



Meeting No. 2022-42

San Pedro Bay Ports Sustainable Supply Chain Advisory Committee *May Meeting Summary*

Date: May 18th, 2022 | 11:00 am – 3:00 pm

Location: Via phone conference

Attachments: Attachment A - Attendees
Attachment B - Meeting Agenda
Attachment C - Presentation - Committee Meeting
Attachment D - Presentation - CARB Regulatory Updates
Attachment E - Summary of Available Funds

Meeting Summary

1. Review & Approve March Meeting Summary
 - a. The meeting summary was approved, and members requested that meeting materials be distributed further in advance of the meeting to allow for closer review. *GNA agreed to review and introduce efficiencies to deliver meeting materials three or more business days prior to the Wednesday meetings. The March meeting summary would also be posted on the Committee's website.*
 - b. GNA introduced guests from South Coast Air Quality Management District (South Coast AQMD) and Maersk Lines, and welcomed new South Coast AQMD representative Dr. Aaron Katzenstein to the Committee.
 - c. Committee member Harbor Trucking Association (HTA) inquired about the status of the SSCAC's invitation to the California Energy Commission (CEC) to join as a member, in early 2022. GNA shared that the CEC had confirmed a representative earlier in the week and that GNA would coordinate an on-boarding meeting before the July 20th Committee meeting.
 - i. HTA expressed concern that the CEC's delayed decision reflected a lack of commitment to the SSCAC's work, and emphasized that while the CEC's membership is valuable given the electrification horizon for commercial freight, that value depends on its readiness to participate.
 - ii. *GNA recognized the concerns and agreed to discuss expected level of involvement during the onboarding meeting. GNA noted that it would invite Dr. Katzenstein to join that meeting as well.*
2. Review & Approve Draft Recommendations
 - a. AHJ Permitting Efficiency & Responsiveness
 - i. GNA presented revisions to the draft recommendation discussed in March, based on input from a member sub-committee. The members recommended



that the term “laborers” with “workforces” to avoid any confusion with the Laborers union. All edits were approved by the members and the recommendation was considered accepted. GNA will post the approved recommendation on the Committee’s website and circulate the document with the city and port staff, and meeting attendees.

3. Port Opening Remarks

- a. The Port of Long Beach (POLB) staff shared that they are now operating on a hybrid remote/in-office schedule and are continuing to monitor the trends of the latest COVID-19 variant. The Port of Los Angeles (POLA) has not yet returned to any formal in-person office standard.
- b. Both ports reported that the vessel management system implemented in November 2021 continues to reduce congestion, even as ports in Asia face shut-downs associated with the COVID-19 pandemic. As of May 15, 26 vessels were at berth and six were at anchor in the POLB complex (POLA reported that its figures were similar). The number of containers dwelling for more than nine days had decreased by fifty percent relative to November 2021, and the ports continued to refrain from implementing a container dwell fee as a result of this evident progress.
 - i. Staff at POLA clarified that shut-downs at ports in China have diverted cargo to other Chinese ports, and have not created a backlog in the West Coast ports.
- c. POLA announced that it kicks off work on the Green Corridor shipping project it will be engaging POLB as a partner, noting that the two ports always work in partnership on environmental and emissions reduction issues.
- d. Status Update: Clean Truck Program & Rate
 - i. The ports reported that the program has performed smoothly and that the first invoice and payment were received, covering the first month of operation (April 2022). From that first month, each port collected approximately \$3.7MM, and based on this initial figure the ports are currently confident that their projected \$90 million in estimated annual revenue will be nearly or fully met. At this time, the ports allocating funds to several established projects including the South Coast AQMD’s Kick Start fund and the Joint Electric Truck Scaling Initiative (JETSII) project co-funded by CARB and the CEC. Under a partnership with CALSTART POLA will also distribute funds through the HVIP program, and POLB is negotiating a similar contract. Overall, the ports intend to allocate the funds to electrification project components along the same ratio as initially proposed; POLB shared that its expected ratios are: 65% to new vehicle purchases, 25% to charging infrastructure, and 10% to large scale deployments and demonstration projects.
 - ii. HTA asked whether funds allocated to the South Coast AQMD would exclusively support zero emission trucks, and POLB advised that per the terms of the agreement which pre-dated the Clean Truck Program launch, these funds would support trucks meeting a low NOx standard.
 - iii. The members asked if the quoted revenue included administrative fees. Both ports clarified that the \$3.7MM quoted was post-fees, and that they have separate rate structures which are based on activity levels. POLA added that the



current figures indicate that each port is collecting approximately \$900,000 per week after costs.

4. SSCAC Member Priorities & Activities

- a. New Member: CEC
 - i. This agenda item was previously discussed under agenda item 1.c.
- b. EarthJustice: Funding Tracker
 - i. EarthJustice shared a summary of Federal Highway Administration (FHWA) funding relevant to the ports work under the CAAP (**Attachment E**), based on a funding tracker that it is developing for funding that supports emissions reductions in the port, marine shipping and rail industries. EarthJustice noted that it is unable to disclose all found information to non-clients, and that several programs do not currently have significant funding amounts or activity due to being launched only recently but that they are expected to grow in the coming years.
 - Specifically, the federal NEVI Formula Program is currently small relative to its projected size in the next few years, and focused primarily on light duty vehicle charging. EarthJustice advised the ports, city staff and Committee members that allocation decisions for this and other programs will be made in August, and that there is currently an opportunity to advocate for funding allocations and amounts that ensure that these resources support emissions reductions in the SPBP complex and associated industries, for example, by developing public commercial vehicle charging facilities.
 - POLB shared that it is submitting a letter to encourage this program to apportion some funds for public commercial charging and that signatories include several SSCAC members.
- c. PMSA: Pier H & Queen Mary Transfer
 - i. PMSA summarized the findings of the POLB's latest budget committee meeting¹ regarding the city's proposal to transfer ownership of the Queen Mary vessel to the Port. While the vessel is not relevant to the CAAP's scope, the budget implications of managing this property have been found to be significant and potentially put the POLB's ability to invest in the technologies and infrastructure required to meet the CAAP goals at risk. PMSA expressed concern that the city is not taking appropriate recourse to transfer ownership of an asset that has proven to be a financial burden. PMSA asked for the group's perspective on how the maintenance cost of the Queen Mary was consistent with the port's goals, priorities, and the CAAP.
 - ii. POLB clarified that no decision has been made about the transfer of ownership, and that the budget currently being advanced for FY2023 does not include costs for the Queen Mary or its host pier. Noting that stakeholder input on these topics is always valuable, port staff added that it would inquire if there is a



specific deadline for submitting commentary. Port staff added that several steps must be taken at the city level for the board to consider a proposal for ownership transfer, but it could not advise on the process' typical timeline.

- The port clarified that existing budget forecasts are projected out for 10 years, and that the published budget for FY23 includes all projects that are scoped, defined and committed.
 - POLB is also launching its zero emission infrastructure planning process and anticipates that more detailed financial requirements will be one outcome. When this information is available it will be added to the budgets.
 - PMSA requested a specific description of which projects were covered in the budget, and which anticipated costs are not yet incorporated. It noted that grants are not incorporated into budgets because they are unpredictable, and that grant supplies are also in increasingly high demand. PMSA asked that the ports provide a deeper dive on the details of its budget and consideration of the Queen Mary transfer at the July meeting.
- iii. The Coalition for Clean Air (CCA) supported a call for a deeper discussion at a future meeting in order to avoid delays in clean fuels and technologies. The ILWU observed that there are strong opinions on both sides, and noted that scrapping the Queen Mary is estimated to cost approximately \$100MM. Some stakeholders have advocated for innovative alternatives such as transforming it into a museum. These options and concerns all deserve consideration in a discussion about the potential transfer, the ILWU said.
- iv. **GNA agreed to add an agenda item for this discussion to the Committee's July meeting.**
- d. Grid Alternatives updated the Committee that it has begun work under the Research Hub for Electric Technologies in Truck Applications (RHETTA) grant with CALSTART and EPRI. The project aligns stakeholders in industry and government to identify innovative high-power charging infrastructure sites along major goods movement corridors. Grid Alternatives is organizing a committee for Workforce Development within the project, to ensure that work done aligns with social equity principles and standards. Further updates will be provided in July and/or September as the work unfolds.

5. Marine Vessels

a. Regulatory Updates

i. At-Berth Regulation

- CARB presented on the development of its 2021 At-Berth Regulation which stipulates shore power capability and emissions reduction standards by vessel category starting in January 2023 (**Attachment D**). The Regulation allows for regulated parties to propose alternative compliance pathways (ACPs) by December 2021, and staff updated the Committee that 11 applications were received by the deadline and returned with a request for the parties to submit additional data to meet the application requirements. After CARB review, applications are posted for public comment (45-day period) and the applicants have a



subsequent 45 days to re-submit. Acknowledging that 100% of the applications were missing required content, the agency said it also developed a checklist of required materials and sent a completed copy for each project to the applicants to guide their resubmission. All applications are posted on CARB's website.²

- CARB's regulation additionally requires that ports and terminals submit compliance plans which include a division of responsibilities between the landlord port and the marine terminal operator. CARB received plans from nine ports, 19 container/reefer terminals, four cruise terminals, eight roll-on roll-off terminals, and 21 tanker terminals. The compliance technologies and solutions identified in these plans included shore power, carbon capture and storage (CCS) technologies (container, reefer and cruise vessels), and some hydrogen fuel cell-based solutions for roll-on roll-off terminals. Many plans are pending re-submission due to missing geographic coordinates and details for emissions control installation schedules. Meanwhile, the plans are posted on CARB's website and subject to the same public comment and revision process as the compliance pathway applications.³
- HTA asked whether the applications and plans that CARB is requiring takes into account power supply infrastructure, and if not, how the agency is coordinating its reviews with the CEC to ensure that compliance plans are evaluated holistically.
 - a. CARB advised that it is not reviewing details or asking for validation of the power supply infrastructure for the proposed compliance plans and alternative compliance pathways, but welcomes regulated entities' input on capacity concerns.
 - b. HTA compared the situation to a classic chicken-and-egg conundrum since the regulated parties' plans depend on actions by parties whose activity lies outside of the same rule. The lack of coordination between these parties, and their regulating entities, is a source of concern for the maritime sector including its partners in the off-dock segment.
- ILWU asked if CARB could address the health impacts and technical viability of CCS technologies; provide examples of innovative compliance pathway concepts; and share its perspective on the challenge of governing interstate emissions as it pertains to the current lawsuit between South Coast AQMD and the Environmental Protection Agency (EPA)?
 - a. CARB clarified that it has approved two CCS systems which are both used widely. The market for these solutions remains small, but the agency continues to receive inquiries from companies seeking certification. Funding technology development and deployment given uncertain demand has been a challenge, however CARB hopes that more solutions will become available

² <https://ww2.arb.ca.gov/berth-regulation-innovative-concept-applications>

³ <https://ww2.arb.ca.gov/terminal-and-port-plan-submissions>



around the first compliance deadline in 2023. ILWU observed that the power generation concerns suggest that shore power isn't the only solution, and therefore more work on CCS is valuable.

- b. CARB described a few proposed innovative concepts: reductions on a fleet rather than vessel basis; credit trading scheme; reductions from an unregulated source in the same geographic area.
 - c. CARB said it is unable to comment on the litigation between AQMD and the EPA.
 - GNA asked for clarification on a remediation fund that is established by the regulation. CARB pointed to this as an additional compliance option that could be used under limited circumstances, and would be funded by hourly mitigation fees assigned to vessels using a tiered rate system by vessel and engine type. The agency aims to make funds available by January 2023, and the program will be administered by CARB in partnership with California Air Pollution Control Officers Association (CAPCOA) and the air districts.
- ii. Commercial Harbor Craft Regulation
 - CARB staff presented a summary of the recently adopted regulation including its compliance dates by vessel type, compliance extension periods, and expected health and cost benefits (**Attachment D**). The amendments included in the final adopted regulation are estimated to achieve \$5.25Bn in health benefits at a cost of \$2Bn. The agency is addressing public comments in its Final Statement of Reason and preparing to submit the final package to the state's Office of Administrative Law.
 - The ports noted that they are both working on a zero emission tug boat design project with Crowley. EarthJustice asked whether the Committee should raise awareness around the urgency of developing zero emission solutions in this particular sector, particularly if the core challenge is sufficient and attainable funds. The group acknowledged that funding is a concern, but that several questions remain to identify what types of technologies offer the most feasible pathway to zero emissions.
 - POLA noted that it has partnered with Crowley on the design of a hydrogen fuel cell tug boat and that the manufacturer hopes to build this in the coming years.
- iii. Discussion - SPBP Readiness
 - The ports expressed concern that the timelines under both regulations are ambitious given the state of the industry and the significant cost to advance technologies and fuels for these two sectors. CARB has certified only a few technologies, limiting the market, and certification of future technologies may be a lengthy process. Additionally, the rules' requirements about existing vehicle scrappage carry significant costs. The ports affirmed that they are supporting their tenants with the compliance reporting process.



- EarthJustice asked if the ports were using the leasing process to require zero emission equipment for harbor craft operators, and asked that the topic be brought back to a future SSCAC meeting for discussion. POLA agreed to make a short presentation on the topic at a future meeting.
 - POLA noted that it does have a reasonable amount of infrastructure in place to support tug boats requiring electrical power at-berth.
 - The ILWU reminded the group that many of the harbor craft operators are small companies and family businesses, and that it is important to consider economic balance and individual livelihoods when developing their budgets, emphasizing that the transition has to be equitable.
- b. Low Carbon Fuel & Vessel Development Landscape
- i. GNA provided an overview of the marine sector’s emission reduction targets as defined by the IMO and, in 2021, under the Clydebank Agreement. Recent research indicates that hydrogen, ammonia, methanol and biofuels are the dominant fuels under investigation in current marine vessel decarbonization projects globally, and that active development of battery technology projects has declined slightly. Where battery technologies are used in marine vessel projects, they primarily provide auxiliary power support.
 - ii. Due to time constraints, members were invited to review the slides in more detail after the meeting.
- c. Marine Vessel Decarbonization Activities in SPBP
- i. Maersk Lines’ Sustainability Initiatives (Maersk)
 - Lee Kindberg presented Maersk’s sustainability strategy, activity to date, and decarbonization strategy (**Attachment C**). The company’s operations cover marine shipping and ground distribution, and it has ownership of more than 700 container ships which are collectively responsible for 0.1 percent of total global carbon dioxide emissions. Maersk updated its net zero carbon shipping deadline from 2050 to 2040 in 2018, and reported that through its early efficiency efforts and more recent programs including its ECO Delivery ocean transport program it has reduced its net carbon emissions by 42.6 percent relative to a 2008 baseline.
 - In 2021, Maersk purchased vessels to operate on green methanol but with bi-fuel operating capabilities in the event that green fuel cannot be procured and marine diesel must be used. These vessels will be deployed in 2023 in the Baltic region. Meanwhile, the shipping line is deploying 12 container vessels with green methanol on transpacific routes in 2022; the U.S. ports of call have not yet been confirmed.
 - a. Dr. Kindberg reminded the audience that criteria pollutants are not included in metrics of “zero carbon emissions” but should be considered when discussing “zero emissions.”
 - While the company is developing science-based targets based on the SBTi methodology, their targets and methodology are still being approved. These targets will span the 2020, 2030 and 2040 decades and include emissions targets for Maersk’s associated air freight and on-land container transportation activities. To support decarbonization in the



latter sector, it has taken delivery of its first 16 of several hundred battery electric Class 8 tractors in Southern California. These vehicles will begin operations with the Performance Team fleet once the charging infrastructure is activated, expected this calendar year. Maersk's purchases today reflect key components of its strategy for reaching its 2040 goal.

