CALIFORNIA
AIR RESOURCES BOARD

Public Workshop for the Draft Proposed Amendments to the Commercial Harbor Craft Regulation

September 30, 2020, 9:00 AM

Slides available for download at:
https://ww2.arb.ca.gov/our-work/programs/commercial-harbor-craft/chc-meetings-workshops

Commercial Harbor Craft (CHC) Workshop Agenda

- CHC Regulation and Rulemaking Overview
- Updates to Draft Proposed Regulation Amendments
- Emission Inventory and Vessel Category Updates
- Cost Analysis Updates
- Next Steps

*****Please submit questions at any time through the chat box**

Commercial Harbor Craft Regulation Process Overview

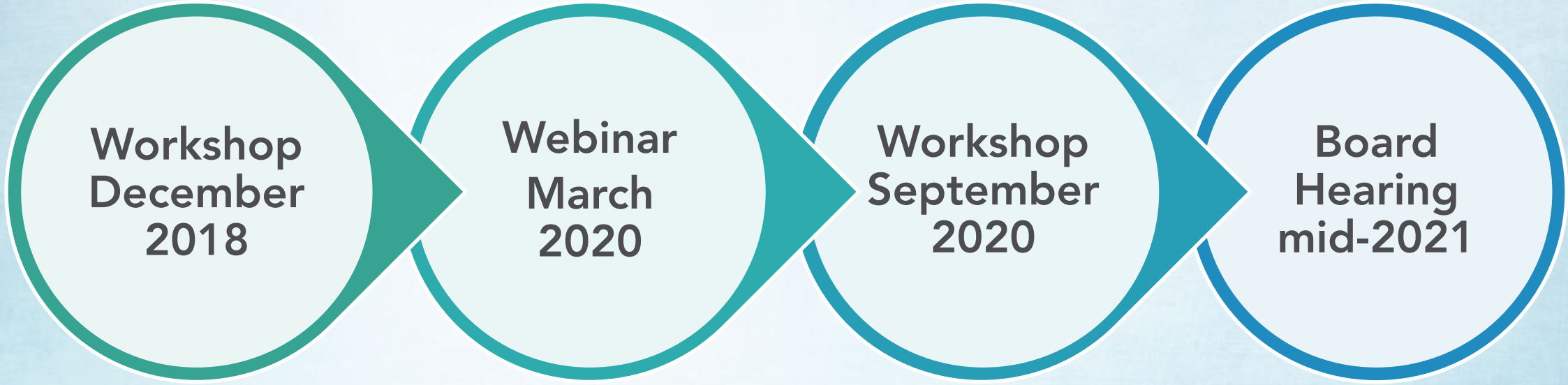
Progress to Date

- Since 2009, commercial harbor craft owners have replaced older engines with newer, cleaner engines to comply with the existing regulation
- Some harbor craft owners not subject to in-use requirements have voluntarily replaced engines
- Many engine replacements have been funded by CARB's Carl Moyer Program administered through local air districts

Additional Harbor Craft Emission Reductions are Needed

- Staff proposed in the March 2018 board hearing to reduce emissions from harbor craft
- Additional to State Implementation Plan actions to:
  - Achieve reduction in community health risk
  - Attain regional air quality standards
  - Mitigate climate change
- CHC rulemaking is included in CARB's Community Air Protection Blueprint strategies for AB 617

Where Are We Now?



- Began feasibility study with Cal Maritime Academy
- Distributed owner-operator surveys

- Proposed concepts posted Feb. 2020
- Preliminary emission inventory methodology

- Draft regulation language posted
- Cost analysis
- Updated emission inventory

- Stakeholder feedback
- SRIA economic analysis
- ISOR staff report

We Appreciate and Value Your Input

- Over 50 comment letters or other written correspondence received, some including multiple attachments with technical analysis
- We have met individually with many of your companies and trade organizations to better understand your operations
- Non-confidential letters posted to CARB's web site, and all information was considered in revising Draft Proposed Amendments

General Feedback Received since March 2020 Webinar

- Comments regarding feasibility of meeting Tier 4 + DPF on in-use vessels, and costs of compliance
- Suggestions for updating the population of CHC operating in California for emission inventory and cost analysis
- Discussion of fleet operational and technology availability impacts to meeting proposed compliance schedules
- Questions regarding specifics on compliance fees and opacity testing concepts
- Feedback on the value of incentive funding to achieve emission reduction goals for harbor craft
- Requests to accelerate deployment of zero-emission technologies where feasible, but consider infrastructure needs and deployment timelines

Updates to Draft Proposed Regulation Amendments

Overview of Updates to Draft Proposed Regulation Amendments

- Performance Standards, Tier 4 Engines, and DPFs
- Low Use Exemptions
- Compliance Extensions and In-Use Engine Requirements
- Zero-Emission and Advanced Technology
- Opacity Testing
- Facility Reporting and Infrastructure
- Compliance Fee Schedule

Review of Proposed Requirements for In-Use and New Vessels

- Proposed requirement is a performance standard equivalent to
  - Below 600 kW: Tier 3 or 4 (if certified) + diesel particulate filter (DPF)
  - Above 600 kW: Tier 4 + DPF
  - Includes engines under 50 hp
- Pathways for meeting Tier 3/4 + DPF performance standard
  - Repowering or rebuilding engines to meet Tier 3 or 4 diesel engines plus installing a CARB verified Level 3 DPF
  - Install Tier 3 or 4 engine certified by U.S. EPA with a DPF from the original equipment manufacturer (OEM)
  - Demonstrate that engines otherwise meet performance standard during normal operation

Tier 3 and 4 + DPF Performance Standards

- CARB staff has developed performance standards based on existing Tier 3 and Tier 4 standards as shown in Tables 7-9*
- NOx standards are equivalent to existing Tier 3 or Tier 4 standards
- PM standards approximately equivalent to 85 percent lower than Tier 4 PM standards
- Proposed Tier 4 + DPF performance standards for engines are either 0.005 or 0.010 PM (g/bhp-hr) for Category 1 engines, depending on power subcategory

