



Update on CARB's Marine Programs

California Marine Affairs & Navigation Conference
September 10, 2026

Agenda

- Status update on
 - Commercial Harbor Craft (CHC) Regulation
 - Spark-Ignition Marine Engines
 - Ocean-Going Vessel (OGV) Fuel Regulation
 - OGV At-Berth Regulation
- Discussion of potential In-Transit rulemaking activities
- Q&A



CHC: Regulation & Implementation

CHC overview

- Commercial vessels near ports (not OGV or recreational)
- Regulation adopted 2008; amended in 2010 and 2022

2022 Amendments

- Compliance began in 2023, phased by vessel type/model year
- New short-run ferries → zero-emission; excursion vessels → hybrid
- Renewable diesel (R99) required 1/1/23
- Projected reductions: 89% DPM, 54% NOx when fully implemented

2022 CHC Regulation: Expanded Applicability

Previously Covered (2010 Regulation)

- Excursion
- Barges under 400 feet
- Dredge
- Crew and Supply
- Ferries
- Tugboats
- Diesel-fueled only



Newly Covered (2022)

- All commercial vessels
- Workboats
- Pilot
- Research
- Sportfishing
- Commercial Fishing
- Barges over 400 feet
- Engines under 50 hp

2022 CHC Regulation: Cleaner Combustion



- Tier 4 engines required for <600 kW if certified for duty cycle
- EPA-certified engines that meet CARB's performance standards may be used

CHC: Status & Next Steps

EPA partial authorization (Jan 2025)

- Most CHC requirements were authorized
- No action on ZE for **in-use** short-run ferries or post-E3 feasibility extension requirements
- ZE required for **new** short-run ferries (keel laid after 12/31/25)
- Short-run ferry diesel engines must be Tier 3/4 (no DPF) by 12/31/25

Board resolution 22-6 activities:

- Ongoing assessments of lower-emitting engines and ZE tech
- 2024 workshops completed; 2025 report published
- Biennial technical working groups through 2032
- Next working group planned for 2027

2022 SIP Measure for Spark-Ignition Recreation Marine Engines

Catalyst-based exhaust standards (outboard & PWC)

- 70% HC + NO_x reduction for engines $\geq$ 40 kilowatts (kW)
- 40% HC + NO_x reduction for engines $<$ 40 kW
- Assessing ZE phase-in for engines $<$ 19 kW

2022 SIP anticipated timing

- Board hearing: 2029*
- Exhaust standards phase-in: 2031-2033
- ZE phase-in: 2031-2035

*Date may change based upon resource allocations

HC: Hydrocarbons, NO_x: Nitrogen oxides, ROG: Reactive organic gases,
SIP: State Implementation Plan

OGV Fuel Regulation

- In place since 2009
- Cleaner marine distillate fuel ($\leq 0.1\%$ sulfur) within 24 nm
- Applies to main engines, auxiliary engines, and boilers
- Statewide compliance $>95\%$
- Low-sulfur distillate fuels cut emissions significantly
- Alternative fuels allowed: natural gas, propane, ethanol, methanol, hydrogen, electricity, and fuel cells



OGV At Berth Regulation

Original At-Berth Regulation (2007)

- Applied to container, reefer, and cruise ships at six major California ports
- Portion of fleets required to use shore power or alternative CARB approved emission control strategy (CAECS)

Expanded At-Berth Regulation (2020)

- All covered vessel types must control emissions at regulated terminals (limited exceptions) via shore power or CAECS
- Added tankers and auto carriers; expanded regulated ports/terminals
- Includes opacity limit on black smoke emissions
- 90% NO_x, PM, ROG reduction from ~2,300 annual visits

CAECS Approvals

- Shore power is an approved emissions control strategy
- Additional strategies under CARB review for all vessel types
- 12 CARB-approved barge-based capture and control systems in use
- More information on CARB's website: [CAECS Executive Orders and Approved Test Plans](#)



Implementation Timeline and Flexible Pathways

Implementation Timeline

- 1/1/2023: Container, Reefer, and Cruise vessels
- 1/1/2025: Auto carriers, and Tankers at the Ports of LA/LB
- 1/1/2027: Tankers at all remaining regulated terminals statewide

Alternative compliance pathways

- Vessel and Terminal Incident Events (VIEs and TIEs)
- Remediation Fund (for specific qualifying circumstances)
- Innovative Concepts

Interim Evaluation and In-Transit Rulemaking

- Interim Evaluation Report published December 1, 2022
- No immediate at berth changes; continue exploring additional emission reductions
- Transiting emissions = 95% of OGV emissions
- Priority: additional reductions from vessels **in-transit, maneuvering, and at anchor** in California waters
 - Staff in pre-regulation development stage



