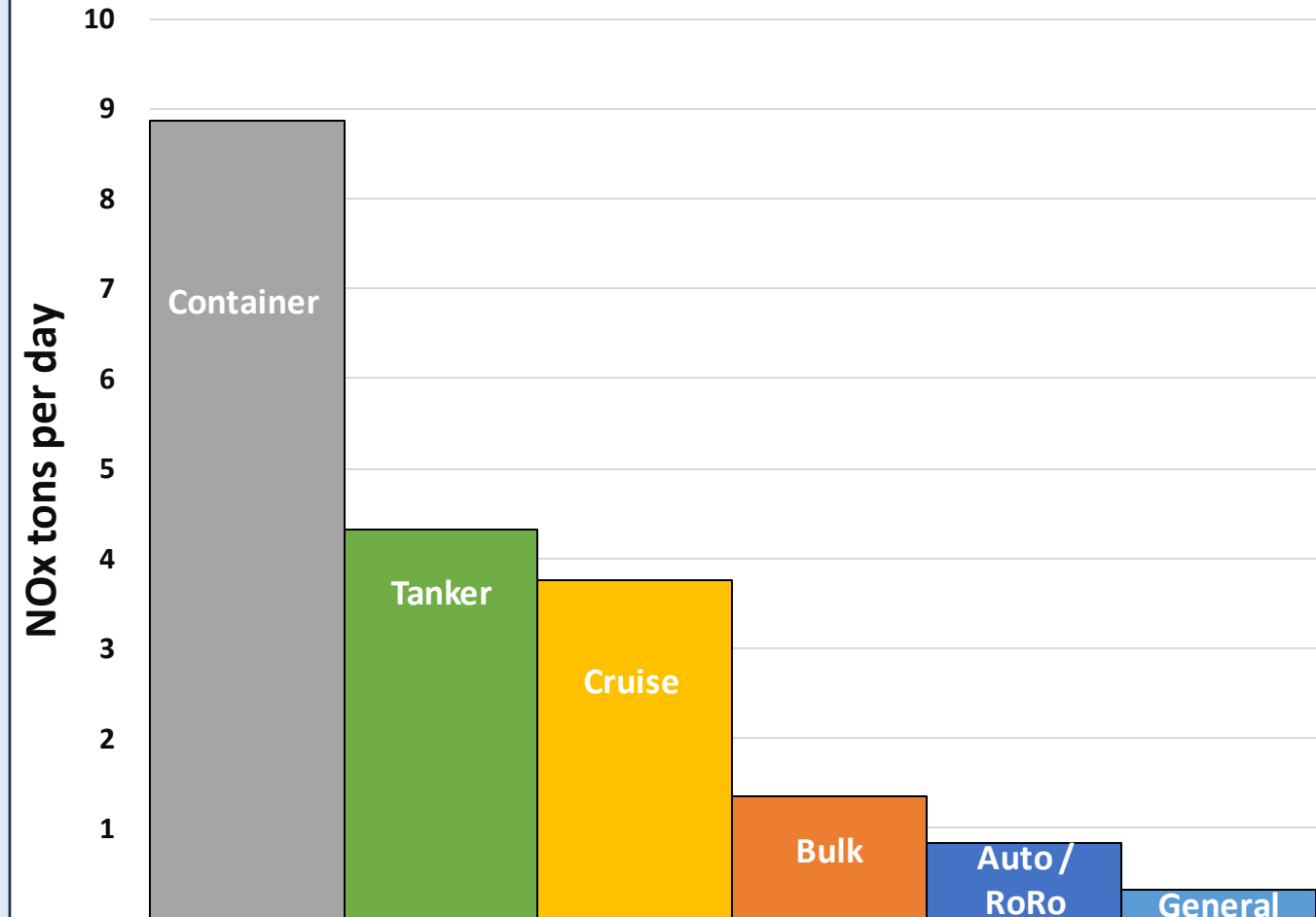
13 – 20% of the total NOx emissions (tpd) in the South Coast Air Basin are from Port sources