*Pages 57-59 of Draft Proposed Regulatory Language

Tier 4 Engine Certification and Availability

- U.S. EPA has certified 40 unique Tier 4 marine engine families, ranging from 600 to 7,458 horsepower
- U.S. EPA delayed Tier 4 engine certification requirements for high power density engines until 2022 or 2024
  - Delays provide more time for engine manufacturers to develop and certify high-power density 4 engines used in some high-speed vessels that are not commonly used in California
  - CARB staff do not expect delay to impact meeting Tier 4 + DPF compliance schedules

U.S. EPA Tier 4 Engine Certification

- U.S. EPA Tier 4 Marine engine PM standard of 0.04 g/kWh can be met without using DPF technology
- Some marine engine manufacturers have already certified with DPFs, even when not required to meet PM standards
- Draft regulatory language (e)(6.1)(C)1 includes new Method C1 to allow for U.S. EPA certified engines to demonstrate that they meet the stricter CARB performance standard

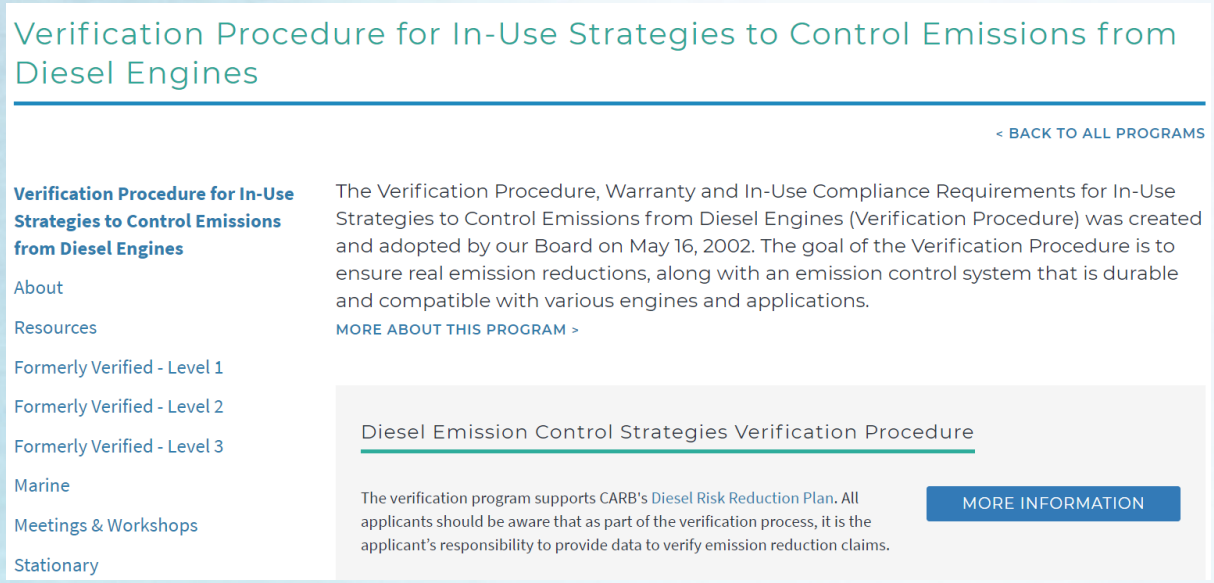
U.S. EPA Tier 4 Engine Certification (cont'd)

- New engine certification requires a deterioration factor demonstration, which requires thousands of durability hours in lab
- Under test engine exemptions, some marine engine manufacturers have accrued durability hours after engines are installed in vessels
- European Stage V requirements took effect in 2020, which include DPF forcing solid particle number standards – these engines may be candidates for in-use certification

Retrofit DPFs for Marine Vessels

- CARB's existing Verification Regulation (13 CCR 2700-2711) specifies requirements for aftermarket DPF approval
- Draft Regulatory Language (e)(6.1)(C)2 includes a new Method C2 to retrofit with a DPF installation to meet performance standards
- DPF must be a Level 3 Verified Diesel Emission Control Strategy (VDECS) capable of reducing diesel PM by 85 percent or more

Retrofit DPFs for Marine Vessels



https://ww2.arb.ca.gov/our-work/programs/verification-procedure-use-strategies-control-emissions-diesel-engines

- Over the past two decades, tens of thousands of retrofits have been installed on on-road, off-road, marine*, stationary, and freight equipment
- CARB staff has met with multiple DPF manufacturers regarding potential future marine market for CHC
- To address stakeholder safety concerns, CARB has directed prospective applicants to work with U.S. Coast Guard Marine Safety Center on design and approvals specific to marine vessels

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*There is one marine device, a Level 2 VDECS, which is capable of a 50 percent reduction in diesel PM emissions.

New Low Use Thresholds

- Current low-use compliance pathway allows for compliance by demonstrating annual hours have not and will not exceed 80 hours/year for dredge/barge and 300 hours/year for all other vessels
- Changes are proposed to this pathway based on engine tier level for all vessel categories:

Engine Tier	Tier 0	Tier 1	Tier 2	Tier 3 / Tier 4
Annual Engine Hours	80	300	400	700

New Low Use Thresholds - Continued

- Additional modifications allow for the acquisition of new engines which do not meet the in-use requirements if:
  1. the new engine is replacing an engine which is certified to a less stringent standard, and
  2. the engine will be operated as low-use
- Provides flexibility, at minimal impact to emission reductions

Compliance Extensions Summary

Compliance Extension	Regulation Section	Status
Change in Annual Hours of Operation	(e)(6)(E)1	Sunsets
No Suitable Engine Replacement for Harbor Craft	(e)(6)(E)2	Sunsets
Facility Infrastructure Installation Delays	**(e)(6.1)(E)1**	**Proposed**
Meeting Performance Standards Is Not Feasible for In-Use Harbor Craft	**(e)(6.1)(E)2**	**Modified**
Equipment Manufacturer Delays or Installation Difficulties	(e)(6.1)(E)3	Existing
Multiple Engines on Multiple Vessels Within Same Fleet and With Same Compliance Dates	(e)(6.1)(E)4	Existing
Multiple Engines on Single Vessel With Different Compliance Dates	**(e)(6.1)(E)5**	**Proposed**
No Certified Engines or VDECS Available	**(e)(6.1)(E)6**	**Proposed**
Extension for Vessels with Tier 4 Engines and Limited Operating Hours	**(e)(6.1)(E)7**	**Proposed**

Facility Infrastructure Installation Delays
(e)(6.1)(E)1

- One-year compliance extension, renewable once for a total of 2 years
  - If unforeseen circumstances outside of the facility/vessel owner's or operator's control prevent the installation or use of dock power or zero-emission fueling infrastructure

Question for stakeholders: What obstacles do you expect for installing facility infrastructure? Is there interest in convening a public-private infrastructure work group?