- Based on existing offtake agreement with fuel providers globally, Maersk expects to reduce its carbon footprint by 3.5MM tonnes of GHG emissions annually by 2025. Maersk summarized the pros and cons of the three low or no carbon fuels that currently anchor its sustainability and purchase plans: biodiesel derived from cooking oil, green methanol from biomass and renewable electricity, and green ammonia from green hydrogen. The importance of selecting fuels produced and delivered under environmentally and economically sustainable conditions was discussed as one of the important but complicating factors of the overall transition for the sector. For example, Maersk has excluded LNG from its strategy due to its scope two and three emissions profiles.
- Dr. Kindberg emphasized that a new ecosystem is needed to support a decarbonized marine shipping sector and this transformation relies on partnerships. Maersk is actively seeking partnerships with ports, customers, and suppliers globally on the topics of: carbon emissions reporting; support for and expansion of its ECO Delivery program; decarbonized land transportation networks; sustainable airfreight and warehouse networks; climate pledge development. Dr. Kindberg noted that a typical vessel life is approximately 20-25 years, and therefore the new e-methanol vessels being deployed should be viewed by ports and the industry as a clear request for that fuel and infrastructure at ports of call.
- POLB observed that LNG was an important fuel as the marine decarbonization goals were being defined several years ago, and that carrier CMA-CGM has adopted LNG as part of its decarbonization strategy. Given that Maersk is pursuing another route, it asked what ports can do to support the shipping industry over the long term.
 - a. Dr. Kindberg replied that diversification is expected and valuable to the industry at this stage, and that if LNG can be developed from renewable sources then it has a valuable place in the sector.
 - b. POLB noted that the marine vessel segment is the most difficult to decarbonize from the ports' perspective. Dr. Kindberg noted that successfully funding on-shore infrastructure is important for the on-shore entities (the ports) to manage to meet carriers' demand, but acknowledged that that demand is still evolving. An additional challenge that needs immediate and cooperative attention is accelerating the standard pace of progress for fueling infrastructure projects in the U.S. POLB echoed the



observation and called the participant agencies' attention to the need to streamline but not circumvent approval processes.

- Responding to questions about the incremental cost of the bi-fuel vessels and customers' willingness-to-pay under the ECO Delivery program, Dr. Kindberg noted that the additional capital expenditure is approximately 10 to 15% of a vessel's price. Meanwhile, customers are accepting the relatively low premium on the biodiesel product used for the ECO Delivery program. Participants in this program receive a certificate for the fuel's carbon intensity from Price Waterhouse Coopers, which supports their sustainability reporting. Additionally, while the program is a high upfront investment for Maersk, the pass-through cost to the end user is often very low - a few cents on a pair of shoes, for example.
 - Responding to questions regarding the greatest near-term need from stakeholders such as the members of the SSCAC, Dr. Kindberg advised that navigating the regulations governing renewable fuel consumption is difficult, especially in California. She noted that the industry puts huge value on avoiding surprises, and on having access to a single reliable point of contact to stay current and compliant with regulations.
 - Pointing to the hydrogen hub projects that the federal government is preparing to fund, Dr. Kindberg advised that any hub must include space to convert the hydrogen product to the most relevant, portable and usable marine fuels, such as ammonia and methanol. She cautioned against assuming that these hubs should primarily support a pure hydrogen economy.
- ii. Overview of active projects (Ports)
- POLB staff provided an overview of the active and upcoming marine vessel carbon reduction projects in San Pedro Bay (**Attachment C**). The ports and their tenants will begin operating two new build and one conversion vessel with dual fuel technologies between 2022 and 2023.
 - In 2020, the ports welcomed the first two Tier 3 Low NOx vessels along the West Coast. These vessels currently move between Long Beach, Oakland, Hawaii and China.
 - In the harbor craft segment, the eMaxx project will complete emissions testing in July 2022. Separately, and as previously mentioned, the ports are working with Crowley on the design of a battery electric tugboat with a diesel range extender.
 - Coming up, the ports have recommended a vessel retrofit project featuring low pressure exhaust gas recirculation, and another featuring a multi-fuel injection platform, for funding under its Technology Advancement Program. Both vessels will rely on dual-fuel diesel/natural gas engines. These designs are expected to also support ammonia and methanol with minor modifications.
 - Regarding readiness to welcome LNG-powered vessels, POLB shared that a project to develop bunkering capacity is in the process of



acquiring permits. Meanwhile, LNG vessel calls at Toyota's terminal are being supported by bunkering facilities outside of the SPBP.

- a. POLB noted that a recent review of carrier orders indicates that there is more interest in scrubber systems than LNG across the fleet expected to call at the ports over the next several years. Additionally, the ports anticipate that the shipping industry will move towards zero carbon options and bypass low carbon alternatives over this decade.

iii. Green Corridor Program (POLA)

- POLA provided an overview of the recently-launched Green Corridor between the SPBP and the port at Shanghai. As one of six corridors under development worldwide, the initial project efforts are to establish common definitions and baseline values for measuring emissions reductions and overall project progress. Among the terms recently established is that a Green Corridor's boundary is established at the gates of each receiving and dispatching port. Cargo emissions profiles are tracked from the entry point at the port of dispatch to the exit point at the port of receipt. POLA reported that four committees have been established and held initial meetings, and that the team is close to defining a baseline year. The active committees are Definitions, Goals and Milestones, Stakeholder Engagement, and International Green Corridor Policy and Advocacy.
- POLA noted that POLB will officially join the project this year. Staff at both ports agreed to ensure that their various departments and teams coordinate their meetings with government agencies and associations to avoid duplication.

iv. Marine Vessel Project Implementation (SCAQMD)

- Mei Wang from the South Coast AQMD presented a summary of their current marine vessel decarbonization projects (**Attachment C**). Results from both projects are expected this year.
- Responding to a question from the Committee regarding CCS on oil tankers, Ms. Wang specified that the on-board mixing tank was sized for immediate need only and was not intended to store large volumes over time. She clarified that the project aims to obtain Executive Orders from CARB for this CCS system's use on both container and tanker vessels by the end of 2023.

d. Discussion - Funding Landscape & Committee Action

- i. Due to time limitations the Committee agreed to hold a focused conversation on marine funding opportunities at a future meeting. The key concerns identified from the presentations were fund sufficiency, accessibility and most appropriate allocation.

6. Funding Opportunities & Advocacy

a. Proposed Coalition Letter (POLA)

- i. POLA staff agreed to provide summary language on this update for the Committee. **GNA will circulate this information to the members.**



- ii. POLB added that both ports are working on a large funding proposal for the federal government and would appreciate SSCAC support on that effort. **GNA agreed to facilitate a discussion on this issue in July or sooner if necessary.**
 - b. Federal Regional Hydrogen Hub applications (Ports)
 - i. The ports updated the Committee that they are pursuing partnerships to develop a proposal for the federal Hydrogen Hub program, and are receiving support in this effort from GNA. The RFP is expected to be released in the next two months. **GNA agreed to dedicate an agenda item to further discussion of this effort in July.**
- 7. Conclusion & Next Steps
 - a. Next Meeting: July 20th, 2022 - Increased Efficiency & On-dock Rail
 - b. Upcoming Agendas:
 - i. September: Workforce Development
 - ii. November: ZE Trucks & CHE Implementation



Attachment A
List of Meeting Participants

SSCAC Committee Members	
Marnie Primmer	FuturePorts
Michele Grubbs	PMSA
Thomas Jelenic	PMSA
Aaron Katzenstein	South Coast AQMD
Heather Arias	CARB
Chris Chavez	CCA
Stella Ursua	Grid Alternatives
Sal DiCostanzo	ILWU-13
Adrian Martinez	EarthJustice
Matt Schrap	Harbor Trucking Association
Rob Nothoff	International Brotherhood of Teamsters (rep'd by the LA County Federation of Labor)
Los Angeles Port & City Staff	
Teresa Pisano	Port of Los Angeles
Chris Cannon	Port of Los Angeles
Tim DeMoss	Port of Los Angeles
David Libatique	Port of Los Angeles
Erick Martell	Port of Los Angeles
Amber Aviles	Port of Los Angeles
Michael Samulon	Mayor Eric Garcetti's Office
David Ou	Mayor Eric Garcetti's Office
Long Beach Port & City Staff	
Heather Tomley	Port of Long Beach
Rick Cameron	Port of Long Beach
Wei Chi	Port of Long Beach
Leela Rao	Port of Long Beach
Morgan Caswell	Port of Long Beach
Rose Szoke	Port of Long Beach
Sam Joumblat	Port of Long Beach
Meeting Facilitation Staff	
Erik Neandross	GNA
Eleanor Johnstone	GNA
Christopher Davis	GNA
Other Stakeholders	
Jacob Haik	Councilman Joe Buscaino's Office



Angela Csondes	CARB
Melissa Houchin	CARB
Bonnie Soriano	CARB
Nicole Light Densberger	CARB
Ross Zelen	SCAQMD
Mei Wang	SCAQMD
Lee Kindberg	Maersk
Saba Takidar	Maersk



Attachment B

Meeting Agenda

1. Review & Approve March Meeting Summary
2. Review & Approve Draft Recommendations
 - a. AHJ Permitting Efficiency & Responsiveness
3. Port Opening Remarks
 - a. Status Update: Clean Truck Program & Rate
4. SSCAC Member Priorities & Activities
 - a. New Member: CEC
 - b. EarthJustice: Funding Tracker
 - c. PMSA: Pier H & Queen Mary Transfer
5. Marine Vessels
 - a. Regulatory Updates:
 - i. At-Berth Regulation
 - ii. Commercial Harbor Craft Regulation
 - iii. Discussion - SPBP Readiness
 - b. Low Carbon Fuel & Vessel Development Landscape
 - c. Marine Vessel Decarbonization Activities in SPBP
 - i. Overview of active project (Ports)
 - ii. Green Corridor Program (POLA)
 - iii. Marine Vessel Project Implementation (SCAQMD)
 - iv. Maersk Lines' Sustainability Initiatives (Maersk)
 - d. Discussion - Funding Landscape & Committee Action
6. Funding Opportunities & Advocacy
 - a. Proposed Coalition Letter (POLA)
 - b. Federal Regional Hydrogen Hub application (Ports)
7. Conclusion & Next Steps
 - a. Next Meeting: July 20th, 2022 - Increased Efficiency & On-dock Rail
 - b. Upcoming Agendas:
 - i. September: Workforce Development
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Attachment C
Presentation - Committee Meeting

San Pedro Bay Ports

Sustainable Supply Chain Advisory Committee Meeting

May 18th, 2022



Agenda

1. Review & Approve March Meeting Summary

2. Review & Approve Draft Recommendation

- a. AHJ Permitting Efficiency & Responsiveness

3. Port Opening Remarks

- a. Status Update: Clean Truck Program & Rate

4. SSCAC Member Priorities & Activities

- a. New Member: CEC
- b. EarthJustice: Funding Tracker
- c. PMSA: Transfer of Pier H & Queen Mary

5. Marine Vessels

- a. Regulatory Updates (CARB)
 - 1. At-Berth Regulation
 - 2. Commercial Harbor Craft Regulation
 - 3. Discussion – SPBP Readiness
- b. Low Carbon Fuel & Vessel Development Landscape (GNA)

c. Marine Vessel Decarbonization Activities in SPBP

- 1. Overview of active projects (Ports)
- 2. Green Corridor Program (POLA)
- 3. Marine Vessel Project Implementation (SCAQMD)
- 4. Maersk Lines' Sustainability Initiatives

d. Discussion – Funding Landscape & Committee Action

6. Funding Opportunities & Advocacy

- a. Proposed Coalition Letter (POLA)
- b. Federal Regional Hydrogen Hub Application (Ports)

7. Conclusion & Next Steps

- a. Next Meeting: July 20th, 2022 – Increased Efficiency & On-dock Rail
- b. Upcoming agendas:
 - i. September: Workforce Development
 - ii. November: ZE Trucks & CHE Implementation

1. Review & Approve March Meeting Summary

2. Review & Approve Draft Recommendation

- a. AHJ Permitting Efficiency & Responsiveness

3. Port Opening Remarks



4. SSCAC Member Priorities & Activities

- a. New Member: CEC
- b. EarthJustice: Funding Tracker
- c. PMSA: Transfer of Pier H & Queen Mary

5. Marine Vessels

a. Regulatory Updates (CARB)

1. At-Berth Regulation
2. Commercial Harbor Craft Regulation
3. Discussion – SPBP Readiness

b. Low Carbon Fuel & Vessel Development Landscape (GNA)

c. Marine Vessel Decarbonization Activities in SPBP

1. Overview of active projects (Ports)
2. Green Corridor Program (POLA)
3. Marine Vessel Project Implementation (SCAQMD)
4. Maersk Lines' Sustainability Initiatives

d. Discussion – Funding Landscape & Committee Action

5.b. Low Carbon Fuel & Vessel Development Landscape

The **shipping industry accounts for ~3% of global emissions, and these are projected to rise by 30% by 2050** compared to 2008 levels (worst case). The IMO recently set fuel sulfur limits, engine NOx standards, and a **GHG emissions reduction target of 50% by 2050 relative to 2008***. But current projections find that the industry must reach net zero carbon emissions by 2050 to achieve the Paris climate goals.