2022 OGV Operating Mode Activity

San Pedro Bay Ports OGV NOx Emissions by Operation Mode



San Pedro Bay Ports NOx Emissions by Vessel Type



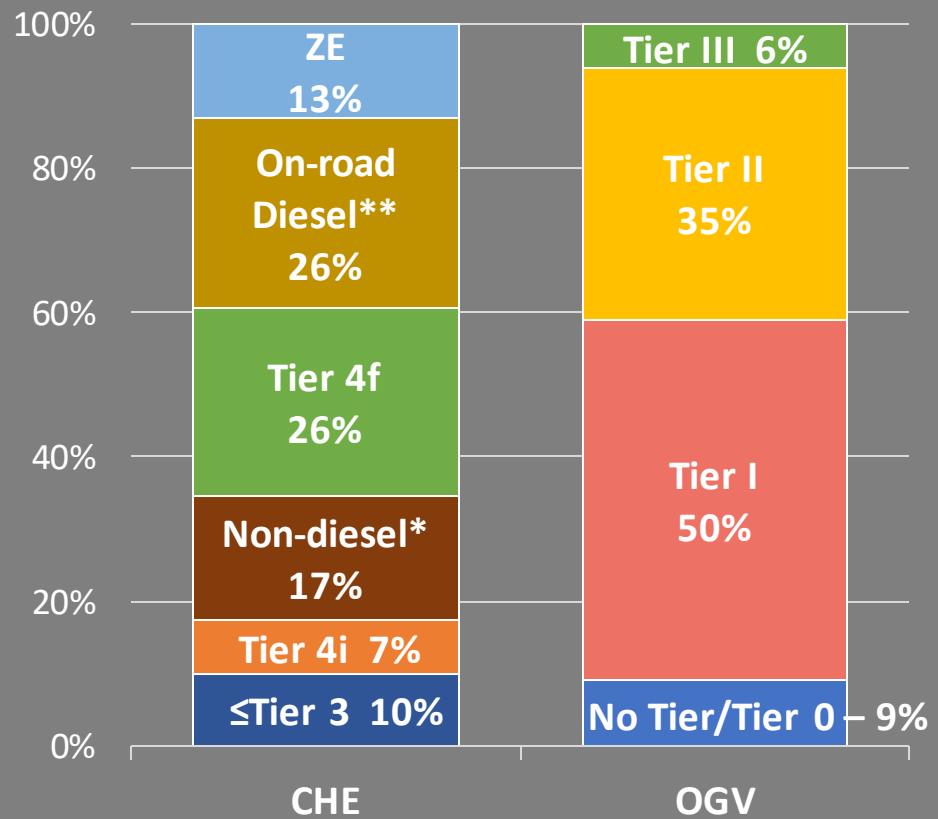
Note: CARB's OGV emissions inventory extends to 100 nautical miles from coastal shoreline; total 32 tons per day of NOx

*Transit emissions are calculated within approximately 3 to 24 nautical miles from coastal shoreline

Source: 2022 POLA/POLB Emissions Inventories

Technology Implementation at San Pedro Bay Ports

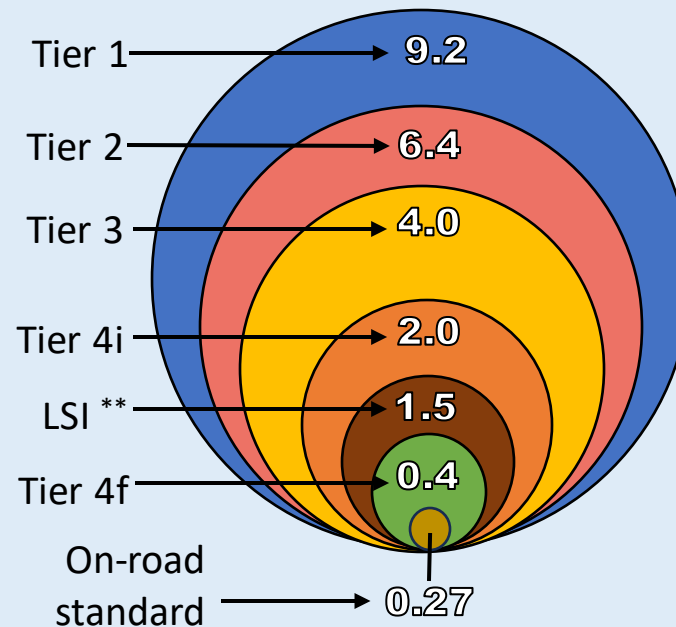
Fleet % Distribution by Port Source at San Pedro Bay Ports