Meeting Performance Standards Is Not Feasible for In-Use Harbor Craft (e)(6.1)(E)2

- 3-year compliance extension, renewable once for a total of 6 years
  - If an operator demonstrates that because Tier 4 + DPF is not feasible on their vessel they must replace the vessel, and they cannot afford this cost
    - Requires a technical feasibility analysis
    - Financial evaluation methodologies include using the U.S. EPA's Penalty and Financial Models such as "ABLE", "INDIPAY", and "MUNIPAY"
- The proposed implementation schedule for new requirements is 2023-2031
  - For applicable scenarios, this extension would be capped at 6 years from proposed dates, potentially pushing compliance dates to 2029-2037*

Questions for stakeholders: Are there recommendations on how to best evaluate ability to pay? What thresholds and assumptions should be used?

*All except workboats, CARB staff are not considering changing the proposed unlimited compliance extensions for workboats.

Multiple Engines on Single Vessel With Different Compliance Dates (e)(6.1)(E)5

- For each set of engines with different compliance dates on a single regulated in-use vessel, a one-time, maximum 1-year extension is proposed for one in-use engine
  - Provides additional flexibility for operators wishing to replace multiple engines at the same time, rather than piecemeal
  - Considers all engines as a group since vessel replacement may be necessary

No Certified Engines or VDECS Available
(e)(6.1)(E)6

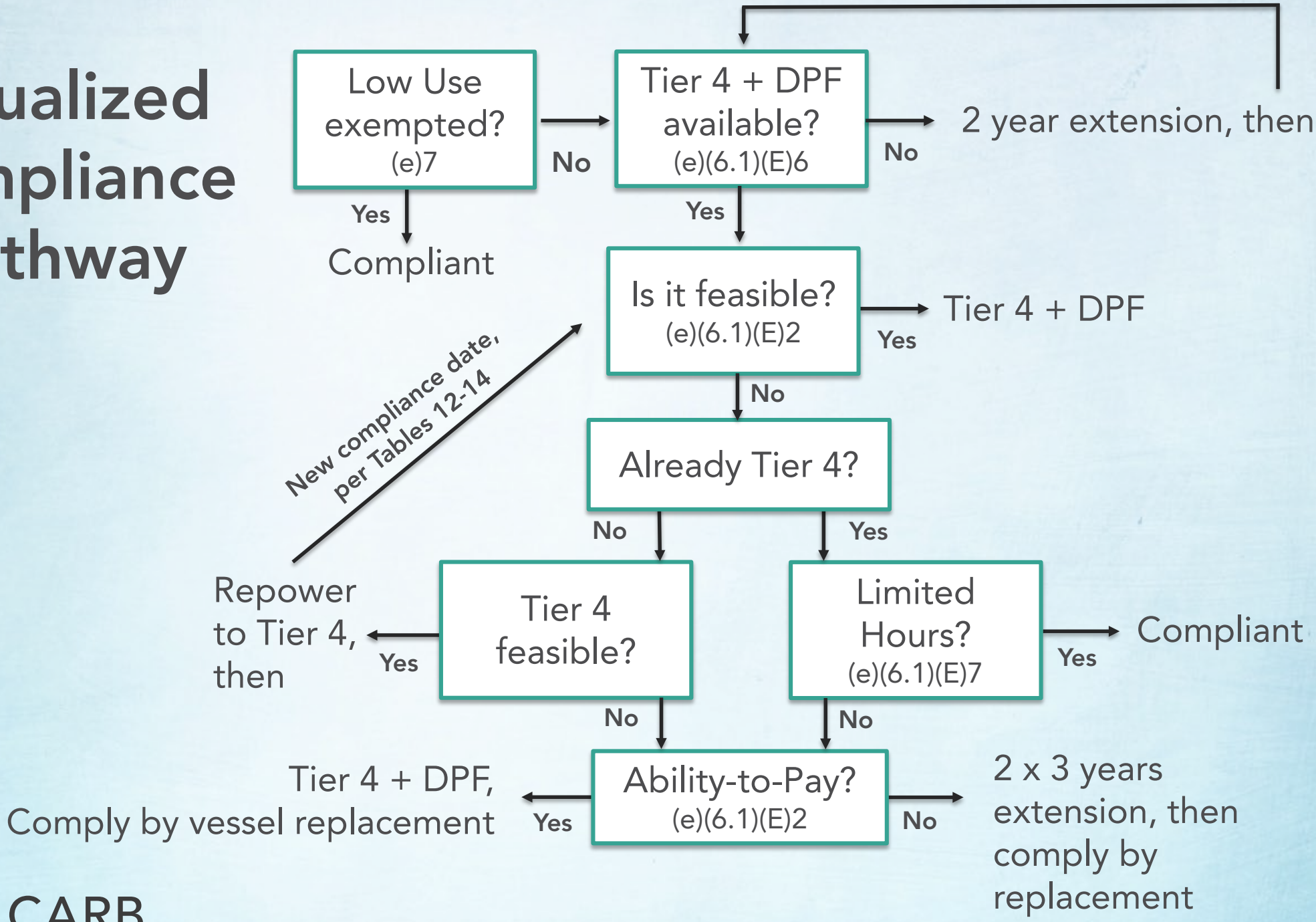
- Many stakeholders provided comments about potential lack of Tier 4 engine and/or DPF availability in marine sector
- Staff propose a new renewable two-year compliance extension where no certified Tier 4 engines or verified DPFs exist for existing and new vessels
- Extension would be subject to feasibility review – No combination of existing engines or DPFs are available
- Staff propose to count this extension (E6) toward total time of potential subsequent E2 extensions ("Is Not Feasible") for a max of 6 years

Extension for Vessels with Tier 4 Engines and Limited Operating Hours (e)(6.1)(E)7