Under the 2021 Clydebank Declaration, **22 countries including the US agreed to establish at least six “green corridors” by 2025** to accelerate shipping emissions reductions. These aim to demonstrate and establish markets for the technology, infrastructure, and regulations necessary for decarbonizing marine vessels. Many private industry participants have also set emissions reduction targets designed to exceed the IMO’s goals.

Many fuels and technologies are being pursued but four are generally considered most promising for commercial use this decade.

Ammonia

Methanol

LNG

BioFuel/BioDiesel

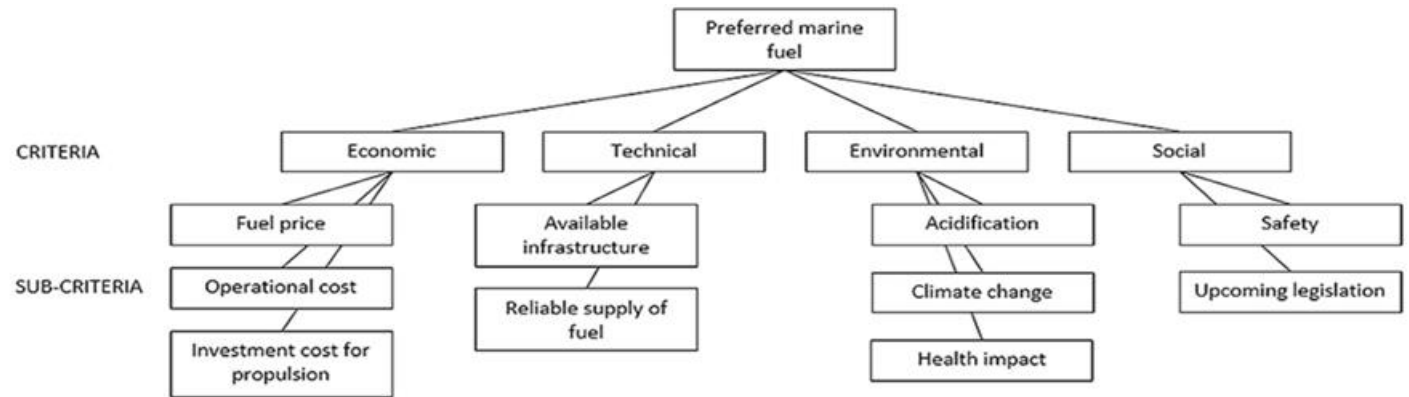
5.b. Low Carbon Fuel & Vessel Development Landscape

Ammonia	Biofuel/ Biodiesel	LNG	Methanol	Battery & Electricity	Hydrogen & Fuel Cells	On-Board CCS
Zero Emission	Can be zero emission	Technically feasible	Technically feasible	Zero Emission	Zero Emission	Concept-stage only
Technically feasible	Technically feasible	Commercially deployed	Fossil version has negligible emissions benefits	Technically feasible for short-sea shipping, peak shaving, and hybrid	Valuable feedstock for other fuel solutions	Large onboard footprint
Compatible with existing vessel and fuel infrastructure	Compatible with existing vessel and fuel infrastructure	Available and accessible fuel	Renewable methanol not produced at scale	Low energy density	Large onboard footprint	Regulatory concerns
Toxic fumes present safety concerns	Not produced at scale	Emissions benefits are negligible		Not suitable as a single fuel solution	Fuel not produced at scale	
Not produced at scale	Feedstocks are limited and in high demand				Fuel cell cost remains high	
Feedstocks are limited						

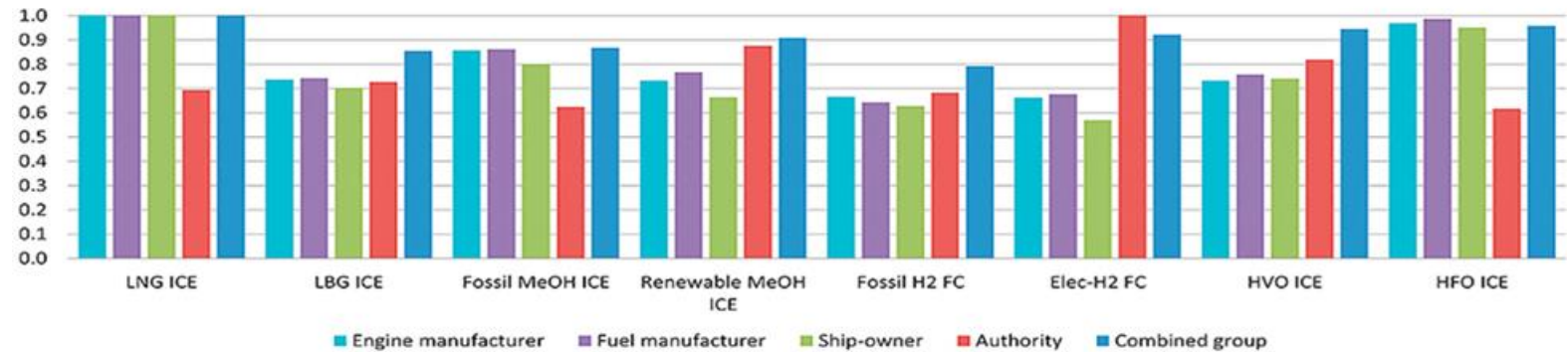
5.b. Stakeholder Ranking of Marine Fuels

A Swedish study evaluated stakeholder preferences for alternative marine fuels on an economic, technical, environmental and social basis.

The study finds that policy is required to close the gap between Government and Industry preferences.



RANKING FOR DIFFERENT STAKHOLDER GROUPS



Industry ranks LNG and Methanol highest due to fuel price.
 Government ranks R-H2 and R-Methanol highest due to GHG emissions.
Fuel Cells received the lowest ranking.

Legend

LBG: liquefied biogas
 MeOH: methanol via natural gas
 Fossil H2: hydrogen via natural gas
 Elec-H2: hydrogen via electrolysis
 HVO: hydrotreated vegetable oil
 HFO: heavy fuel oil

5.b. Recent Studies & Projects

Ammonia Zero Emissions (AMAZE) project (2022-2025)

- Develop a multi-fuel engine capable of switching between ammonia and diesel, or ammonia and other biofuels for “close to zero emissions”. Intended for retrofits.
- Partners are Bergen Engines, Government of Norway, Equinor, SINTEF, Norwegian University of Science and Technology, RISE Fire Research

Global Maritime Forum’s 2021 ZE Project Review

- Nearly half of the 106 projects have a hydrogen focus including derived ammonia production. Ferries and smaller ships are being tested in the US, Norway, France, Belgium.
- In 2021, attention to ammonia, methanol/ethanol and hydrogen grew while attention to battery, biofuels and wind declined. There was an uptick of ammonia-focused projects in the large vessel category.
- Most battery-powered ship projects use batteries for auxiliary power, not main propulsion.

ICCT Study on Hydrogen for Container Corridors (2019)

- Hydrogen-fueled technology can serve 43% of cargo ship voyages, and 99% of all voyages, between the US and China by either adding one port call or losing 5% cargo capacity.

5.b. Recent Demonstrations & Deployments

Biofuels & blends

- ONE completed its third trial blending a biofuel from bp with VLSFO, in Southeast Asia. The mixing ratio had 3x the biofuel content of the first trial.
- Norden will begin offering fuel derived from waste cooking oil as a drop-in alternative for commercial customers in Q2 2022. It is currently negotiating its first carbon-neutral freight contract.
- LDC completed a 55-day voyage between Belgium and Brazil on B30 biofuel-blended marine fuel in May 2022, reducing GHG emissions by ~24% (723 tons CO²e). Carbon credits were used to offset the remainder.
- CMA-CGM Group's ANL fleet completed a 42-day voyage between Southeast Asia and Australia using a B20 blend. The Group is working to satisfy 10% of its energy requirement with alternative fuels by the end of this year.

Methane & Ammonia

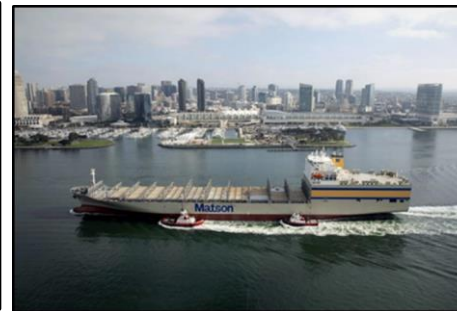
- CMA-CGM currently operates 27 e-methane-ready vessels and is expanding to 44 by 2025
- Mitsubishi is developing a vessel with Mitsui OSK Lines to carry ammonia and liquified CO². Carriage of LCO² is relevant to the CO² capture, use and storage (CCUS) value chain for marine decarbonization.
- Maersk ordered 12 vessels (16,000 TEU capacity each) to run on methanol. Estimated fuel demand is 15x the global supply of 30,000 tonnes.

5.c. Marine Vessel Decarbonization Activities in San Pedro Bay

1. Overview of active projects (Ports)
2. Green Corridor Program (POLA)
3. Marine Vessel Project Implementation (SCAQMD)
4. Maersk Lines' Sustainability Initiatives



TAP OGV/Harbor Craft Demonstrations





South Coast AQMD Ocean-Going Vessels Emission Reduction Technology Demonstration Projects

Mei Wang

Technology Implementation Manager



South Coast AQMD Ocean-Going Vessels(OGVs) Emission Reduction Projects



- Engine Retrofit Technologies for 2-Stroke OGV Engines
 - Water-in-Fuel (WiF)
 - Low-Pressure Exhaust Gas Recirculation (LP-EGR)*
 - Alternative Fuels Conversion*
- Capture and Control System for Oil Tankers

* Contracting stage and not included in this presentation

WiF Retrofit

- Vessel Information
 - MSC ANZU 9S90ME 2-stroke engine, Built in 2015
 - IMO Tier II
 - 9,000 TEU container vessel
- WiF emulsion injection
 - 40% NOx reduction expected
 - <50% engine load
 - 140NM
 - Marine Diesel Oil (MDO) with 0.1% Sulfur
- Project Cost and Partners
 - \$3.2M
 - SCAQMD, POLA, POLB, MAN ES, and MSC



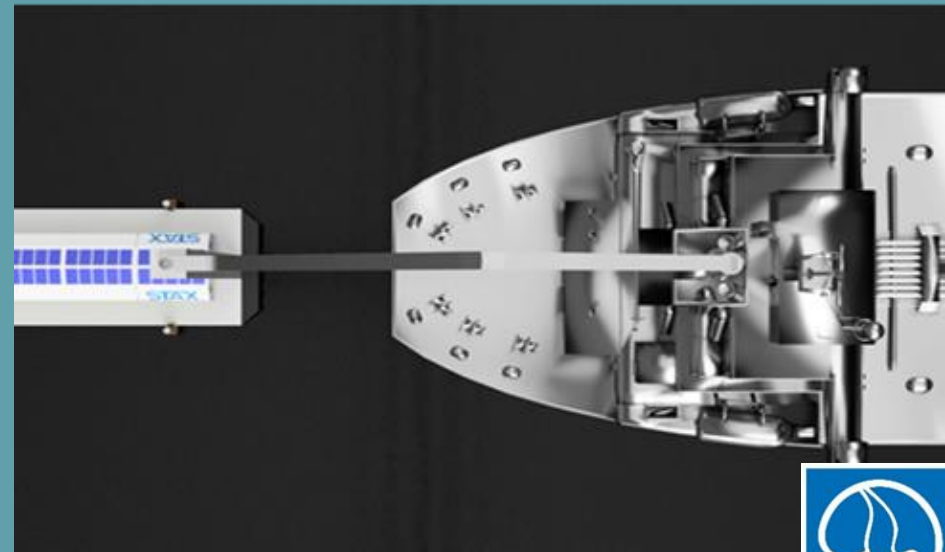
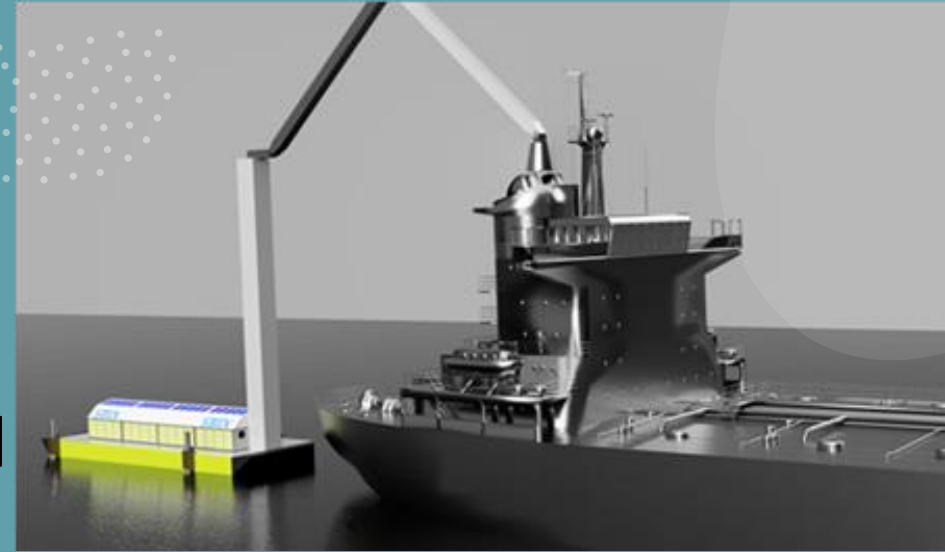
WiF Retrofit

- Installation was completed in March
- Diesel reference test conducted in April, but the Initial WiF test was incomplete due to problem with emulsifier
- New emulsifier were chosen and tested
- Next test scheduled for June 2022
- Final report by October 2022



Capture and Control System for Oil Tankers

- Project Cost: \$13.5M
- Project Partners: SCAQMD, CARB, STAX Engineering, and Tesoro Logistics
- Self-propelled Spud Barge
 - Powered by renewable diesel and fuel cell
 - Solar and battery storage
- Exhaust capture and treatment units with carbon-capture
- Goals:
 - At least 90% of NO_x, PM_{2.5} and ROG reductions from both auxiliary engine and boiler
 - Obtain CARB executive order





Project Status:

- Two safety studies conducted by the American Bureau of Shipping
- Emission Test Plan was approved by CARB
- Final Design Review submitted to CARB
- Part of Power system, spuds, ducting, exhaust capture and one treatment systems were installed on the capture and control barge
- Emission test on vessels to begin later this year
- Project completion by end of 2023

Questions





Maersk Decarbonization Strategy

May 2022 | Dr Lee Kindberg – Head of Environment and Decarbonization

We are committed to ensuring Responsible Business Practices across our company to mitigate responsibility risks throughout your supply chain



The UN Sustainable Development Goals and our Code of Conduct is the foundation for our sustainability work



Safety



Responsible ship recycling



Diversity & Inclusion



Employee Relations



Sustainable procurement



Disaster response

10+ years of sustainability reporting. Sustainability practices assured by PWC



Human rights



Responsible tax



Air emissions

Evaluated by third parties through sustainability ratings like EcoVadis, CDP and other sustainability ratings



Ocean health



Anti-corruption



ecovadis



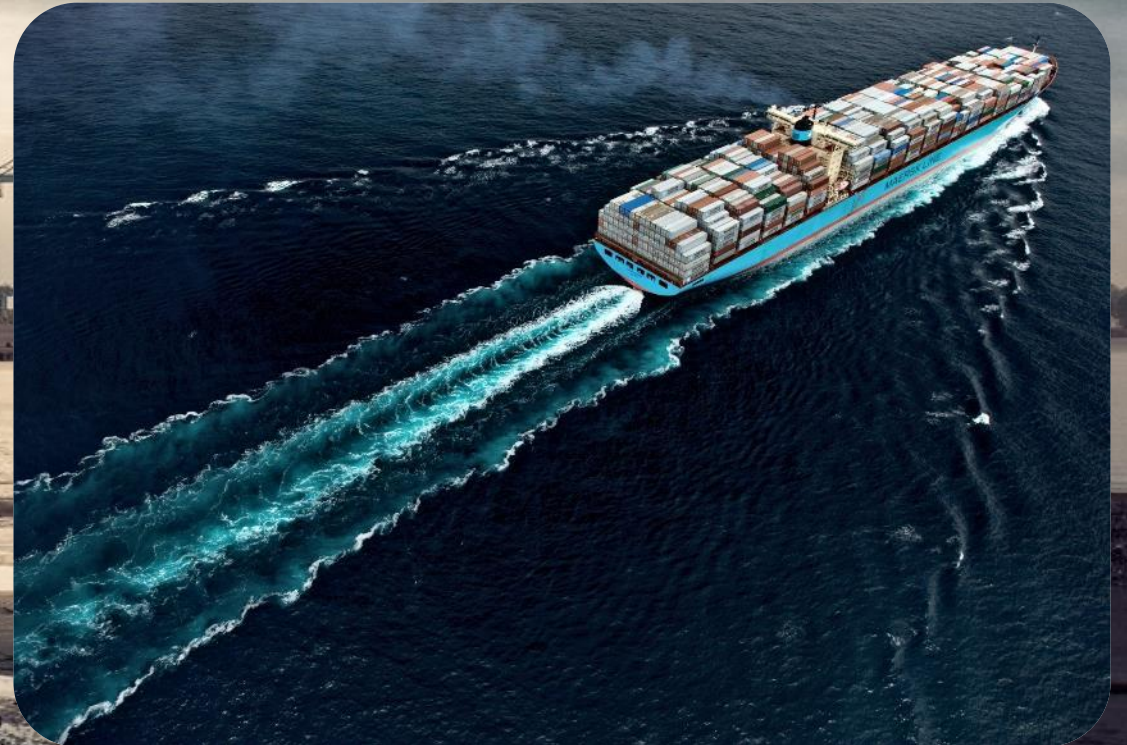
MSCI



S&P Global

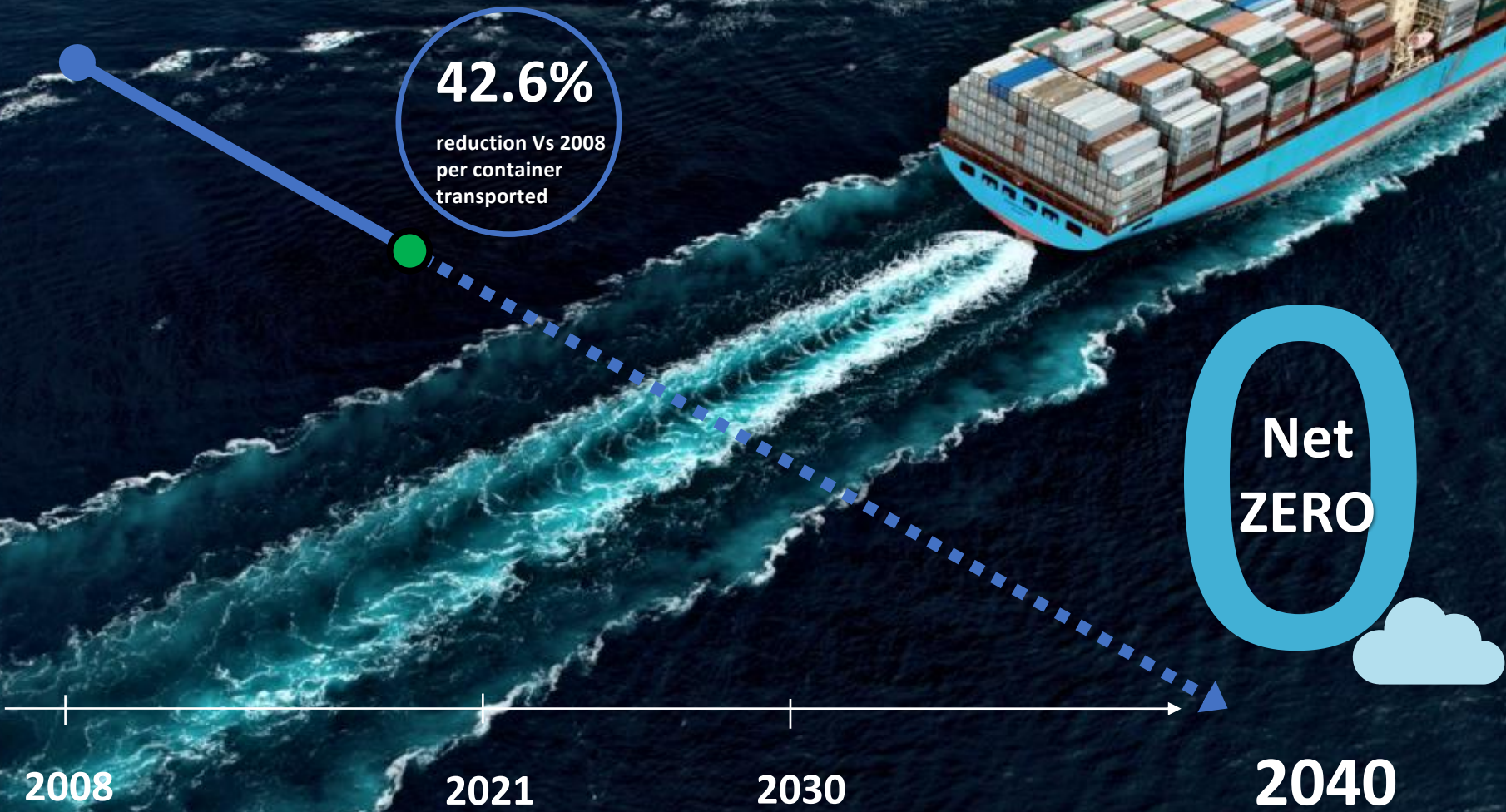
The climate challenge in shipping is huge

- While it is the most energy efficient way to move goods, shipping emits **3%** of global CO2 emissions. (Around 3.5 Gigatons (Gt) of CO2 emissions yearly)
- Maersk's 700+ container ships emit **0.1%** of Total global CO2 emissions.
- One very large container ship consumes **7,000** ton of fuel oil on a trip from Europe to Asia and back.

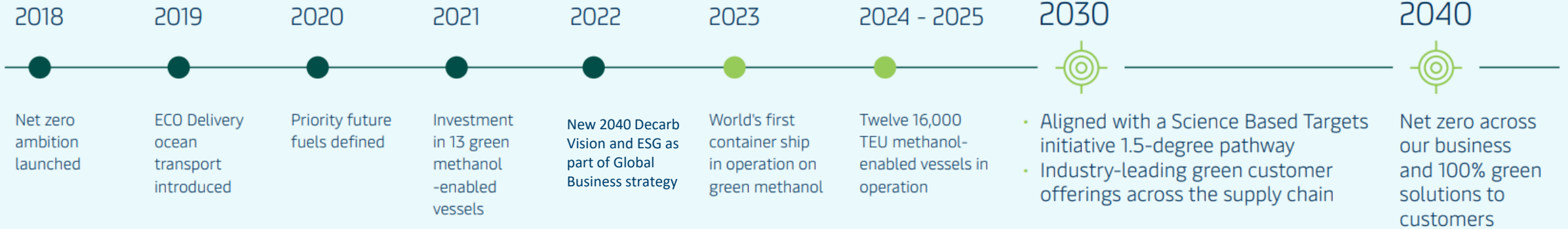


In 2018, we committed to Net Zero Carbon shipping by 2050

This year we accelerated that by 10 years, to 2040



Roadmap to deliver net zero by 2040



OUR DECARBONISATION COMMITMENTS



2030: Industry-leading green customer offerings

- Ocean: 25% of cargo transported with green fuels
- Air: min. 30% of cargo transported with green fuels
- Contract logistics and cold chain: Min. 90% green operations (scope 1 and 2)
- Inland transportation: Industry leading green offering (targets to be set in 2022)



2030: 50% reduction of absolute direct climate impact*

- Ocean ~50% reduction in emissions intensity
 - Terminals ~70% absolute reduction (scope 1 & 2)
 - Aligned with Science Based Target net zero criteria
 - Natural Climate Solutions above and beyond the SBTi
- *2020 Baseline



2040: Net zero across our business

- 100% Green solutions to our customers
- Net Zero greenhouse gas emission across the whole business/all scopes
- Aligned with Science Based Target net zero criteria

Potential fuels identified - their pros and cons



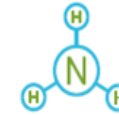
Biodiesel (incl. advanced biofuels)

- ✓ Biodiesel market already exists
- ✓ Can be used as drop-in fuel in existing vessels and engines
- ✗ Limited availability of sustainable biomass feedstock
- ✗ Price pressure due to competing demand



Green methanol (bio-methanol and e-methanol)

- ✓ Can be produced from both biomass and renewable electricity
- ✓ Already in operation today
- ✓ Well-known handling
- ✗ Bio-methanol: biomass availability of biomass feedstock
- ✗ E-methanol: Availability of biogenic CO2 source



Green ammonia (e-ammonia)

- ✓ Can be produced at scale from renewable electricity alone
- ✓ Fully zero emissions fuel
- ✗ Safety and toxicity challenges
- ✗ Infrastructure challenges at ports
- ✗ Future costs depends on cost of renewable electricity

Partnerships in place with green fuel pioneers to accelerate the green fuel transition for shipping

In total, securing 730 – 830k tonnes of green fuels by end 2025



- 10,000 tonnes per year
- First delivery in 2023
- Denmark



- 300,000 tonnes per year
- First delivery in 2025
- United States



中集安瑞科



- 50,000 tonnes per year
- First delivery in 2024
- China



- 200,000 tonnes per year
- First delivery in 2025
- Multiple locations



- 2 – 300,000 tonnes per year
- First delivery in 2025/2026
- South America & United States



