



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

Date: July 21st, 2021 | 11:00 am – 3:00 pm

Location: Via phone conference

Attachments: Attachment A - Attendees
Attachment B - Meeting Agenda
Attachment C - CARB At-Anchor Emissions Analysis
Attachment D - POLA RFI Summary
Attachment E - Presentation

Meeting Summary

1. POLA / POLB Opening Remarks

- a. Both ports reported that the pandemic-related cargo surge continues to put pressure on their supply chains; POLA cited a new record of having processed 10 million TEUs year-to-date. Long dwell times at anchor present a growing threat to the ports' abilities to meet their emission reduction targets and to improve the flow of cargo through an unusually-congested supply chain. The ports cited two external factors that have further complicated their efforts - Union Pacific railroad's one-week suspension of traffic into Chicago, and President Biden's July 2021 executive order to improve competitiveness across the goods movement supply chain.
 - i. The ports are exploring solutions such as just-in-time delivery and expanded anchorage areas, in response to expressions of concern from their boards and CARB.
 - ii. The ports are separately working to re-activate a Memorandum of Understanding with the South Coast AQMD regarding the emissions benefits from the Clean Air Action Plan (CAAP), in lieu of a port-based Indirect Source Rule. This process had been suspended due the COVID-19 pandemic.
- b. Addressing the Clean Truck Program (CTP), POLA noted that a public meeting is planned for August 2021 and that a proposed exemption for Low NOx trucks is expected to be a central topic given divergent stakeholder opinions on use of funds as well as an evolving regulatory landscape.
 - i. The Committee noted that –the South Coast AQMD and POLB have been collaborating to put together a \$45 million program to fund NZE. The amount was acknowledged to be insufficient to meet the total demand, and illustrates the need for local funding such as is expected from the CTP. The lack of a clear start date for the CTP rate, however, makes it very challenging to guarantee that funding gaps can be filled, and determine what other sources are needed. Noting the program's delayed start, the Committee asked the ports what options exist to accelerate action on this issue.



- The Ports anticipate that the rate will go into effect during Q1 2022 but observed that differences of opinions among stakeholders needed to be addressed. Acknowledging this condition, the Committee observed that there will always be differences of opinion but that action is needed now in order to save lives. Several members stressed that the ports are at a decision point if air quality attainment and public health goals are to be met.
 - Citing the ports' congestion statistics, the Committee pointed out that significant revenue that could support NZE and ZE truck deployment has already been lost from the CTP's delays.
 - The ports agreed to share the Committee's concerns with their management team and request guidance about options to accelerate the CTP implementation timeline.
- c. POLB added that its board approved a revised green ship incentive program that is based on the ESI scoring index; that it will finalize a truck charging and fueling study this summer; and that the joint port emissions inventories are expected to be released in October. Meanwhile, both ports are working on the 2021 technology feasibility studies as directed under the CAAP.
- d. Committee member PMSA noted that Union Pacific's decision has pushed trucking activity further inland, and added some additional delay to truck, rail and ship dwell time at the port complex. Fluctuations in COVID-19 cases at other, feeder ports around the world also affect the SPBP's level of congestion. The group recognized that all partners in the supply chain are working hard to find solutions to efficiently address the backlog.
2. Review & Approve May Meeting Summary
- a. Member ILWU Local 13 flagged the POLB's reference to cargo handling equipment (CHE) in item 1.c and requested that references to funding CHE be associated with the term "human-operated", citing a need for clear solidarity between the ports and the labor unions on equipment funding. POLB did not object to this request.
 - b. The Committee recognized that its use of the term "near-zero emission (NZE)" refers to the optional low NOx standard of 0.02 g/bhp-hr, and that the group has not used the term to refer to the recently-revised working standard of plug-in hybrid handed down by CARB. The Committee agreed to consider revising its terminology to clearly define each standard in future writing.
 - c. A typo that mischaracterized the California Transportation Commission as a Coalition was raised and corrected in the publicly-listed minutes.
 - d. The minutes were approved.
3. Update on CARB Activities (CARB)
- a. Low NOx Omnibus
 - i. A 15-day change has been made in the final rule based on discussions with engine and vehicle manufacturers that revealed that compliance requirements for MY2022 would lead to a diesel engine availability issue for 2024 and 2025. Engine manufacturers will be allowed by CARB to produce legacy diesel engines as long as they offset emissions in excess of the rule's requirements by making