- Compliance extension proposed for vessels where:
  1. Tier 4 + DPF is not feasible
  2. Vessel is already Tier 4
  3. Engine hours of operation are below specified thresholds

Vessel Category	Tier 4 Only Operation Limit
Ferry, Pilot, Tug	< 2,000 hours/year
Passenger Fishing, Excursion, Research	< 2,500 hours/year
Dredge, Barge, Crew Supply, Workboat	< 3,500 hours/year

Visualized Compliance Pathway



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Requirements for Zero-Emission and Advanced Technologies (ZEAT)

Marine Technology Type	Vessel Category Requirement	Mandate Phase-In Date
Enhanced Efficiency Diesel-Electric	N/A	N/A
Zero-Emission Capable Hybrid	New Excursion Vessels	Jan. 1, 2025
Zero-Emission	New and In-Use Short (< 3 nm) Run Ferries	Jan. 1, 2026

Questions for stakeholders: Do tug operators or vessel engine/powertrain manufacturers have data supporting fuel savings and emission benefits of enhanced efficiency tug vessels? Is there feedback on removing the Enhanced Efficiency Diesel-Electric technology for new tugs?

Short-Run Ferry Definition

- Vessel dedicated to provide regularly scheduled round-trip ferry service between two points that are less than 3 nautical miles apart for 20 percent or more of service trips
- Clarified short-run ferry definition for ferries that work on multiple or circular routes
  - Excludes short-hop or interlining vessels, but includes circular routes that may have some one-way trips slightly longer than 3 nm
  - Section (d)107 of Draft Proposed Regulatory Language

Alternative Compliance Pathways (ACP)

- Propose replacing Alternative Control of Emissions (ACE) pathway in existing regulation with two Alternative Compliance Pathways (ACP)
- Two options that vessel owners can request:
  1. Option 1. Achieve greater or equal emission reductions as Tier 4 + DPF standard with alternative technology; or
  2. Option 2. Adopt ZEAT where not required = additional compliance time for another vessel in fleet and air basin

Marine Technology Type	Additional Compliance Time
Zero-Emission Capable Hybrid	3 Extra Years
Zero-Emission	7 Extra Years

ACP - Continued

- ACP Option 1 would allow for combining strategies to achieve performance standards, such cleaner fuel, hybrid, and Alternative Complying Technologies (ACTs), such as engine rebuild kits*
- Regulatory requirements, such as using grid electricity while at dock, could not count toward a vessel or fleet's ACP
- CARB lead Portable Emissions Measurement System (PEMS) testing to quantify emissions impacts of 100% Renewable Diesel (R100) for an in-use excursion vessel operation
- Results confirm laboratory testing from on-road diesel vehicles (about 10% lower NOx and 30% lower PM); CARB staff is considering requiring all CHC to use R100 instead of a component of an ACP

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*https://ww2.arb.ca.gov/our-work/programs/commercial-harbor-craft/chc-complying-alternative-technologies

Opacity Testing

- Beginning January 1, 2023, a vessel owner/operator must perform opacity testing every other year (biennially)
- Proposed language specifies that engines equipped with DPFs shall not exceed 5 percent smoke opacity when adapting SAE J1667 procedures
- Staff is still evaluating field data to propose opacity limits and procedures for engines not equipped with DPFs
- Vessels with wet exhaust systems will still be subject to testing

Questions for stakeholders: What methods are best used to test wet exhaust systems for opacity testing? Is there any feedback on opacity limits?

Facility Infrastructure Requirements

- Facilities would install/maintain dock power infrastructure
  - Update: staff propose this applies to facilities that receive more than 50 visits per year
    - A vessel visit is a period of time lasting between 1 and 24 hours with main engines idling or auxiliary engines operating at a facility
  - Facilities to provide dock power by 2024
- Vessel owner/operators are responsible for zero emission infrastructure other than dock power
  - Facilities would be required to allow vessel owners to install infrastructure for their operations

Reporting and Vessel Compliance

- Analysis of vessels reported and CA DMV and US Coast Guard data indicate that more than one-third of vessels are not reported
- Operators state that competitors are operating out of compliance, and such operation undercuts companies that are operating legally
  - Compliance rate of inspected vessels, mostly reported vessels, is ~92%
- To increase compliance, CARB has proposed facility reporting and vessel labeling
  - This requires time and resources

Question for stakeholders: What new approaches or requirements could help improve compliance and emission reductions?

Facility Recordkeeping and Reporting Requirements

- Starting January 1, 2023, facilities are required to report to CARB quarterly
  - Reporting will be done via an online reporting system (FRRS)
- Staring January 1, 2023, facilities will be required to maintain daily records of date, local time, position (e.g., slip number), etc. for each facility tenant

Compliance Fee Structure

- CARB is authorized under Health & Safety Code (HSC) 43019.1 to develop fee schedule to recover costs associated with compliance of off-road or non-vehicular engines and equipment
- Staff developed draft schedule based on costs of personnel, equipment, and operational costs for implementation and enforcement (**$1.9 million/year)**
- Stakeholder comments received indicated some auxiliary engines are already subject to local air district permits
- CARB proposes fee structure to recover costs through each vessel and main engine aboard each vessel
  - Includes a 25 percent lower fee for fleets operating a single vessel only
  - Assesses a higher fee (50 percent more) for low use compliance pathway due to additional staff time to review demonstration

Compliance Fee Structure

- Using vessel and engine populations for 2023 from CARB's cost analysis, the following fee amounts were calculated:

Category	Annual Fee Amount
Per vessel, for single-vessel fleets	$349
Per vessel, for all other fleets	$466
Per engine, for single-vessel fleets	$145
Per engine, for all other fleets	$193
Per engine, if complying by low use	$290

*commercial fishing vessels are not subject to fees based on this proposal

Staff Seeking Input on Draft Regulatory Language

Staff is requesting feedback from stakeholders to refine the proposed draft language posted on CHC website: https://ww2.arb.ca.gov/our-work/programs/commercial-harbor-craft