Green Technology Bank



- 50,000 tonnes per year
- First delivery in 2024
- China



- 30,000 tonnes per year
- First delivery in 2024
- South America

Announced in
August 2021

Announced in
March 2022



New fuels are not enough - we need to build a new ecosystem



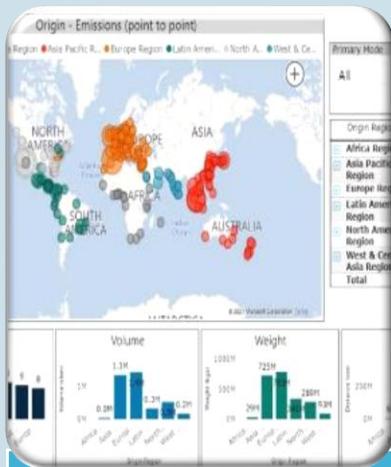
1. Price

2. Scalability

3. Sustainability

4. Tech. viability

Opportunities to Collaborate on our journey to Net Zero 2040



Carbon Emissions Visibility and reporting



ECO Delivery Low Carbon Ocean Shipping



Decarbonized Landside Transportation



Sustainable Airfreight



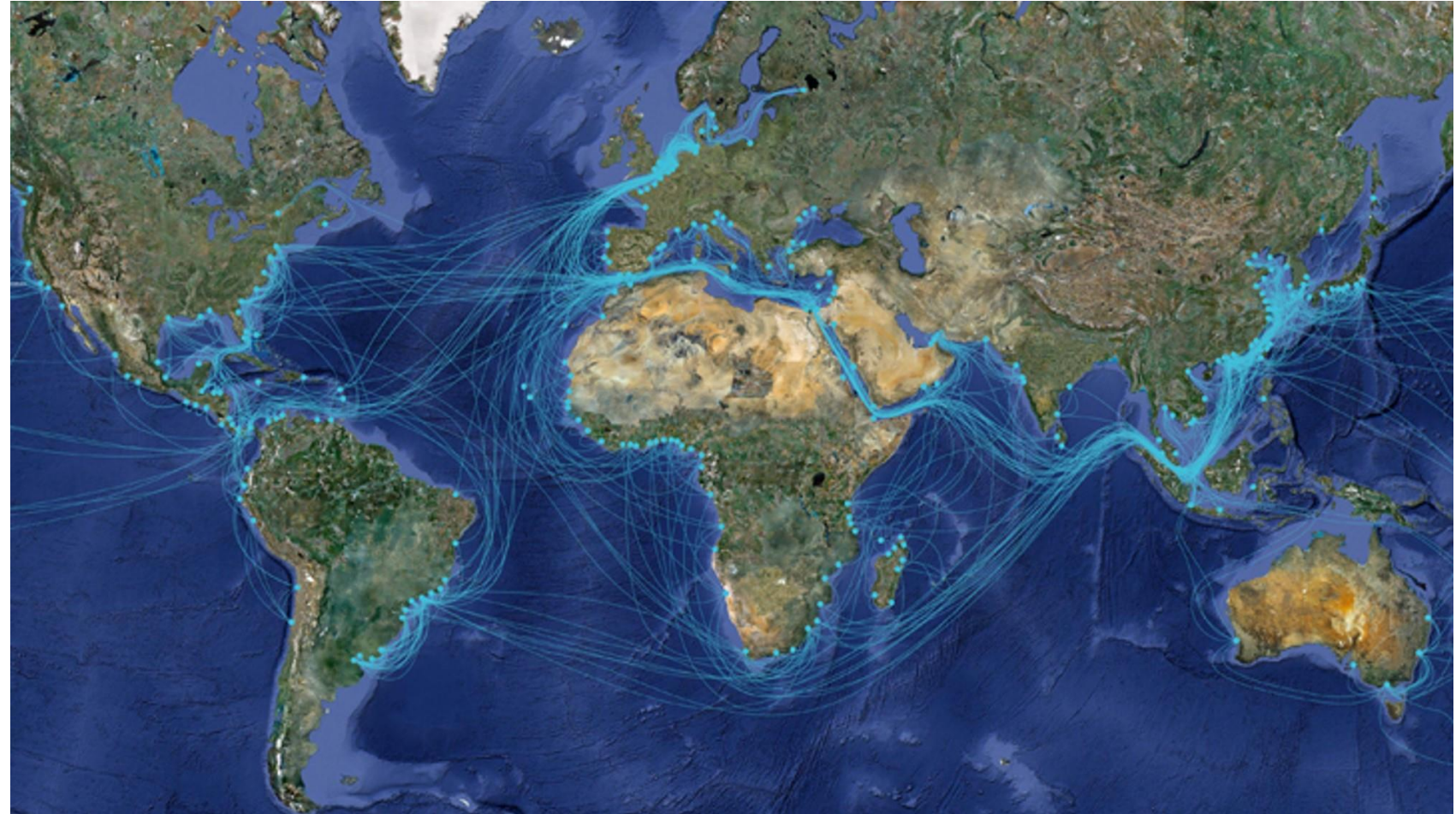
Carbon Partnership or Climate Pledges

Thank you

Lee Kindberg

Maersk Head of Environment &
Sustainability North America

lee.kindberg@maersk.com



5.d. Discussion – Funding Landscape and Committee Action

6. Funding Opportunities & Advocacy

- a. Proposed Coalition Letter (POLA)
- b. Federal Regional Hydrogen Hub Applications (Ports)

7. Conclusion & Next Steps

- a. Next Meeting: July 20th, 2022 – Increased Efficiency & On-dock Rail
- b. Upcoming Agendas:
 - a. September: Workforce Development
 - b. November: ZE Trucks & CHE Implementation

Appendix: Committee Focus in 2022

Date	Theme	Specific Topics	Potential Guests
January 26 th	<ul style="list-style-type: none"> SSCAC 2022 Level-Set 	<ul style="list-style-type: none"> Updates from Members, Mayors, Ports on 2022 activities & priorities Updates from CARB, Ports on funding programs, strategies Progress with existing SSCAC recs Definition of “sustainability” 	
March 16 th	<ul style="list-style-type: none"> CTP Implementation & ZE Infrastructure 	<ul style="list-style-type: none"> CTP Implementation Regional blueprint projects 	<ul style="list-style-type: none"> UCLA CEC
May 18 th	<ul style="list-style-type: none"> Marine Vessels – 2021 activity & technology opportunity 	<ul style="list-style-type: none"> Approach to the 2021 emissions inventory Commercial Harbor Craft regulation hearing SPBP Technology Feasibility Assessment 	<ul style="list-style-type: none"> Thetius (IoT on vessels) Ballard (Fuel Cell propulsion)
July 20 th	<ul style="list-style-type: none"> Increased Efficiency & On-dock Rail 	<ul style="list-style-type: none"> Federal focus & funding Research & resources for needs, impact assessments Short-haul rail ZE opportunities CARB locomotive regulation 	<ul style="list-style-type: none"> Everport Terminal Services METRANS
September 21 st	<ul style="list-style-type: none"> Workforce Development 	<ul style="list-style-type: none"> Training center developments Member activities Research & findings in 2022 	<ul style="list-style-type: none"> Green Workforce Coalition CSULB, UCLA
November 16 th	<ul style="list-style-type: none"> ZE Trucks & CHE Implementation 	<ul style="list-style-type: none"> CTP Update ACF Rulemaking 	<ul style="list-style-type: none"> TBD



Attachment D
Presentation - CARB Regulatory Updates



At Berth Regulation Implementation Updates

Update to Sustainable Supply Chain Advisory Committee

May 18, 2022

New At Berth Regulation

- Adopted by CARB's Board on August 27, 2020
- Every vessel visiting a regulated terminal must connect to shore power or alternative control strategy
- Compliance required by:
 - January 1, 2023: Container, Refrigerated Cargo, Cruise
 - January 1, 2025: Auto carrier
 - January 1, 2025 (SoCal) and January 1, 2027 (NorCal): Tanker
- Alternative compliance pathways:
 - Vessel and Terminal Incident Events (VIEs and TIEs)
 - Remediation Fund (for specific qualifying circumstances)
 - Innovative Concepts



Regulation Implementation

- January 1, 2021 - New Regulation took effect
- December 1, 2021 - Ports and Terminal Plans submitted to CARB
- December 1, 2021 - IC applications submitted
- December 1, 2022 - Publish Interim Evaluation Report



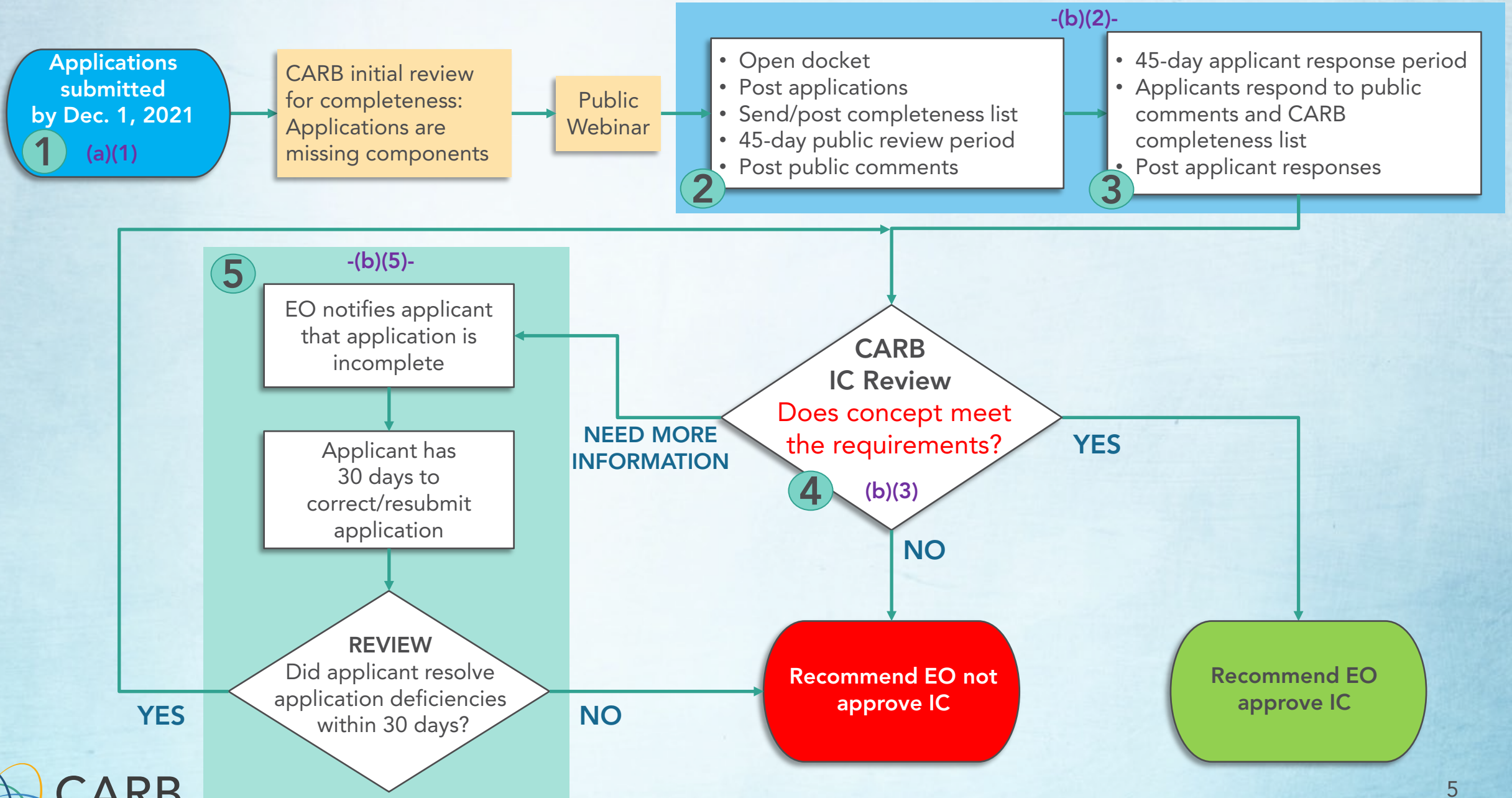
Innovative Concept Compliance Option

- Option that allows compliance through emission reduction projects that benefit impacted port communities
- Received by December 1, 2021
- Reduce emissions¹ equivalent to, or greater than the level that would have been achieved by using a CAECS²
- Achieve reductions in and around the same California port or marine terminal as with direct compliance
- Approved by CARB through Executive Officer
- Requirements are in Section 93130.17 of the Regulation

1) Reduce NO_x, PM_{2.5}, ROG while not increasing GHG

2) CAECS: CARB Approved Emission Control Strategies

Innovative Concepts Application and Approval Process Flow Chart



Public Engagement

- A comment docket will be available for each IC
- Comments can be submitted here:



The screenshot shows the California Air Resources Board website. The header includes the CARB logo and navigation links: ABOUT, OUR WORK, RESOURCES, SERVICES, RULEMAKING, NEWS, EQUITY. The main heading is "At Berth Regulation Innovative Concept Applications". Below this is a table with two columns: "Applicant" and "Dockets:". The table lists 11 applicants and their corresponding docket IDs.

Applicant	Dockets:
Clean Air Engineering Maritime	AtBerth-ICApp-01
Carnival	AtBerth-ICApp-02
Chevron - Richmond	AtBerth-ICApp-03
Hapag Lloyd	AtBerth-ICApp-04
Intrepid	AtBerth-ICApp-05
Matson	AtBerth-ICApp-06
Pasha	AtBerth-ICApp-07
Shell	AtBerth-ICApp-08
Tesoro Long Beach	AtBerth-ICApp-09
Tesoro Martinez	AtBerth-ICApp-10
Wallenius Wilhelmsen	AtBerth-ICApp-11

<https://ww2.arb.ca.gov/berth-regulation-innovative-concept-applications>

Next Steps

- Applications will be posted
- Public has a 45-day window to evaluate and provide feedback
- Applicants will be notified regarding the information that is missing from their application
- Applicants will then have 45 days to respond to public comments
- CARB will evaluate the Innovative Concepts or notify applicants if more information is needed

Overview of Port & Terminal Plans

- Purpose of Port & Terminal Plans
 - Demonstrate each port and terminal operator's path toward compliance
 - Define the division of responsibilities between port and terminal operators
 - Assist with Interim Evaluation
- Plans are publicly available on CARB's website:
<https://ww2.arb.ca.gov/our-work/programs/ocean-going-vessels-berth-regulation>

What Information Was Required?

Plans should include:

- Equipment and location
- Number of vessels expected to use the strategy
- Berth coordinates
- Where equipment will be used
- Terminal and Port berthing restrictions
- Schedule for installing and operating equipment
- Terminal-Port division of responsibilities

- Full details of Plan requirements can be found in section 93130.14 of the Regulation

Port and Terminal Plan Timeline

Submittal

- To CARB by December 1, 2021

After Submittal

- Staff had 90 days to review plans

Complete or Incomplete?

- If ports/terminals did not receive an incomplete letter from CARB within 90 days of submittal, plans were deemed complete

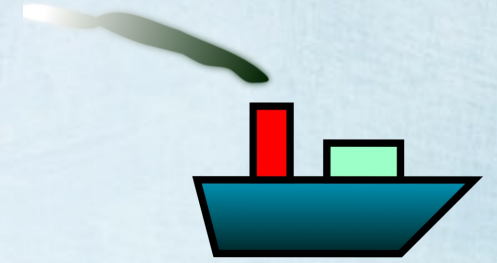
Revised Plans

- February 1, 2024: Revised ro-ro and S. CA tanker plans due
- February 1, 2026: All other tanker revised plans due

Port and Terminal Plan Summary

- CARB received and reviewed: 9 Port Plans, 19 container/reefer terminal plans, 4 cruise terminal plans, 8 ro-ro terminal plans, 21 tanker terminal plans
- Primary Compliance Pathways:
 - Container/Reefer: Shore power and capture and control systems
 - Cruise: Shore power
 - Ro-ro: Shore power, capture and control, hydrogen fuel cells
 - Tanker: Shore power, capture and control, Innovative Concepts
- Main Deficiencies: Missing berth coordinates, number of vessels expected to use each strategy, signatures, schedules for installing equipment

Interim Evaluation



- Assess the progress in adopting control technologies and the status of infrastructure upgrades
- Evaluate possible inclusion of control requirements for bulk and general cargo vessels and vessels at anchor
- Must be published by December 1, 2022
 - Followed by an update to the Board (likely early/mid 2023)
- Data/analyses should be provided to CARB no later than June 2022

Public Process

- CARB will consider all information submitted by any member of the public or industry stakeholders
 - Including Port and Terminal Plans, site specific engineering evaluations, logistical considerations, health risk/exposure assessments
- CARB staff will provide further guidance on the public review process



How Will CARB Use the Interim Evaluation Report



- Evaluate and summarize implementation status of the Regulation
- Develop recommendations for CARB's Board
 - Based on COVID impacts and new technical information or health studies
- Determine if control requirements are now feasible/recommended for:
 - Bulk and general cargo vessels
 - Vessels at anchor
- Findings will shape next steps recommendations to CARB's Board

Contact Information

Innovative Concepts

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Bonnie Soriano, Chief, Freight Activity Branch, Bonnie.Soriano@arb.ca.gov, (279) 208-7264

General Inquiries

ShorePower@arb.ca.gov

Port and Terminal Plans & Interim Evaluation

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Nicole.LightDensberger@arb.ca.gov

(916) 790-9176

Elizabeth Melgoza, Marine Strategies Section

Elizabeth.Melgoza@arb.ca.gov

(279) 208-7467

Questions?