further investments in zero emission (ZE) vehicles which will serve as a mitigation credit. The final statement of reason (FSOR) will be published in November, and final board approval is expected in the same month. The Committee noted the allowance for non-compliance diesel engines and reiterated its concern for the impact of diesel exhaust on public health.

- ii. CARB staff also brought three related industry developments to the Committee's attention:
 - The extended warranty policy under the Advanced Clean Truck (ACT) Regulation has taken effect with the MY2022 vehicles, and customers are beginning to face higher costs on their vehicle warranties.
 - Engine manufacturer Cummins has recalled and halted shipments of its 9L diesel engine for urban buses due to a safety concern, creating some congestion in the school and transit bus segments.
 - CARB plans to bring its proposal for a new HD inspection and maintenance program to the Board in December 2021; the final workshop will be held in August.
- b. At-Anchorage Emissions Analysis
 - i. A recent analysis of emissions associated with extended ship dwelling periods over the last 1.5 years (**Attachment C**) finds that NOx and PM emissions increased many-fold between November 2020 and March 2021 relative to prior years. During that period, cargo volumes increased 44% and container ships were at-anchor for longer periods of time. From the perspective of public health risk, CARB's study finds that the improvements the agency anticipated achieving in the year 2025 from its at-berth rule have been eliminated by the emissions released between April 2020 and March 2021.
 - ii. The Committee inquired whether the governor's executive order to suspend cold-ironing activity between July 9th and July 12th, and as late as July 17th if necessary, to minimize load on CA's electrical grid during a recent heat wave had a significant impact. CARB advised that it does impact overall emissions but that the scale was not measured in this study.
- c. 2021 - 2022 State Budget
 - i. CARB summarized key components of the recently-released 2021-2022 state budget for commercial transportation. CARB will provide \$75MM for drayage trucks, in addition to \$40MM for its joint award with the CEC to support ZEV drayage truck deployment. This second investment allows it to fully fund three projects beyond what it had originally anticipated. The agency also has access to \$500MM for its Clean Trucks, Buses and Off-Road Equipment program.
 - ii. The amount of funding allocated for this coming period is significantly greater than the amount available in the prior year, when the COVID-19 pandemic required state funds for emergency use. Based on this condition, the agency anticipated a need for an early release of a large funding tranche to catch up with the industry's demand for financial support, and has moved \$60MM into the HVIP program as a contingency measure. CARB added that the HVIP program was heavily subscribed during its first disbursement period in this calendar year.
- d. Project 800