- Recommendations on ability to pay evaluation methods (thresholds, assumptions, etc.)
- What pathway(s) would you use to comply?
  - What alternative technologies could work for your operations?
  - Would compliance extensions and alternative compliance pathways satisfy your needs?
  - Which compliance extensions should be stacked/combined?
- What obstacles do you expect for installing facility infrastructure? Is there interest in a public-private infrastructure work group?
- Feedback on removing enhanced efficiency diesel-electric requirements
- Feedback on a 100% renewable diesel fuel requirement for commercial harbor craft
- What methods are best used to test wet exhaust systems for opacity testing? Is there any feedback on opacity limits?
- Feedback on approaches or requirements to help improve compliance

Emission Inventory and Vessel Category Updates

General Emission Inventory Methodology

$$\boldsymbol{Emission} = \sum (POP \times HP \times \mathrm{A} \times LF) \times EF \times \mathrm{FCF}$$

- **POP:** engine population
- **HP**: rated/maximum horsepower
- **A**: average activity in hours
- **LF: Load Factor,** the ratio of in-use HP to maximum HP
- **EF: Emission Factor (g/hp-hr)**, adjusted for deterioration
- **FCF: Fuel Correction Factor,** accounts for the difference in emissions between CARB and federal diesel

CHC Emission Inventory Updates: Vessel Category

Previous Vessel Category	Updated Vessel Category
• Ferry	• Catamaran Ferry • Monohull Ferry • Short Run Ferry
• ATB Barges • Bunker Barges • Other Barges	• ATB Barges • Bunker Barges • Towed Petrochemical Barges • Other Barges
• Charter Fishing	• Commercial Passenger Fishing

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CHC Emission Inventory Updates: Vessel Population

- U.S. Coast Guard (USCG) data updated excluding vessels with expired or invalid COD status
- CARB reported vessel population from Port of LA/Long Beach/Oakland/Richmond held constant
- Remaining reported vessel population scaled up by vessel type to match population identified by CARB staff and USCG

CHC Emission Inventory Updates: Vessel Population

Vessel Category	Previous Population	Updated Population
Barge-ATB	31	19
Barge-Bunker	51	31
Barge-Other	163	88
Barge-Towed Petrochemical		22
Dredge	80	47
Commercial Fishing	1,557	1,199
Commercial Passenger Fishing	570	508
Ferry-Catamaran	80	32
Ferry-Monohull		19
Ferry-Short Run		15
Pilot Boat	10	10
Research Boat	31	25
Tugboat-ATB	13	19
Tugboat-Escort/Ship Assist	73	63
Tugboat-Push/Tow	158	147
Work Boat	333	481
Crew/Supply	141	167
Excursion	408	417
Total Population	**3,698**	**3,310**

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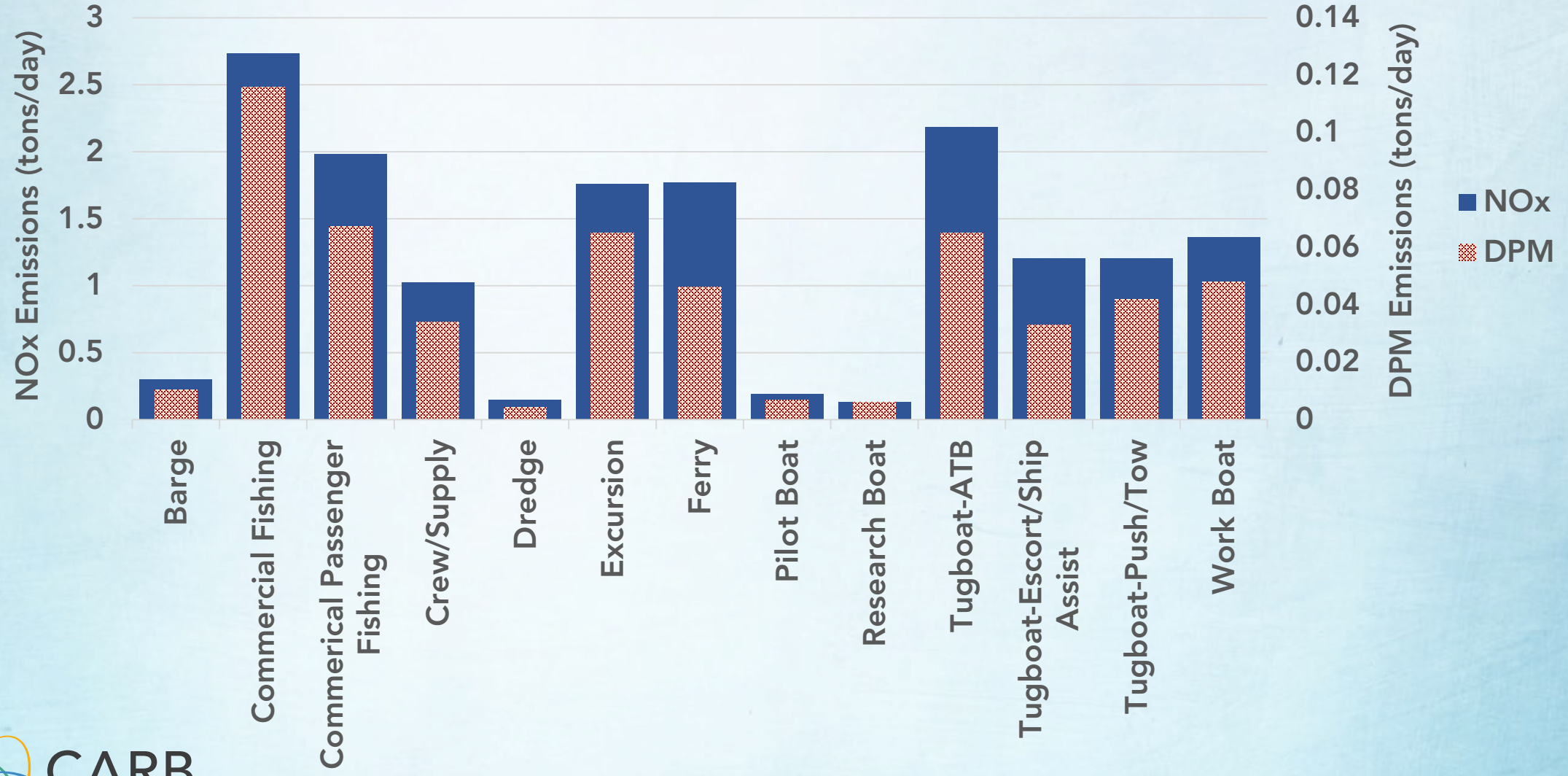
Preliminary 2023 Statewide CHC Emissions by Vessel Type