Proposed Amendments to the Commercial Harbor Craft Regulation

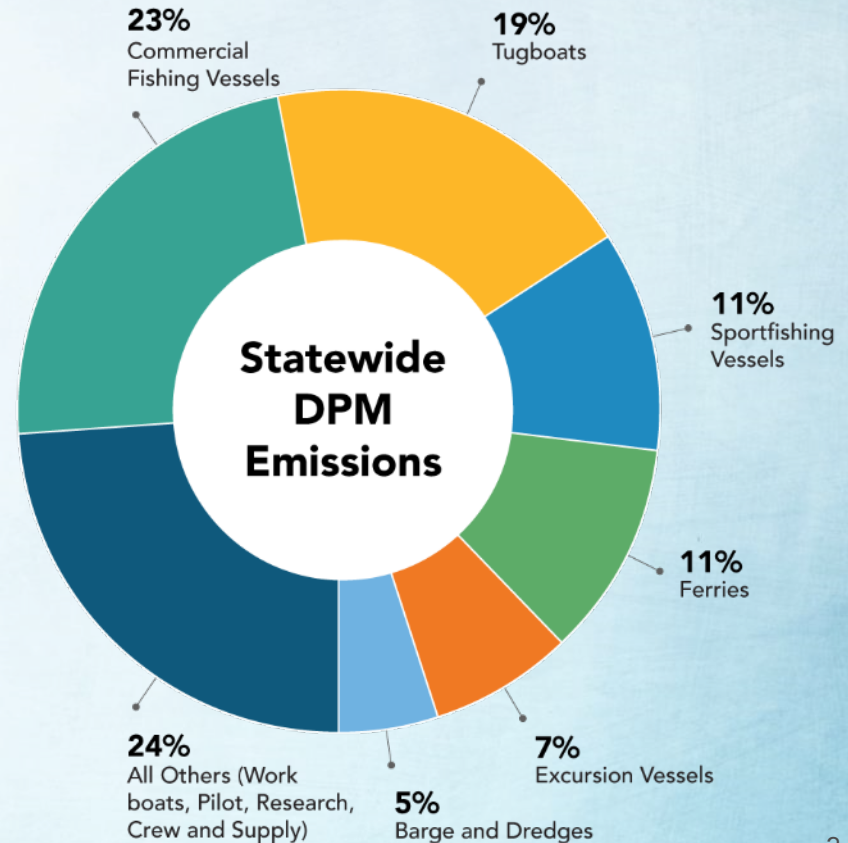
Hearing 2 of 2
March 24, 2022

Regulatory Background

- Focused on meeting clean air commitments and protecting communities
- Current Regulation: accelerated turnover to Tier 2 and 3 engines for select categories between 2009 and 2022
- Proposed amendments would require zero-emission where feasible, and cleaner combustion on all other vessel types
- Implementation would begin in 2023 and phase in through 2035

Statewide Emissions in 2023

- Major category of diesel emissions at seaports:
 - Diesel particulate matter: **165 tons per year**
 - Oxides of nitrogen: **15.1 tons per day**
 - Near-source cancer risk: **>900 in a million**



Proposal: Zero-Emission Vessels



- 2025: zero-emission capable new excursion vessels
- 2026: zero-emission short run ferries (routes < 3 nm)
- 2035: additional deployment where feasible through alternative control of emissions

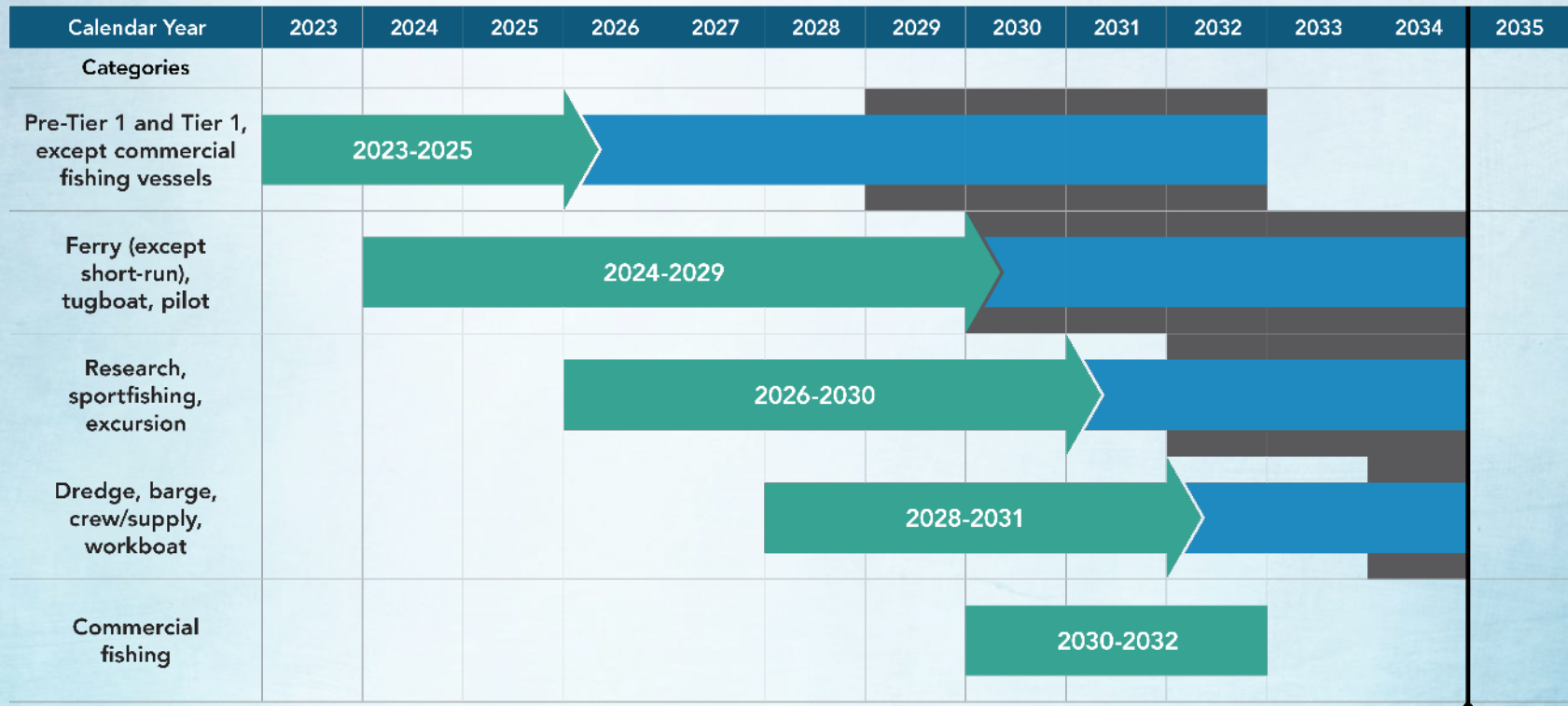



Proposal: Transition to Cleaner Combustion





- Tier 4 engines required <600 kW if certified for duty cycle
- PM standard harmonizes with newest on-road engine standards

Proposal: Compliance Schedule



 Compliance Dates

 Possible Extension Period (financial hardship & feasibility)

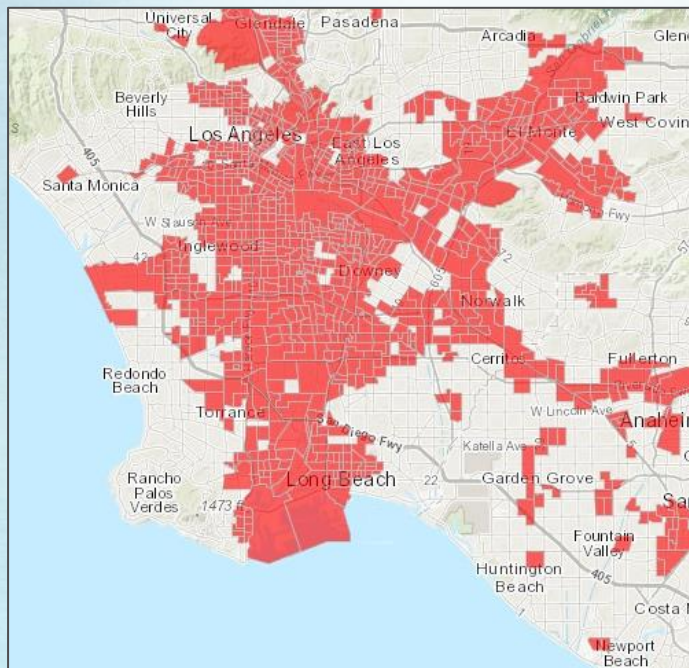
 Vessel replacement dates after financial hardship extensions expire

Extensions expire December 31, 2034

Proposal: Flexibility through Alternative Compliance Options

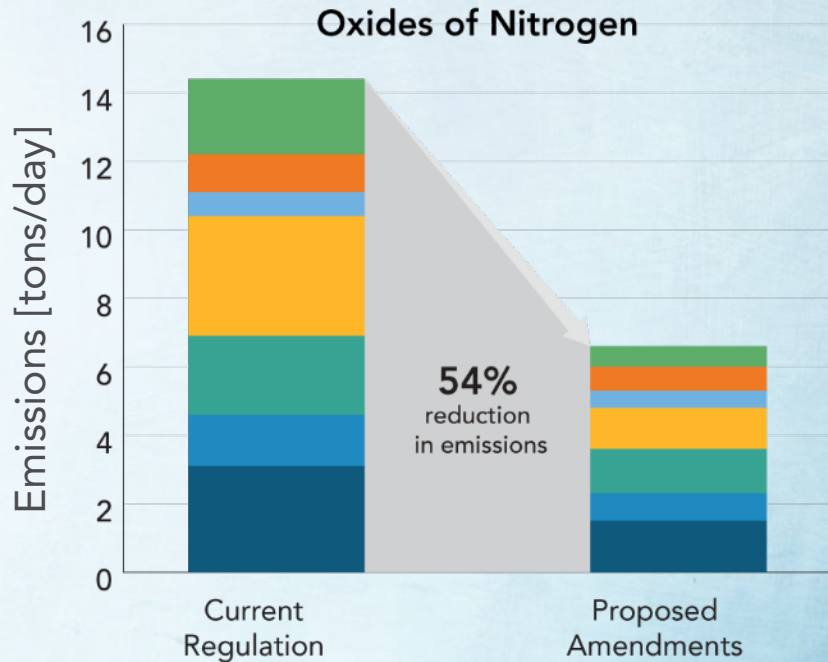
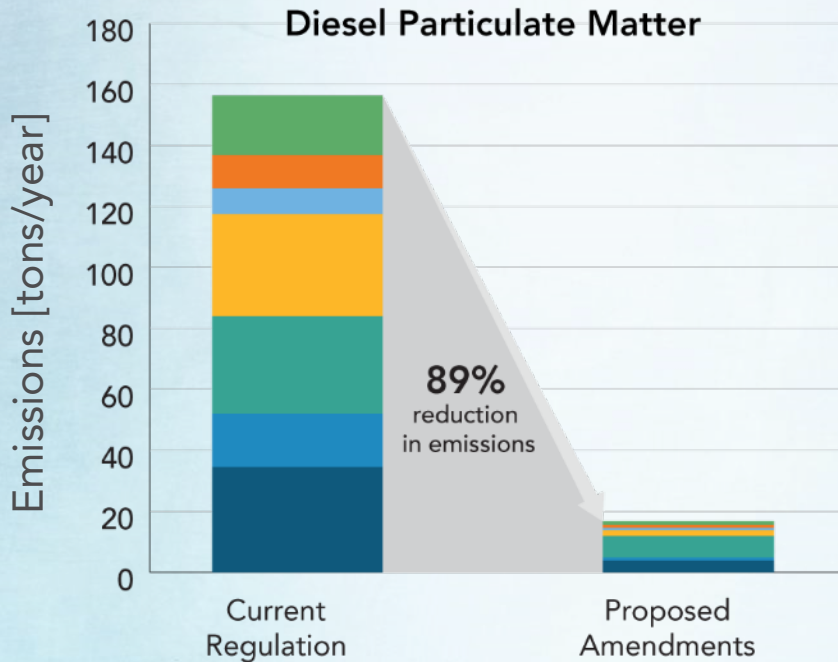
- **Alternative Control of Emissions (ACE) plan**
 - Demonstration of equivalent emissions reductions
 - Examples: fleet-averaging, early action, zero-emission
- **Zero-Emission and Advanced Technology credit**
 - Zero-emission vessel deployment = additional compliance time on another vessel in fleet

Proposal: Additional Stringency for Vessels in Disadvantaged Communities



- 25% most impacted as defined by CalEnviroScreen
- More stringent low use compliance pathway
- Demonstration of no disproportionate impacts from alternative compliance plans and zero-emission credits

Statewide Emission Benefits in 2035



Ferries

Barge and Dredges

Commercial Fishing Vessels

All Others (Workboats, Pilot, Research, Crew and Supply)