December 1, 2022



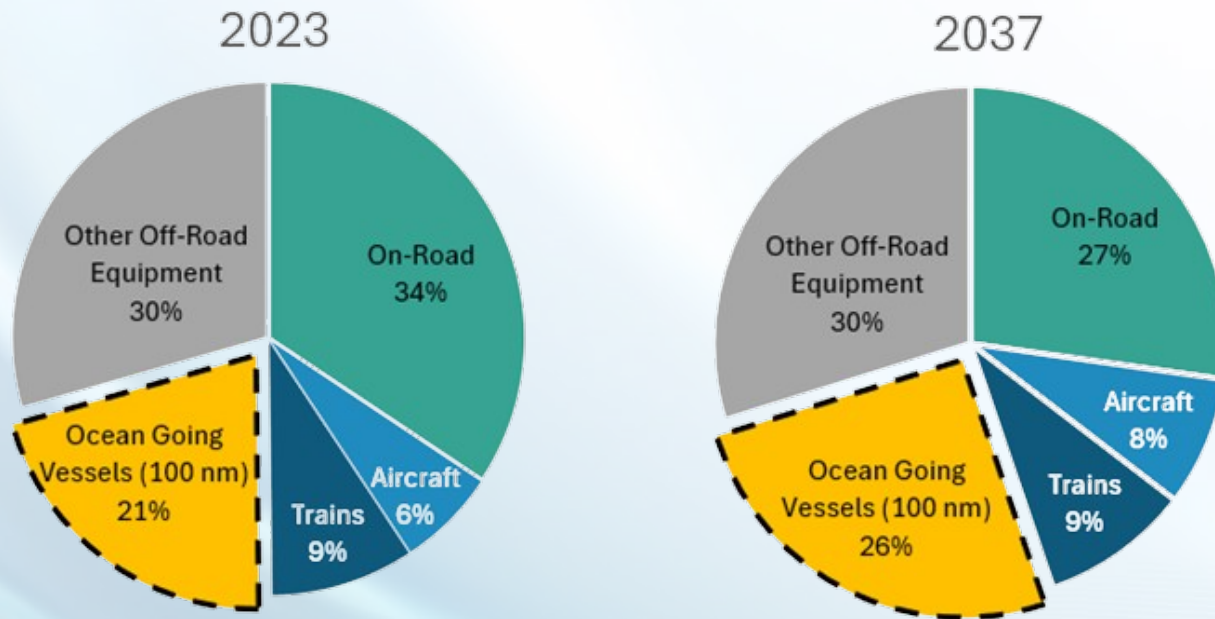
Interim Evaluation Report

Control Measure For Ocean-Going Vessels At Berth



Need for Rulemaking

Statewide mobile source NO_x emissions contributions by sector in 2023 and 2037

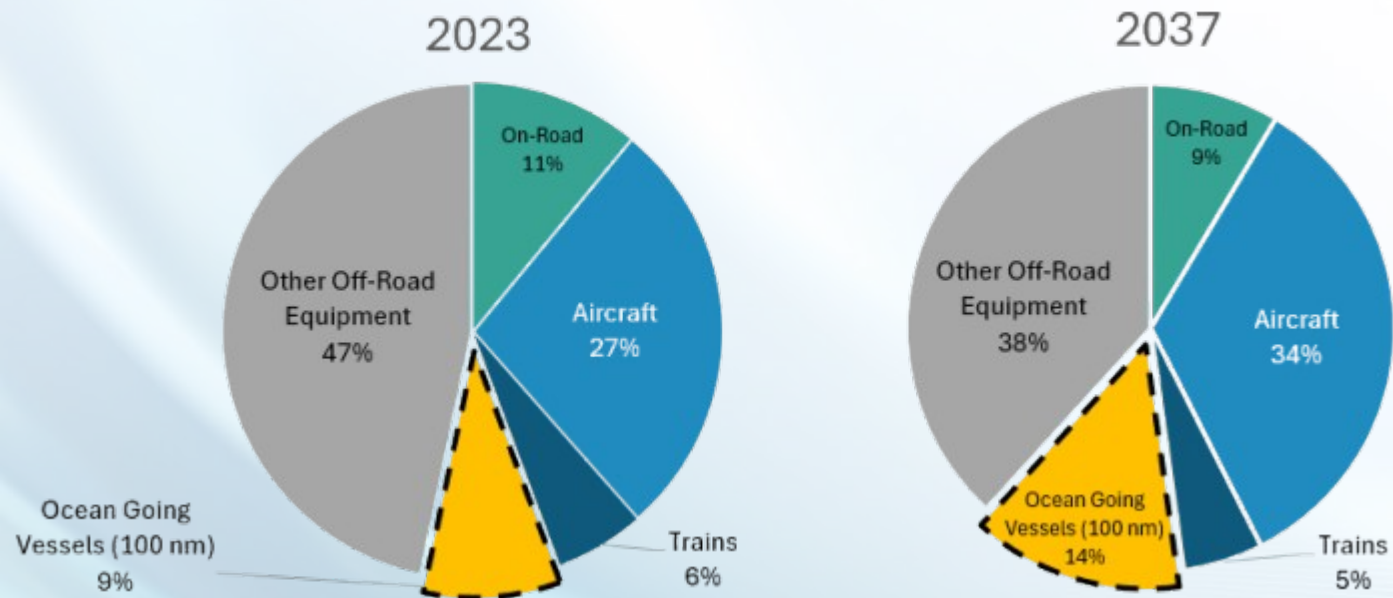


*CARB Emissions Inventory, 2023/2037 projections;
2022 State SIP Strategy