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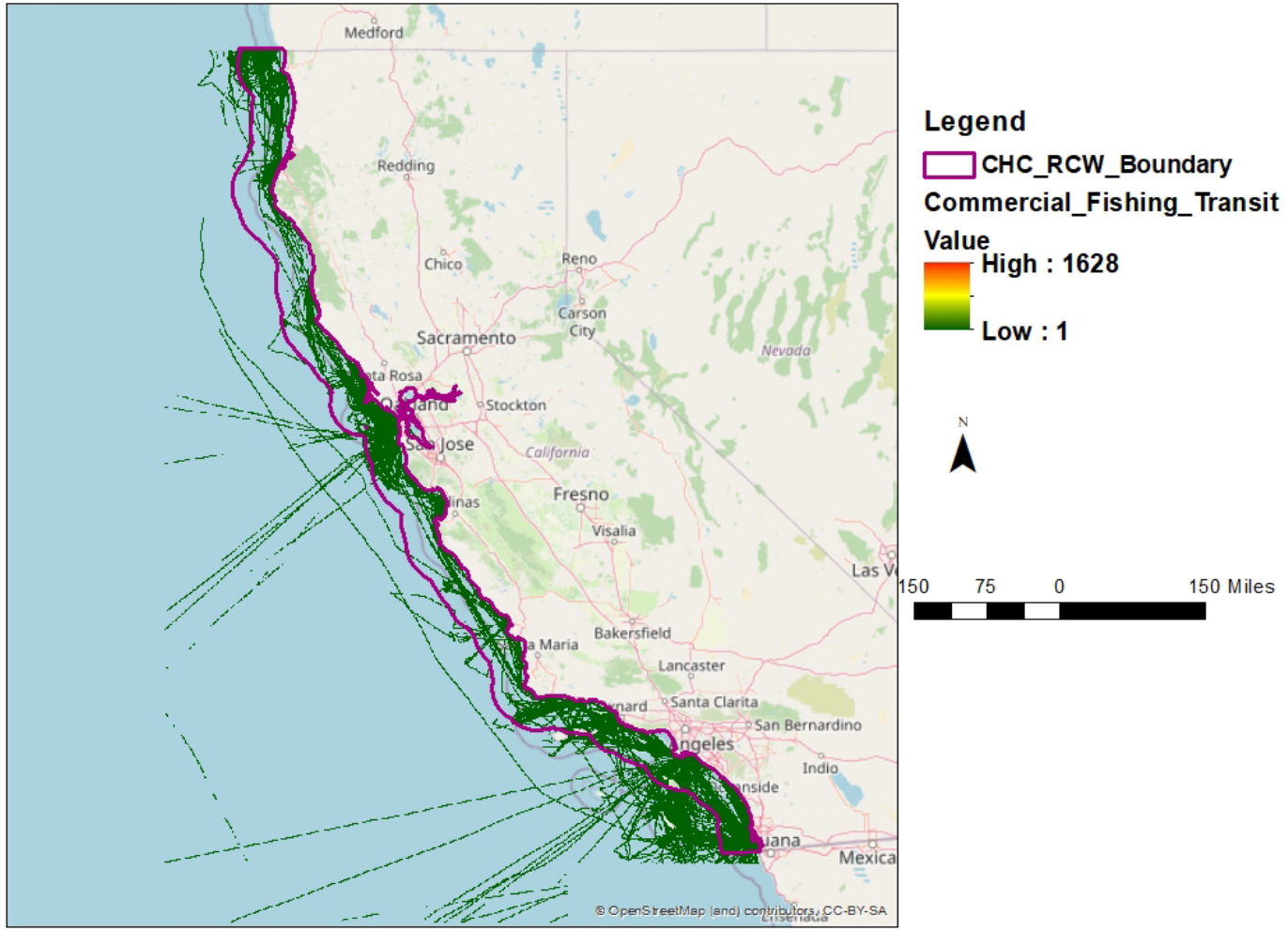
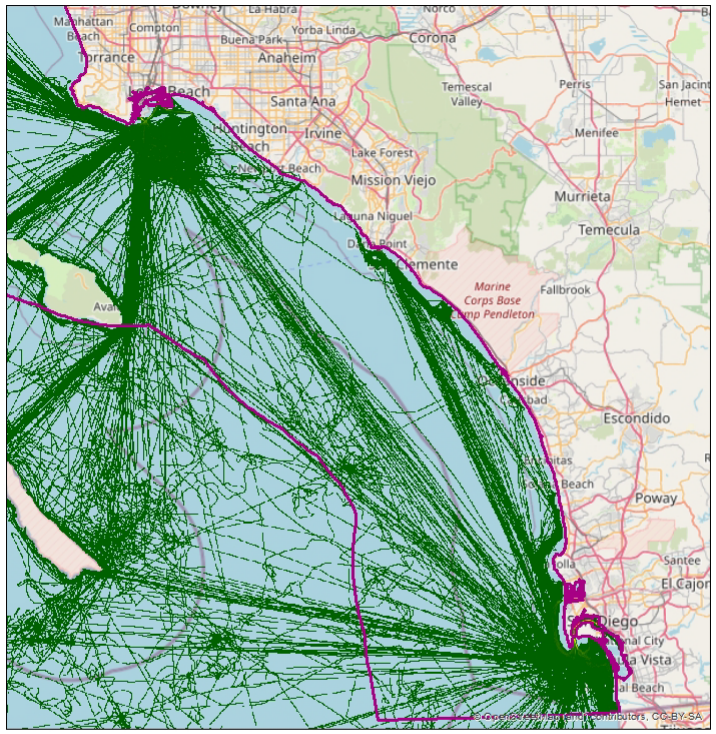
Preliminary Commercial Fishing Transit Heat Map