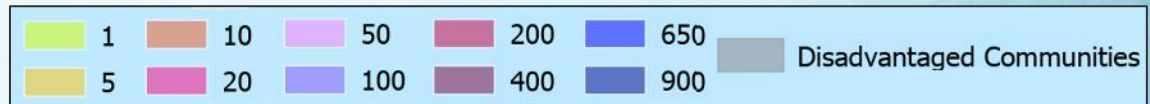
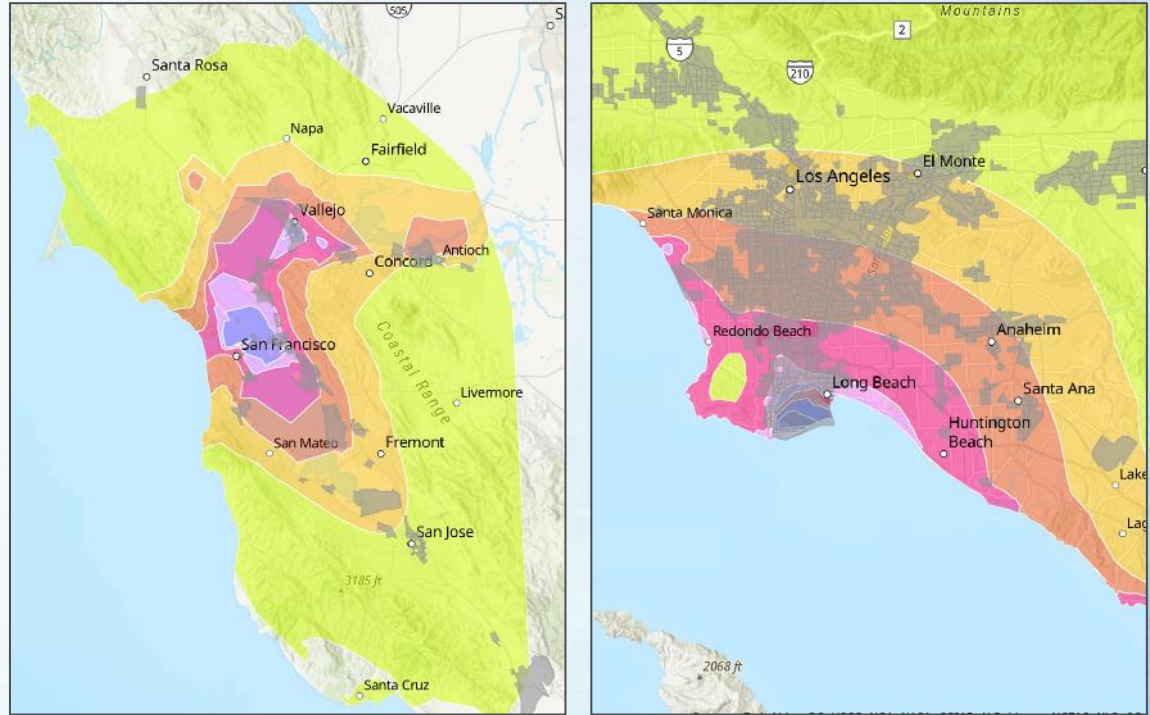
Excursion Vessels

Tugboats

Commercial Passenger Fishing Vessels

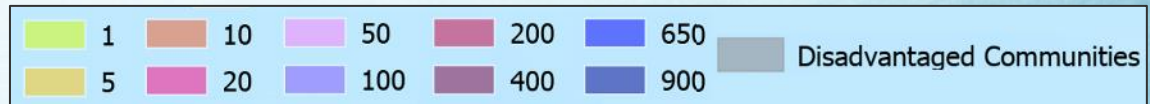
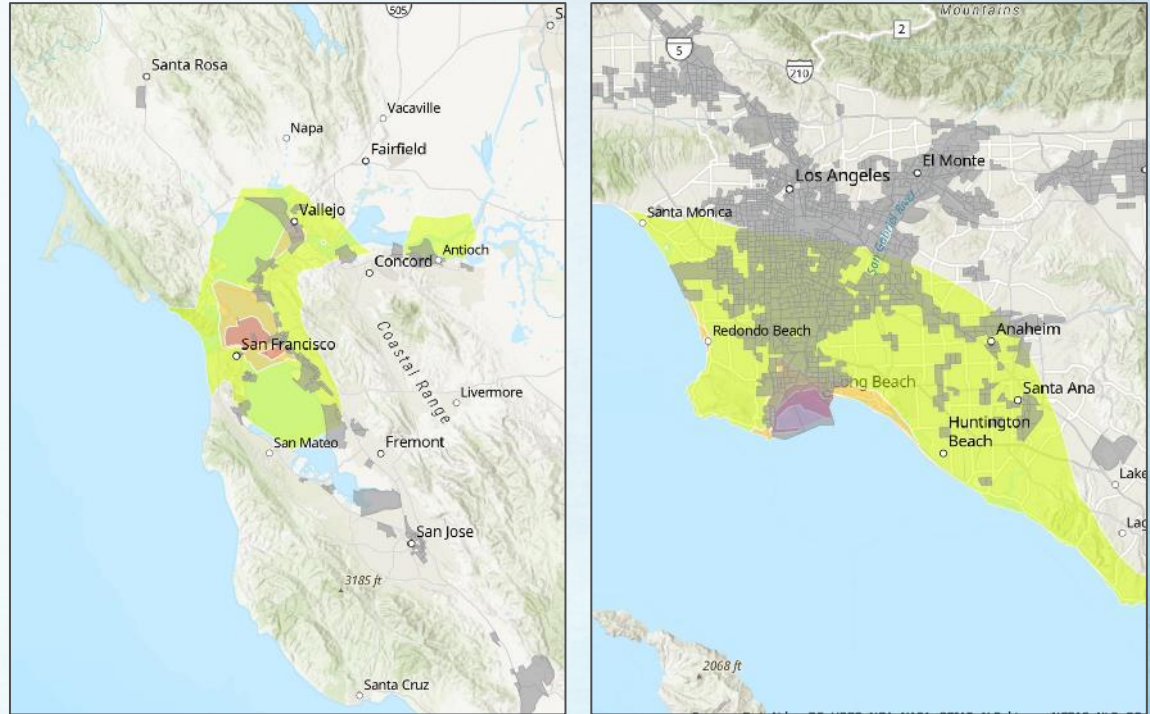
Cancer Risk – Current Regulation in 2038

- Reduced cancer risk to over 22 million residents
- Population-weighted cancer risk reduced from >10 to 1 per million
- Amendments eliminate cancer risk >100 per million for 80,000 residents in study areas



Cancer Risk – Amendments in 2038

- Reduced cancer risk to over 22 million residents
- Population-weighted cancer risk reduced from >10 to 1 per million
- Amendments eliminate cancer risk >100 per million for 80,000 residents in study areas



Summary of Board Direction: November 2021

1. Continue outreach on funding opportunities
2. Streamline compliance extension process
3. Regularly evaluate the status of zero-emission and cleaner combustion technology
4. Evaluate opportunity for contingency measures supporting State Implementation Plans

Extensive Stakeholder Outreach

before November 2021

- 400+ meetings, site visits, calls, emails
- Draft cost materials and regulatory text
- 5 workshops

Extensive Stakeholder Outreach

before November 2021

- 400+ meetings, site visits, calls, emails
- Draft cost materials and regulatory text
- 5 workshops

after November 2021

- 30+ virtual meetings
- 2 site visits and 1 webinar on funding and Board direction
- 80+ calls and email threads

Extensive Stakeholder Outreach

before November 2021

- 400+ meetings, site visits, calls, emails
- Draft cost materials and regulatory text
- 5 workshops

after November 2021

- 30+ virtual meetings
- 2 site visits and 1 webinar on funding and Board direction
- 80+ calls and email threads

Additional Materials Posted

- Emission inventory
- Final cost workbooks
- Informational fact sheets
- Health analysis methodology
- Air dispersion modeling



Key Public Comment Topics



Feasibility



Affordability



Emissions
Reductions

Response to Comments (1 of 2)

Performance

Mature technology, inspected by U.S. Coast Guard on vessels

Affordability

Flexible compliance pathways to invest in clean technologies

Incentives

Many opportunities, but none assumed in cost analysis

Response to Comments (2 of 2)

CHC Population

Industry and multiple government database sources

ATB Category

Historically categorized as harbor craft

CPFV Category

Industry requests Tier 3 → Zero

Recommendations for Sportfishing (CPFV)

- 15-Day Changes:
 - Option to meet Tier 3 by end of 2024 to get until end of 2034 to meet Tier 4 + DPF (or ZE)
 - Contingent upon reporting annually through 2035; no extension renewals every two years
- Resolution:
 - Directs collaboration with industry on zero-emission demonstration and Midterm Review by 2028

1. Outreach and Facilitating Funding

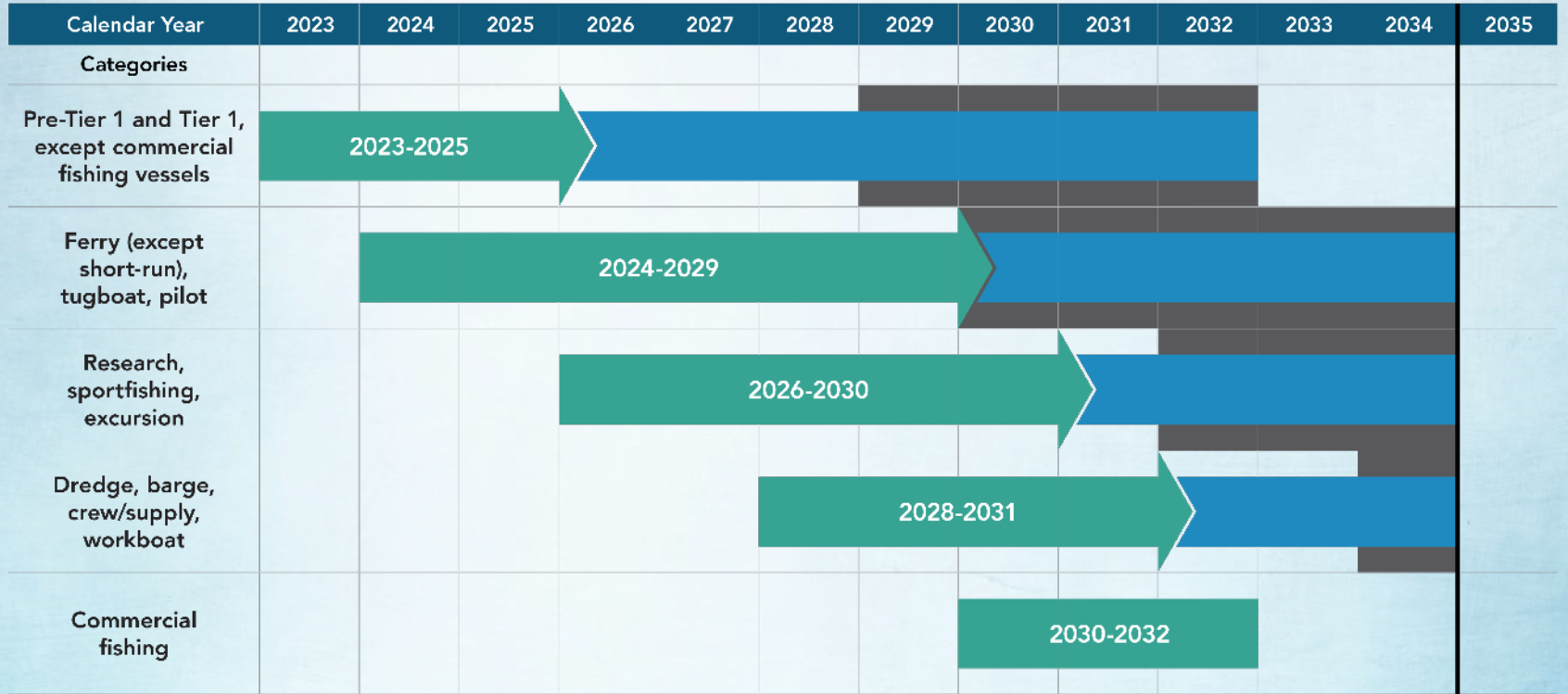
- Topic at January 2022 webinar – 4 funding programs – staff will continue to communicate opportunities
- Maximizing funding for harbor craft, especially zero-emission

January Workshop:

Funding Programs for Harbor Craft

- Low Carbon Transportation (LCT) – demos and pilots
- Clean Off-Road Equipment (CORE) – vouchers
- Carl Moyer – repower and replace in-use fleet
- Other opportunities (Volkswagen, EPA DERA, LCTOP, TIRCP, Prop 1b)

2. Streamlining Extensions



Compliance Dates

Possible Extension Period (financial hardship & feasibility)

Vessel replacement dates after financial hardship extensions expire

Extensions expire December 31, 2034

2. Streamlining Compliance Extensions

- Extensions critical for flexibility
- Staff reevaluation to allow use of existing analyses



Evaluation of the Feasibility and Costs of Installing Tier 4 Engines and Retrofit Exhaust Aftertreatment on In-Use Commercial Harbor Craft

Report prepared for the California Air Resources Board by:

Keir Moorhead

Ryan Storz

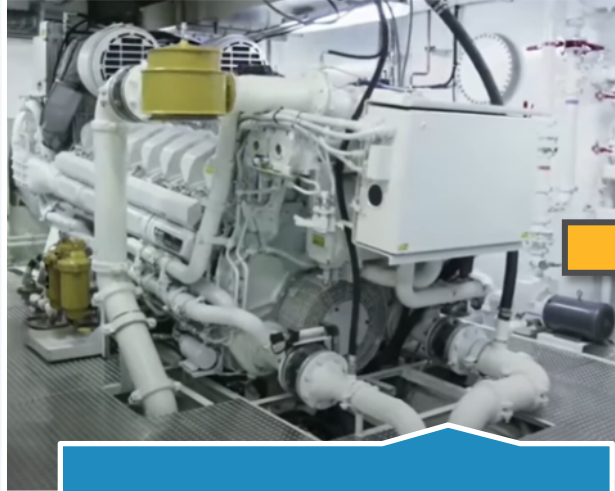
Dinesh Pinisetty

Of the California State University Maritime Academy

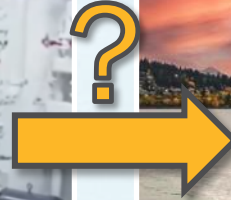
September 30, 2019

3. Technology Review

- Proposed biennially beginning 2024
- Would include a technical working group



Tier 4



Zero-Emission

4. Zero-Emission Contingency Measure

- ZE technology may advance in the marine sector
- Contingency measure would be explored for non-attainment areas