- OGVs are one of the largest contributors of air pollution in California
- NO_x reductions essential to help South Coast Air Basin reach attainment of National Ambient Air Quality Standards

Need for Rulemaking (cont.)

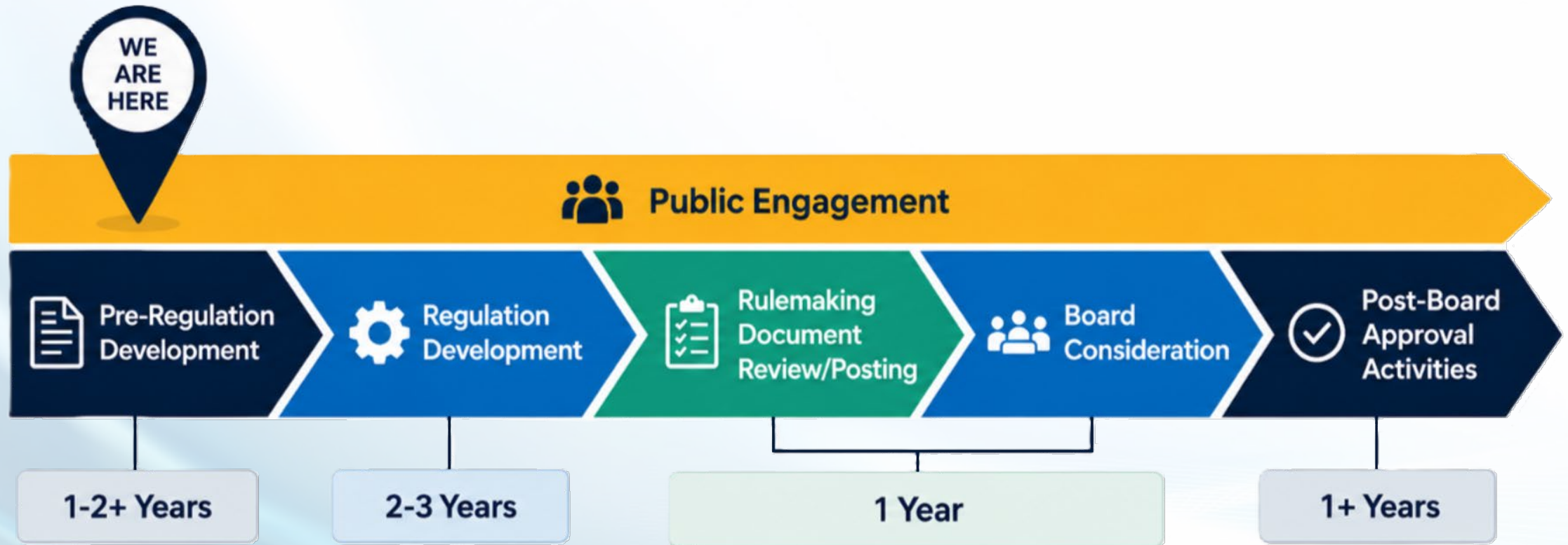
Statewide mobile source PM emissions contributions by sector in 2023 and 2037