*Includes propane, liquified natural gas, and gasoline
 **Includes yard trucks meeting on-road engine standard

Sources: 2022 POLA/POLB Emission Inventories

CHE NOx Emission Limits* (g/kW-hr)



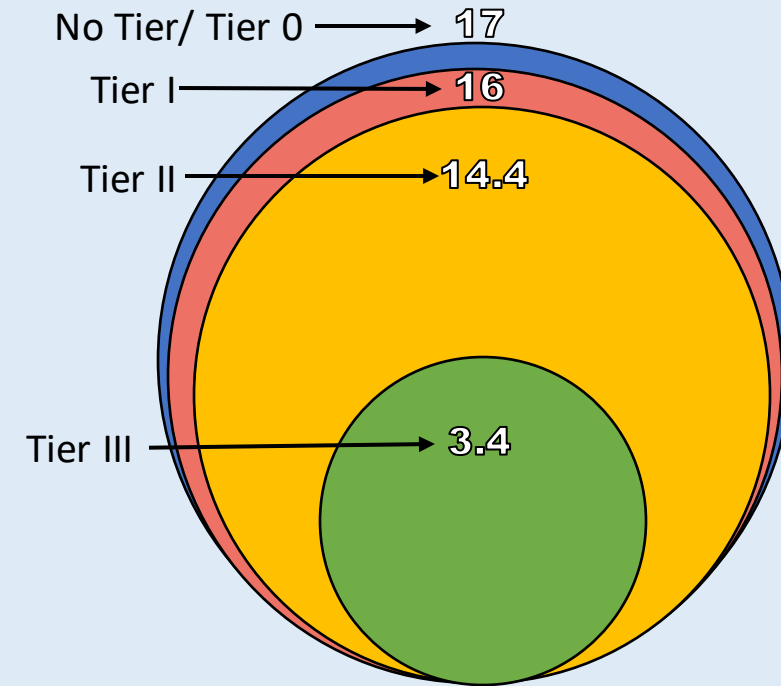
* Limits shown are approximate. Refer to specific regulations for details

**LSI = Large-Spark Ignition standard. Applies to propane, natural gas, and gasoline engines

Sources:

[Nonroad Compression-Ignition Engines: Exhaust Emission Standards \(EPA-420-B-16-022, March 2016\);](https://www.epa.gov/air-quality/clean-air-act-regulations-nonroad-compression-ignition-engines)
[Update of Engine Categories, Emission Rates and Speciation Profiles for Tier-4 Nonroad Compression Ignition Engines - Presentation \(December 6, 2017\) \(epa.gov\)](https://www.epa.gov/air-quality/update-engine-categories-emission-rates-and-speciation-profiles-for-tier-4-nonroad-compression-ignition-engines)

OGV NOx Emission Limits* (g/kW-hr)