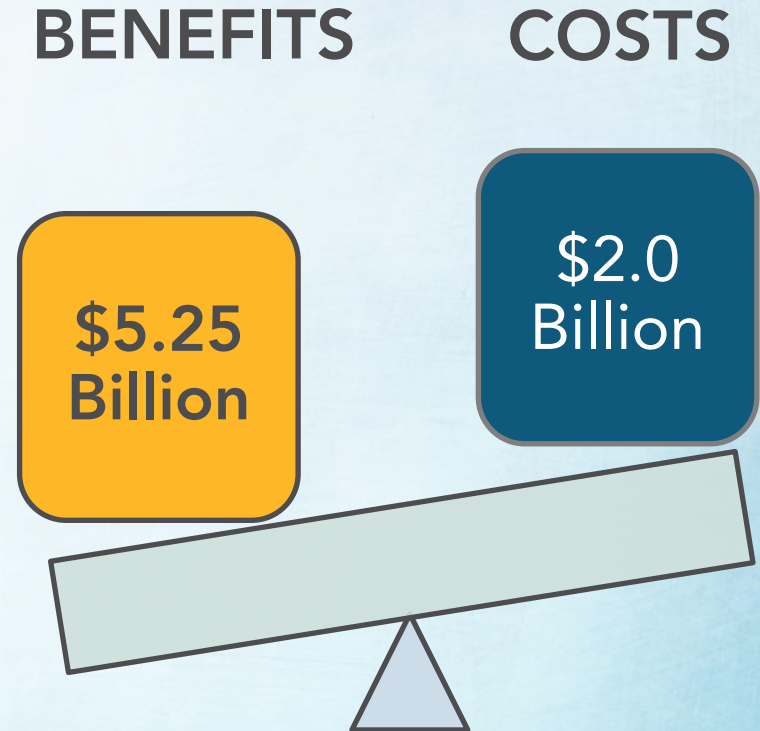


Environmental Analysis

- Draft Environmental Analysis (EA) completed
 - Potentially significant impacts found for some resource areas
- Released for public comment
 - September 24, 2021– November 15, 2021
- CARB prepared the Final EA and written responses to comments received on the Draft EA
 - Released in March 2022

Health Benefits & Valuation: 2023 to 2038

- **531** premature deaths avoided
- **161** avoided hospital admissions
- **236** avoided emergency room visits



Staff Recommends Approval of Resolution 22-6, Which Includes (1 of 2):

- Approval of written responses to environmental comments
- Certification of the Final EA, and
- Making the required CEQA findings

(continued on next slide)

Staff Recommends Approval of Resolution 22-6, Which Includes (2 of 2):

- Continued facilitation of incentive opportunities
- Streamlining compliance extensions
- Establishing a technical working group to advance zero-emission technology and release biennial review
- Continue collaboration with sportfishing industry and conduct Midterm Review by 2028
- Explore contingency measures for zero-emission

Next Steps

- Board vote to approve Proposed Amendments with recommended changes
- Release 15-day change package
- Prepare written responses to public comments in the Final Statement of Reasons



Attachment E
Summary of Available Funds

Federal Highway Administration - IJA implementation priorities
(See [guidebook](#) for more info, [RFI](#) and others' [responses](#))

Program name: **Reduction of Truck Emissions at Port Facilities**

Funding \$: \$400,000,000

Period: 4 year

Type: Competitive

New or existing: **New**

Recipients: No limitations

Program short description: "Reduction of Truck Emissions at Port Facilities program will study and award competitive grants to reduce truck idling and emissions at ports, including through the advancement of port electrification."

Eligible uses: Competitive grants are intended to test, evaluate, and deploy projects that reduce port-related emissions

Status: On hold, pending a full-year budget.

Notes: This is a new program, which gives us the opportunity to shape its implementation. It also may be a while before funds can be distributed depending on appropriations outcomes. Projects funded under this program will be treated as Federal-aid highway projects. Federal cost share not to exceed 80%. Extremely general, with a large amount of discretion given to the agency. [See section 11402 for text.](#)

Program name: **Carbon Reduction Program**

Funding \$: \$6,419,999,998

Period: 4 year

Type: Formula

New or existing: **New**

Recipients: States + DC

Program short description: "The Carbon Reduction Program will provide formula grants to States to reduce transportation emissions or the development of carbon reduction strategies."

Eligible uses: States may use Carbon Reduction Program funds for projects that support the reduction of transportation emissions, including: the construction, planning, and design of trail facilities for pedestrians, bicyclists, and other nonmotorized forms of transportation; public transportation projects; and congestion management technologies.

- (A) a project described in section 149(b)(4) to establish or operate a traffic monitoring, management, and control facility or program, including advanced truck stop electrification systems;
- (B) a public transportation project that is eligible for assistance under section 142;
- (C) a project described in section 101(a)(29) (as in effect on the day before the date of enactment of the FAST Act (Public Law 114-94; 129 Stat. 1312)), including the construction, planning, and design of on-road and off-road trail facilities for pedestrians, bicyclists, and other nonmotorized forms of transportation;
- (D) a project described in section 503(c)(4)(E) for advanced transportation and congestion management technologies;
- (E) a project for the deployment of infrastructure-based intelligent transportation systems capital improvements and the installation of vehicle-to-infrastructure communications equipment, including retrofitting dedicated short-range communications (DSRC) technology deployed as part of an existing pilot program to cellular vehicle-to-everything (C-V2X) technology;
- (F) a project to replace street lighting and traffic control devices with energy-efficient alternatives;
- (G) the development of a carbon reduction strategy in accordance with subsection (d);
- (H) a project or strategy that is designed to support congestion pricing, shifting transportation demand to nonpeak hours or other transportation modes, increasing vehicle occupancy rates, or otherwise reducing demand for roads, including electronic toll collection, and travel demand management strategies and programs;
- (I) efforts to reduce the environmental and community impacts of freight movement;
- (J) a project to support deployment of alternative fuel vehicles, including--

- (i) the acquisition, installation, or operation of publicly accessible electric vehicle charging infrastructure or hydrogen, natural gas, or propane vehicle fueling infrastructure; and
- (ii) the purchase or lease of zero-emission construction equipment and vehicles, including the acquisition, construction, or leasing of required supporting facilities;
- (K) a project described in section 149(b)(8) for a diesel engine retrofit;
- (L) a project described in section 149(b)(5) that does not result in the construction of new capacity; and
- (M) a project that reduces transportation emissions at port facilities, including through the advancement of port electrification.

Status: First round of funds apportioned in December 2021. However, funding not distributed due to the continuing resolution.

Notes: This is a new program, which gives us the opportunity to shape its implementation. It also may be a while before funds can be distributed depending on appropriations outcomes. There's a lot the DOT will need to do by way of guidance to get this program off the ground. DOT will need to define a vague flexibility provision ("Flexibility.--In addition to the eligible projects under paragraph (1), a State may use funds apportioned under section 104(b)(7) for a project eligible under section 133(b) if the Secretary certifies that the State has demonstrated a reduction in transportation emissions--(A) as estimated on a per capita basis; and (B) as estimated on a per unit of economic output basis.). States also have two years to develop "carbon reduction strategies" in consultation with MPOs, that DOT must then review and certify that the strategy meets the requirements outlined (see text), or deny certification and prescribe corrective action. There is no enforcement mechanism specified in the law for corrective action. There are directives for consultations with MPOs in cities and in rural areas. [See section 11403 for text.](#)

Program name: **Congestion Mitigation & Air Quality Improvement Program**

Funding \$: \$13,200,000,000

Period: 4 year

Type: Formula

New or existing: **Existing**

Recipients: States + DC

Program short description: "The Bipartisan Infrastructure Law continues the Congestion Mitigation and Air Quality Improvement Program to provide a flexible funding source to state and local governments for transportation projects and programs to help meet the requirements of the Clean Air Act. Funding is available to reduce congestion and improve air quality for areas that do not meet the National Ambient Air Quality Standards for ozone, carbon monoxide, or particulate matter (nonattainment areas) and for former nonattainment areas that are now in compliance (maintenance areas)."

Eligible uses: Transportation projects that reduce congestion and reduce the mobile source emissions for which an area has been designated nonattainment or maintenance for ozone, carbon monoxide, and particulate matter by the Environmental Protection Agency.

Status: First round of funds (Fiscal Year 2022) was released December 2021. Next round of funding (Fiscal Year 2023) to be released October 2022. Guidance on changes in eligible uses to be released.

Notes: New eligibilities include (new language in bold):

- Shared micromobility
- "The purchase of diesel **replacements or retrofits**" for on and off-road vehicles. This change is made throughout, and EPA admin may allow "other technologies" as appropriate. EPA is asked to release guidance on appropriate technologies for retrofit, and now replacement.
- Purchase of zero emission MHDV and related charging equipment
- Alternative-fueled nonroad vehicles and nonroad engines used in construction projects or port-related freight operations

Also adds EJ provisions (explicit prioritization for PM2.5 reduction in low-income and disadvantaged communities). [See section 11115 for text.](#)

Program name: **National Highway Freight Program**

Funding \$: \$7,150,000,000

Period: 4 year

Type: Formula

New or existing: **Existing**

Recipients: States + DC

Program short description: "The National Highway Freight Program provides funds to the States, by formula, to improve the efficient movement of freight on the National Highway Freight Network."

Eligible uses: Projects that contribute to the efficient movement of freight on the National Highway Freight Network and are identified in a freight investment plan included in the State's freight plan. In addition, a State may use not more than 30% of its total National Highway Freight Program funds each year for freight intermodal or freight rail projects, subject to certain restrictions

Status: First round of funds (Fiscal Year 2022) was released December 2021. Next round of funding (Fiscal Year 2023) to be released October 2022.

Notes: Increases length of road eligible to be designated critical urban freight corridor. Expands amount of funding that can be used at ports. Could be an opportunity to influence guidance for states. [See section 11114 for text.](#)

Program name: **Reconnecting Communities Pilot Program**

Funding \$: \$1,000,000,000

Period: Available until expended

Type: Competitive

New or existing: **New**

Recipients: Owner of an eligible facility (may partner with any of the eligible entities for a planning grant) - Planning grant recipients can be states, tribal, or local governments, MPOs, or nonprofits.

Program short description: "Reconnecting Communities Pilot Program will restore community connectivity by removing, retrofitting, or mitigating highways or other transportation facilities that create barriers to community connectivity, including to mobility, access, or economic development"

Eligible uses: "Grants (≥\$5M) for capital construction projects, including the removal and replacement of eligible facilities. Planning grants (≤\$2 million)."

Status: Department will issue Notice of Funding Opportunity on Grants.gov on a yet to be determined date (update: July 2022).

Notes: "In this section, the term "eligible facility" means a highway or other transportation facility that creates a barrier to community connectivity, including barriers to mobility, access, or economic development, due to high speeds, grade separations, or other design factors." [See section 11509 for text.](#)

Program name: **Surface Transportation Block Grant Program**

Funding \$: \$72,000,000,000

Period: 4 year

Type: Formula

New or existing: **Existing**

Recipients: States + DC

Program short description: "The Surface Transportation Block Grant Program promotes flexibility in state and local transportation decisions and provides flexible funding to best address state and local transportation needs."

Eligible uses: The Surface Transportation Block Grant Program is available for the roughly one million miles of Federal-aid highways, for bridges on any public road, and for transit capital projects.

Status: First round of funds (Fiscal Year 2022) was released to state transportation departments in December 2021. Next round of funding (Fiscal Year 2023) to be released to state transportation departments October 2022.

Guidance to be released on changes in eligibilities.

Notes: New eligibilities, including installation of EV charging infrastructure and V2G infrastructure. [See section 11109 for text.](#)

Program name: **Congestion Relief Program**

Funding \$: \$250,000,000

Period: 4 year

Type: Competitive

New or existing: **New**

Recipients: States, Metropolitan Planning Organization, city or municipality (only for urbanized areas with populations > 1M)

Program short description: "Advance innovative, integrated, and multimodal solutions to reduce congestion and the related economic and environmental costs in the most congested metropolitan areas with an urbanized area population of 1 million+."

Eligible uses: Planning, design, implementation, and construction activities to achieve the program goals, including: deployment and operation of integrated congestion management systems, systems that implement or enforce high occupancy vehicle toll lanes or pricing strategies, or mobility services; and incentive programs that encourage carpooling, nonhighway travel during peak periods, or travel during nonpeak periods. Subject to certain requirements and approval by the Secretary, provides for tolling on the Interstate System as part of a project carried out with a grant under the program

Projects can include "deployment and operation of mobility services, including establishing account-based financial systems, commuter buses, commuter vans, express operations, paratransit, and on-demand microtransit."

Status: TBD

Notes: Lower priority. This is a new program, which gives us the opportunity to shape its implementation. [See section 11404 for text.](#)

All FHWA programs in BIF:

- Reduction of Truck Emissions at Port Facilities
- Carbon Reduction Program
- Advanced Transportation Technologies & Innovative Mobility Deployment
- Congestion Mitigation & Air Quality Improvement Program
- Congestion Relief Program
- National Highway Freight Program
- Reconnecting Communities Pilot Program
- Surface Transportation Block Grant Program
- Charging & Fueling Infrastructure Grants (Corridor Charging)
- Charging and Fueling Infrastructure Grants (Community Charging)
- National Electric Vehicle Infrastructure Formula Program
- Safety-Related Activities (Set-aside)
- Bureau of Transportation Statistics
- Prioritization Process Pilot Program
- Technology & Innovation Deployment Program
- Training & Education
- Construction of Ferry Boats and Ferry Terminal Facilities
- Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT) - Discretionary
- Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT) - Formula
- Accelerated Implementation and Deployment of Advanced Digital Construction Management Systems (Set-aside)
- Accelerated Implementation and Deployment of Pavement Technologies (Set-aside)
- Appalachian Development Highway System
- Bridge Formula Program
- Bridge Investment Program
- Disadvantaged Business Enterprises
- Federal Lands Access Program
- Federal Lands Transportation Program (For other Federal Land Management Agencies)
- Federal Lands Transportation Program (Funding for U.S. Fish & Wildlife Service)

- Federal Lands Transportation Program (Funding for U.S. Forest Service)
- Federal Lands Transportation Program (funds for National Park Service)
- Grants for Planning, Feasibility Analysis, and Revenue Forecasting (Bridge Investment Program Set-aside)
- Highway Research & Development Program
- Highway Use Tax Evasion Projects
- Intelligent Transportation Systems Program
- Metropolitan Planning
- National Highway Performance Program
- National Motor Vehicle Per-Mile User Fee Pilot (Set-aside)
- Nationally Significant Federal Lands and Tribal Projects
- Nationally Significant Freight & Highway Projects (INFRA)
- On-the-Job Training Program
- Puerto Rico Highway Program
- Rural Surface Transportation Grant Program
- State Incentives Pilot Program (Set-aside within Nationally Significant Freight and Highway Projects - INFRA)
- Strategic Innovation for Revenue Collection (Set-aside)
- Territorial Highway Program
- Tribal High Priority Projects Program
- Tribal Transportation Facility Bridge (Set-aside)
- Tribal Transportation Facility Bridges (Bridge Formula Funding Set-Aside)
- Tribal Transportation Program
- Highway Safety Improvement Program
- Railway-Highway Crossings Program
- Wildlife Crossings Pilot Program