*CARB Emissions Inventory, 2023/2037 projections;
2022 State SIP Strategy

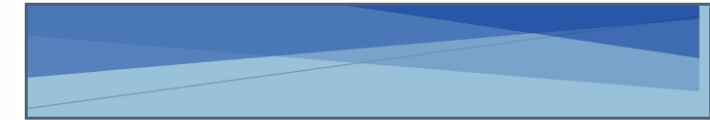
- [2022 State SIP Strategy](#) included emission reduction concepts from OGVs
- PM/diesel PM reductions provide needed health benefits for disadvantaged port communities and supports [Assembly Bill 617 \(2017\)](#)

In-Transit Regulation Development Timeline



University of California, Irvine (UCI) Findings

- Alternative fuels provide large near to mid-term criteria pollutant and GHG reductions
- Mature after-treatment systems (e.g., SCR) remain essential until near/zero-emission engines are viable
- Emerging technologies show long-term potential for near/zero-emission marine operations
- Best path is layering multiple emission reduction strategies



Updated Technology Assessment for Ocean Going Vessels

April 30, 2026

Prepared for: California Air Resources Board

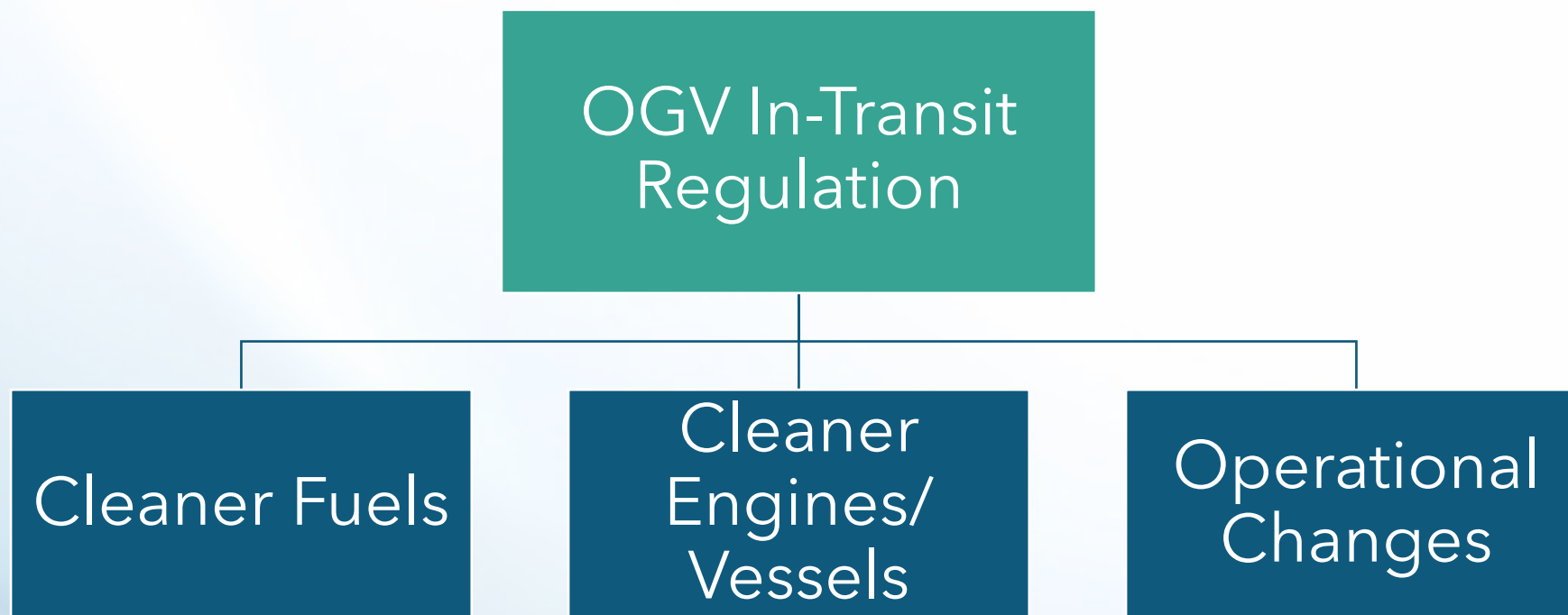
Agreement No: 23TTD023

Agreement Title: Updated Technology Assessment for Ocean Going Vessels

Prepared by: Clean Energy Institute, University of California, Irvine

Principal Investigators: Jeffrey Reed, Michael MacKinnon, Vincent McDonell

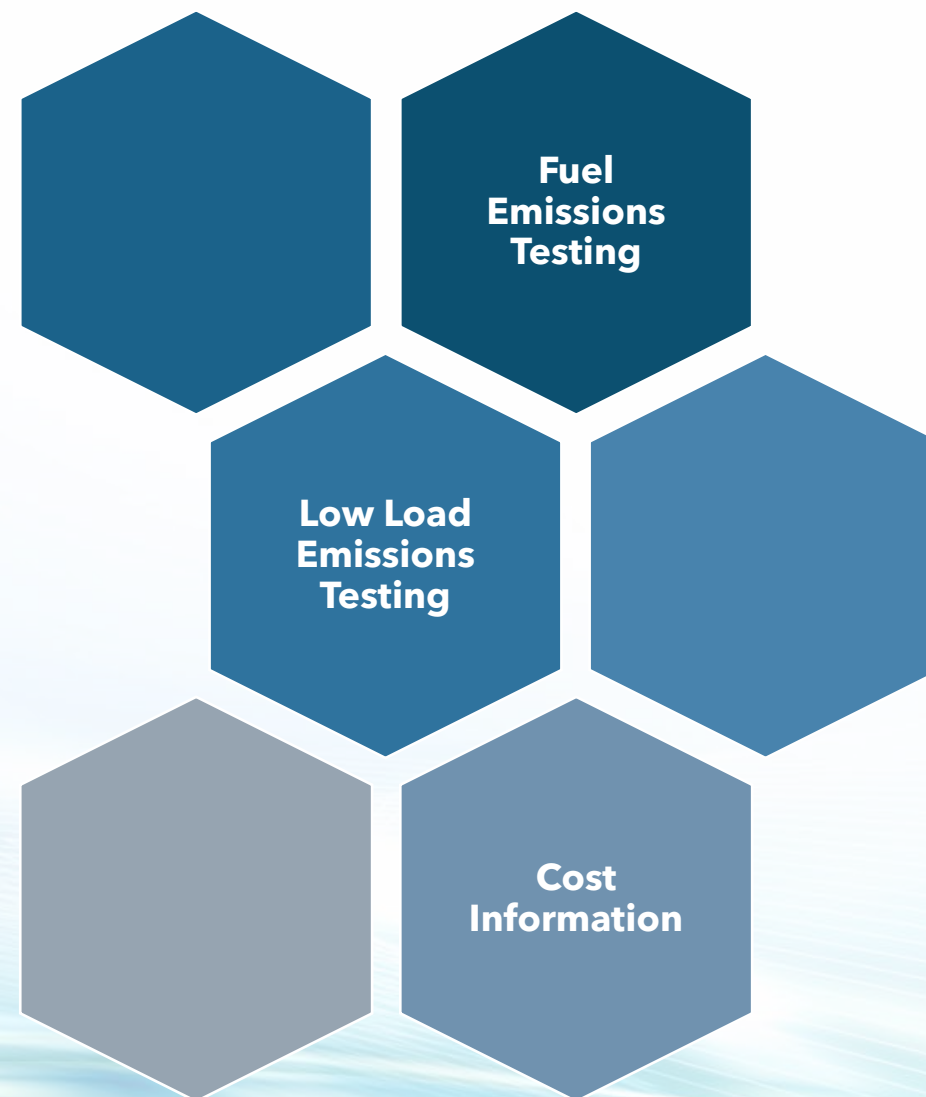
Potential Strategies