Statewide

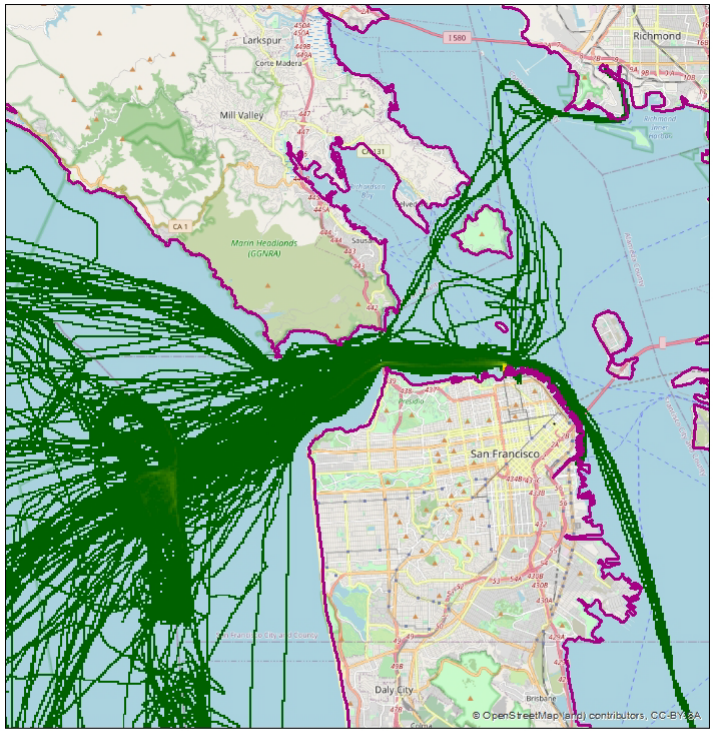


Preliminary Commercial Fishing Transit Heat Map

South Coast



Bay Area



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Update: Proposed Commercial Fishing Vessel Requirements

- CARB staff recognize unique economic considerations of commercial fishing vessels, and that vessel replacement would be common to meet Tier 4 + DPF standards
- Proposed change: Pre-Tier 1 and Tier 1 engines to Tier 2
- Later compliance schedule (2030-2032) to allow operators to take advantage of more funding opportunities

Engine Model Year	≤ 1987	1988 - 1997	1998 - 2003
Proposed Compliance Date	2030	2031	2032

Summary of Proposed Requirements by Vessel Type

Vessel Category	Proposed Future Regulated In-Use Category	Maximum Extension Beyond Compliance Date	Proposed Future New Vessel Requirements
Ferries, Excursion, Crew & Supply, Barges & Dredges, Tanker Barges, Tugboats (including on ATBs), Towboats, Pilot, Research, Charter Fishing Vessels	Yes	6 years	Meet current emission standards plus additional requirements, as applicable
Commercial Fishing Vessels	Yes	Only eligible for extension E3	
Work Boats	Yes	Unlimited	
Historic, Coast Guard/Military, Designed Emergency Use Vessels, OGVs*	No	N/A	N/A
*OGVs are regulated under separate control measures			

Preliminary Cost Estimates for Proposed Amendments to the Commercial Harbor Craft Regulation

Preliminary Cost Estimates by Cost Analysis Input

Cost Input	Total Cost (2023-2037, rounded values)
Repower and Retrofit*	$1.2 billion
Vessel Replacement**	$250 million
Recordkeeping and Reporting, Vessel Labeling, and Facility Reporting	$11 million
Opacity Testing	$10 million
Implementation and Enforcement	$30 million
Naval Architect Report	$43 million
Financial Review	$0.5 million
Dock Power Infrastructure	$17 million
Short Run Ferry and Excursion Vessel Charging Infrastructure	$110 million
Total Cost	$1.7 billion

* Includes Capital, Labor and Installation, Operational, and Loss of Use Costs

** Includes Capital, Labor and Installation, and Operational Costs, and Vessel Residual/ Resale Value

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Preliminary Annualized Cost Estimates by Year

Year	Total Annualized Costs (rounded values)
2023	$22 million
2024	$50 million
2025	$65 million
2026	$81 million
2027	$100 million
2028	$110 million
2029	$110 million
2030	$130 million
2031	$140 million
2032	$140 million
2033	$150 million
2034	$150 million
2035	$150 million
2036	$150 million
2037	$150 million
Total Cost	$1.7 billion

Cost Inputs Used in Analysis

- Data used in cost analysis was provided by industry stakeholders and the Cal Maritime Study
- Cost inputs include:
  - Capital, Labor and Installation Costs
  - Operational Costs
  - Loss of Use Costs
  - Vessel Residual/Resale Value
  - Administrative Costs
  - Infrastructure Costs

Staff Seeking Input on Specific Cost Inputs

- Dry dock fee for repower/retrofit
- Labor and installation costs for Tier 4 + DPF
- Loss of revenue for time out of service
- Naval Architect report: Upfront feasibility cost, cost of blueprints to perform modifications
- Engine or vessel scrap or disposal values
- Costs of on-vessel or land-side infrastructure for using dock power
- Profits from retiring/selling used vessel
- Ferry operators: Trip-level passenger counts

Staff Evaluating Potential Updates to the Cost Analysis

- Extend analysis timeframe past 2037
- Update low use percentages for each vessel category based on thresholds in Draft Proposed Amendments, not the Existing CHC Regulation
- Update Engine and Vessel inventory to reflect comments from stakeholders and incorporate changes in the cost analysis
- Update compliance scenarios to reflect 3-year extensions to postpone DPF upgrades if not feasible and vessel is below operating threshold
- Update Ferry retrofit + DPF costs to include revenue loss due to passenger count reductions

Cost Metrics

Calculated cost metrics and impacts to individuals are based on the projected annualized cost of the Proposed Regulation in 2031

Cost Metric	Cost in 2031*
Cost Per Passenger Per Trip – Ferry Vessels, One-Way Trip	$3.28
Cost Per Passenger Per Trip – Excursion Vessels	$1.13
Cost Increase Per Harbor Tug Ship Assist	$209 (+2.8%)
Cost Increase Per Harbor Tug Ship Escort	$381 (+2.8%)
Cost Increase Per Twenty-Foot-Equivalent Unit (TEU)	$0.34
Cost Increase Per Gallon of Refinery Product	$0.0002