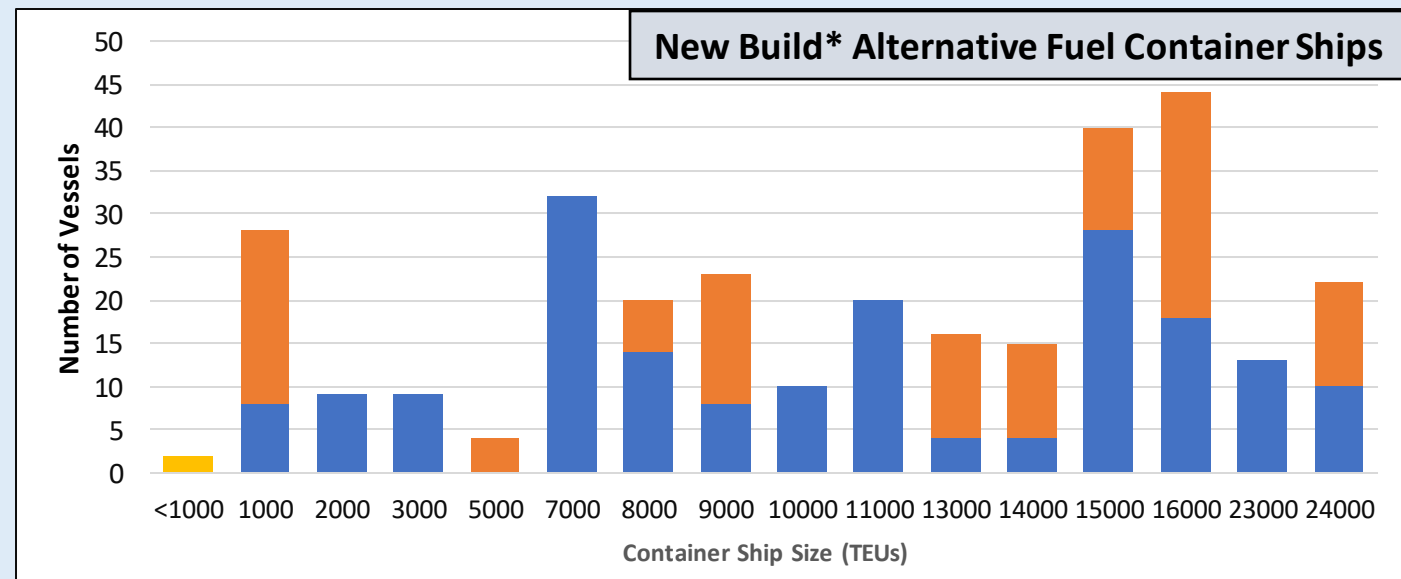
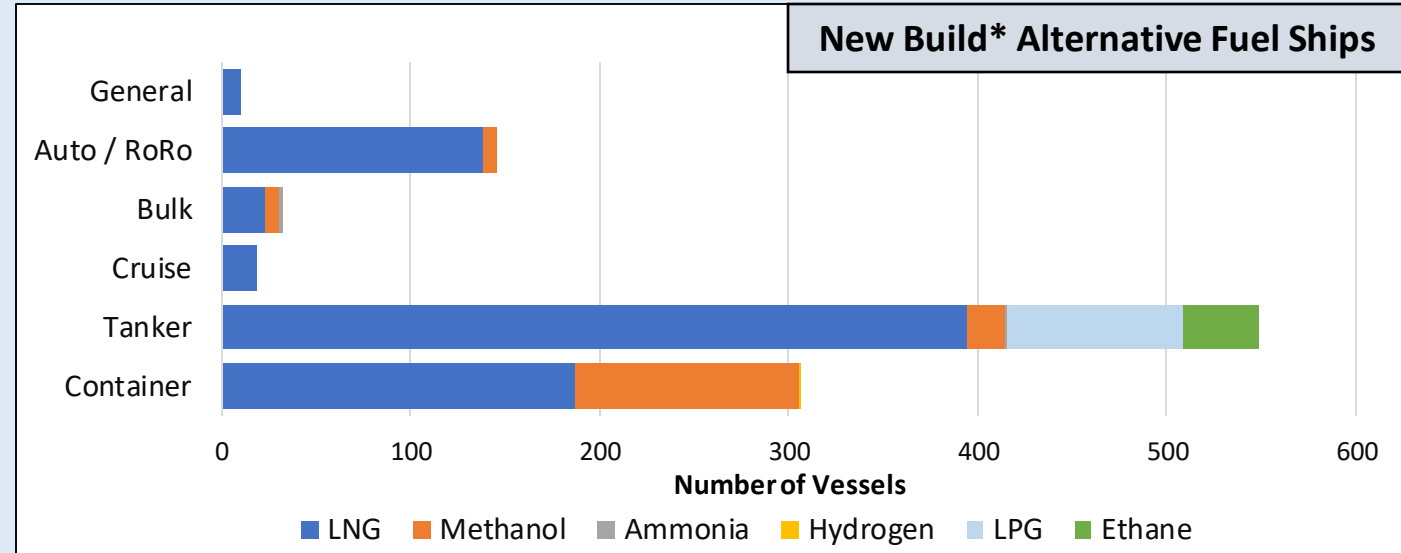
Source:

[https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P10102U0.pdf;](https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P10102U0.pdf)
 2021 California Ocean-Going Vessels Emissions Inventory

Increasing Uptake of Alternative Marine Fuels

- Methanol fueled ship orders growing, with interest in ammonia on the rise
 - 29 methanol ships currently operating globally
 - 2 confirmed ammonia ship orders in 2024
- LNG fueled ships continue to show high uptake
 - 493 LNG ships in operation globally
- 2.6% (~1,600 vessels) of global ship fleet (~60,500 vessels) call to San Pedro Bay Ports
 - Of that, 10.6% of global container ship fleet call to San Pedro Bay Ports
- New build alternative fuel ships are mostly dual-fueled and must meet Tier III NOx limit

Sources: <https://www.tradewindsnews.com/gas/methanol-fuelled-newbuilding-orders-lead-the-charge-in-january/2-1-1592810>;
2022 POLA/POLB Emission Inventories



*Includes ships already delivered and on orderbook

Source: IHS Sea-web Data

Potential Emission Reduction Mechanisms: Ocean-going Vessels



Desired Outcome

Cleaner Vessel Visits

Understand Co-benefits of NOx and Other Criteria Pollutants with Alternative Fuels

Reduce At-anchor Emissions

Potential Mechanisms

Enhanced / additional incentives through existing or related upcoming programs

Lease agreements include minimum % of:

- Vessel calls meet latest IMO standards
- Use of emission control technologies

Study of criteria pollutant reduction benefits with reduction targets in existing programs

Infrastructure support for at-anchor emissions control through public-private partnerships

Feebate program to encourage cleaner vessel and discourage older vessel visits

Demonstrations of emissions control technologies for in-use vessels

Study of emissions profile to ensure Tier 3-level benefits and investigate low load issues in tech demo projects

Incentive program for methods to control anchorage emissions

Questions on these mechanisms?

Potential Emission Reduction Mechanisms: Cargo Handling Equipment



Potential Mechanisms

Desired Outcome	
100% On-terminal ZE Equipment by 2030	Increase ZE Equipment Usage
Development and implementation of terminal-specific master plans	Incentives for container moves to peel-off yard by ZE yard trucks

Questions on these mechanisms?

Discussion Pointers During Breakout Sessions



Looking for productive discussion on how emissions reduction mechanisms could be successful

Staff is open to additional mechanisms not in table as well



Looking for any supporting data or additional information from stakeholder feedback



Encourage multiple viewpoints to be offered and heard



Please treat others with courtesy, civility, and respect

Before Going Into Breakout Sessions

Next Steps

February
28

Working Group Meeting

- Technical Discussion on:
 - Drayage Trucks
 - Locomotives
 - Harbor Craft

March /
April

Follow Up on Meetings

- Additional meetings as necessary
- Consolidate feedback
- Follow up with stakeholders

“Potential Port Emission Reduction Strategies – Discussion Draft” is available on the Facility-Based Mobile Source Measures webpage: <https://www.aqmd.gov/fbmsm>

(Additional copies of the handout for today’s discussion can be found at each breakout table)

To share additional information or supporting data or to meet individually with staff, please contact: PortsISR@aqmd.gov

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Proposed Rule 2304

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Sign up for the mailing list at: <https://www.aqmd.gov/sign-up> (select “Proposed Rule 2304”)

For more information and for materials from previous meetings,
visit: www.aqmd.gov/fbmsm (click into “Commercial Marine Ports”)