- CARB staff is exploring potential strategies and evaluating which measures are priority for reducing emissions

Data Gathering

- CARB is gathering data in support of the In-Transit Rule
- Some areas where additional data is necessary:
 - Fuel testing (renewable/biodiesel, methanol, and other alternative fuels)
 - Low load emissions testing
 - Cost information (engines, fuels, etc.)
 - Other advanced technologies



Next Steps

Strengthen
community and
stakeholder
engagement

Technical
meetings to
inform and shape
our regulatory
approaches

Emissions Testing
and Research

Develop and
refine regulatory
concepts and
strategies

Contact Us!

Program	Email	Website	ListServ
CHC	HarborCraft@arb.ca.gov	Commercial Harbor Craft	Harbor Craft (Commercial Harbor Craft)
Spark-Ignition	Slmarineengines@arb.ca.gov	Spark-Ignition Marine Watercraft	Spark-Ignition Marine Engine/Watercraft
OGV Fuel	OGVFuelRule@arb.ca.gov	OGV Vessel Fuel Regulation	Marine Vessel Activities (Commercial)
At Berth	shorepower@arb.ca.gov	Ocean-Going Vessels At Berth Regulation	Marine Vessel Activities (Commercial and Shore Power for Ocean-Going Vessels)
In-Transit	OGVintransit@arb.ca.gov	Potential Ocean-Going Vessel (OGV) In-Transit Regulation	Marine Vessel Activities (Commercial)



Questions?