*Tug assist and escort costs, cost per TEU and cost per gallon of refinery product based on year 2030 data

Standardized Regulatory Impact Assessment (SRIA)

- SRIA is required for "major regulations" pursuant to SB 617 and the California Environmental Quality Act (CEQA)
- SRIA is a point-in-time estimate of cost and benefits that would result from the proposed regulations or amendments
- As part of developing the SRIA, CARB staff is seeking input on the following items:
  - CARB encourages public input on regulatory alternatives that yield the same or greater benefits than proposed concepts; or do not yield, or are less likely to yield, the same level of benefits than proposed concepts.
  - Competitiveness advantages or disadvantages resulting from the proposed concepts

Funding Programs

- Potential funding programs for CHC include:
  - Carl Moyer Program and Community Air Protection Incentives
  - VW Environmental Mitigation Trust
  - EPA Diesel Emission Reduction Act Program
  - Low Carbon Transportation Options Program
  - California Energy Commission "Hydrogen Fuel Cell Demonstrations in Rail and Marine Applications at Ports"
  - Transit and Intercity Rail Capital Program

Environmental Analysis

- Environmental Analysis (EA) being prepared is analyzing potentially significant adverse impacts caused by reasonably foreseeable actions
  - Meets requirements of CARB's certified program under the California Environmental Quality Act (CEQA)
  - The CEQA Environmental Checklist (CEQA Guidelines Appendix G) is used to identify and evaluate potential indirect impacts
- The EA will be an appendix to the Staff Report

Environmental Analysis to be Prepared

- The EA will include:
  - Description of reasonably foreseeable actions taken in response to the proposal
  - Programmatic level analysis of potential adverse impacts caused by reasonably foreseeable actions
  - Feasible mitigation measures to reduce/avoid significant impacts
  - Alternatives analysis
- Input is invited at this early stage on appropriate scope and content of the EA
- Draft EA will be released for 45-day public comment period

Next Steps

- Provide cost information to CARB by October 30th to be considered for inclusion in the SRIA
- Provide comments on updated regulatory proposal and regulation language by October 30th
- Provide input on scope and content of the Environmental Analysis
- CARB staff expect to take amended CHC Regulation to the Board in mid-2021
    - Initial Statement of Reasons (ISOR) will be posted for a 45-day public comment period prior to the Board Hearing

List of Draft Documents Posted

- Draft Amendments to Regulatory Language
- Draft Cost Analysis Workbook
- Draft Cost Analysis Supplement
- Draft Cost Metrics
- Funding Programs for CHC

Materials posted at:
https://ww2.arb.ca.gov/our-work/programs/commercial-harbor-craft

Q&A

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CARB Commercial Harbor Craft Website:
https://www.arb.ca.gov/ports/marinevess/harborcraft.htm

Resources

Proposed Implementation Timeline

- **Any Tier 0 and 1 engines to Tier 3 and 4 only**
  - Generally Workboats, Research, Pilot, Tank Barges, and Charter Fishing

Engine Model Year	≤ 1993	1994 - 2001	2002 - 2006
Proposed Compliance Date	2023	2024	2025

Proposed Implementation Timeline

- Ferries (except short run), pilot vessels, all tugs to Tier 3 + DPF or Tier 4 + DPF

Engine Model Year	2007 - 2009	2010 - 2012	2013 - 2015	2016 - 2019	2020 - 2021	2022+
Proposed Compliance Date	2024	2025	2026	2027	2028	2029

Proposed Implementation Timeline

- Research, charter fishing, excursion to Tier 3 + DPF or Tier 4 + DPF

Engine Model Year	2007 - 2010	2011 - 2012	2013 - 2014	2015 - 2017	2018+
Proposed Compliance Date	2026	2027	2028	2029	2030

Proposed Implementation Timeline

- Dredges, barges, crew & supply, workboats to Tier 3 + DPF or Tier 4 + DPF

Engine Model Year	2007-2009	2010 - 2013	2014 - 2017	2017+
Proposed Compliance Date	2028	2029	2030	2031

Idling Limits and Shore Power

- Staff has observed and received complaints about extended main engine idling and auxiliary engine operation while at dock
- Currently no idling limits or shore power requirement
- 15 minute limit for operation at dock
- Requirement to use shore power at dock

Vessel Reporting and Identifiers

- Staff propose annual reporting, with some changes in data fields from existing regulation
- Proposed new labeling requirement for harbor craft in California
  - No labeling required in existing regulation, but other CARB regulations require labeling
  - Currently no common identifier for all CA vessels
  - CARB would issue ID for vessel owner/operator to affix or paint onto vessel
- Anyone could look up vessel compliance status on future CARB electronic reporting system

Compliance Fee Example

A fleet of 2 vessels, 4 main engines (regular use), and 1 main engine that falls under low use thresholds:

Category	Fee	Applied	Total
Per vessel, for single-vessel fleets	$ 349	-	
Per vessel, for all other fleets	$ 466	x 2	$ 932
Per engine, for single-vessel fleets	$ 145	-	
Per engine, for all other fleets	$ 193	x 4	$ 772
Per engine, if complying by low use	$ 290	x 1	$ 290
Annual Total			**$1,994**

*commercial fishing vessels are not subject to fees based on this proposal

Overview of Main Cost Equation Used in Analysis

- Cost analysis relies on the following equation to determine costs of the proposal:

  Vessel horsepower x Cost per horsepower [$] x Capital Recovery Factor (CRF) [fraction] x [1 + Vessel Growth Factor [fraction]]

  - **Vessel horsepower:** Determined from the CHC engine inventory by vessel category based on the engine type (main or auxiliary), engine model year, average engine horsepower, and natural turnover populations.
    - CARB staff apply compliance scenario assumptions to the vessel horsepower values.
  - **Cost per horsepower[$]:** Calculated by vessel category, value determined for each cost input (more information on next slide).
  - **CRF [fraction]:** Calculated using the equation CRF=i*(1+ i)^n /((1+ i) ^{n}–1)where i is the interest rate, and n is the useful financial period. CARB staff assume the useful financial period is equal to the vessel's useful life for vessel replacement costs, and the engine's useful life for engine repower and retrofit costs.
  - **Vessel Growth Factor:** Based on vessel growth projections.