- i. CARB has tracked 363 ZEV Class 8 truck reservations in 2021, although it is unknown how many of these are drayage trucks.
 - ii. While the recent HVIP program was fully subscribed on the day it opened, and thus the program was closed on the same day, CARB will continue to accept applications for ZE drayage trucks and ZE trucks and buses owned by public agencies on an ongoing basis. An additional \$80MM in HVIP funding will be released in August 2021.
 - iii. Referring to the 100-voucher cap per manufacturer that was established this year, and the award of vouchers in excess of that cap to several manufacturers during the first round, CARB stated that the cap was always intended as a discretionary guideline. Staff advised that the award of vouchers above that limit triggers an internal review to ensure that the manufacturer is demonstrably able to meet production and deliver targets.
 - e. Advanced Clean Fleet Rule
 - i. Rulemaking has been delayed from 2021 to summer 2022 as CARB works to increase stakeholder engagement including around its total cost of ownership assumptions.
 - ii. It was noted that CARB is also considering a change to the recently-adopted ACT rule to require 100% ZEV sales in CA by 2040. This modification is proposed to align with the Governor's 2020 executive order that the state's truck and bus fleets must achieve zero emissions where possible by 2045.
 - iii. Responding to the Committee's inquiry about whether the delay in rulemaking would affect the target timeline for ZEV restrictions on the Port Drayage Truck Registry (PDTR), the agency confirmed that a delayed implementation will result. A revised date for new vehicle entries in the PDTR would be proposed once the rule is approved by the Office of Administrative Law (OAL).
 - iv. CARB acknowledged that ZEV fueling infrastructure gaps are an important factor in the rule's implementation, and that this is being considered although it won't be on the agenda for the upcoming public workshop.
- 4. POLA Infrastructure Updates
 - a. ZE RFI Summary (see **Attachment D**)
 - i. POLA presented a summary of the key results from its 2020 RFI regarding ZE truck deployment needs and strategies, citing vehicle cost and fueling infrastructure (especially permitting timelines and utility engagement) as critical gaps. There were 17 individual responses submitted to the RFI.
 - ii. The Port emphasized that the fundamental problem of the business model not supporting the purchase of a \$350,000 to \$500,000 truck remains; responses to the RFI were unable to overcome this paradox. Insufficient overall grant funding was noted as a related challenge, as is the tax implications of large grants on small operators. Further, the creditworthiness of the typical port drayage operator remains another significant challenge. The Committee commented that the RFI confirmed many of the major challenges that the Committee has been talking about for several years.
 - iii. While no single silver bullet solution to relieve smaller fleets of the financial burden and achieve accelerated adoption across the industry was identified,



respondents provided some innovative concepts that the port is exploring in follow-up conversations. Among these is a Trucks as a Service (TaaS) model which would reduce the up-front cost and long-term risk to fleets to operate ZE trucks. Charging as a Service (CaaS) was also a model that several respondents highlighted. Finally, the development of a secondary BEV market was raised as an important solution to consider.

- iv. Nearly all of the respondents suggested having a centralized charging location. Many noted that planning and permitting for heavy-duty EV charging, and working with the electric utilities, remain significant challenges.
- v. The POLA will continue to engage with stakeholders that submitted responses to further vet the concepts that were presented, and may release a RFP this calendar year based on these results.
- vi. The Committee asked the port to clarify why the findings cover points of which the industry is already aware, and whether the intent of the RFI was to develop clarity around creative financing solutions rather than confirm market obstacles. Several members added that the results clarify the reasons why a mass ZEV deployment cannot be achieved in the immediate term - and that this finding should motivate the ports to take action to achieve air quality attainment goals now with express support for NZE vehicles.
 - The Port pointed to findings around economies of scale required for the manufacturers to justify a new technology offering, and comparisons between existing drayage truck business models and the unknown model for ZEV deployments, as new and worthy of deeper investigation.
 - POLA objected to the observation that ZEV deployments cannot be achieved immediately, and pointed to several models which are reportedly available in 1-2 years.
- vii. The Committee advised that the Ports and Mayors' office review the RFI results with the intent to decide on a path of action other than conducting more studies, noting that inaction is the worst possible outcome. One member observed that the TaaS model has been discussed for several years and advised that the Ports share this with the Harbor Commission for development.
 - Responding to a request from Mayor Garcetti's office, the Harbor Trucking Association (HTA) advised that the TaaS model is interesting to drivers if it can improve their security with the vehicle and if it offers a choice of several vehicles. A model that only offers access to one model, without a backup or alternative option in case of failures, is not a sound business model from the drivers' perspective. Clear funding and regulatory timelines are also critical factors for driver decision-making.
 - HTA added that many drivers today embrace the NZE (natural gas) vehicle technology for its strong support systems, reliable manufacturers, and available infrastructure. Noting the market's preference to pre-buy vehicles in preparation for a fleet turnover, and the lack of affordable ZEV options, HTA added that there will be a significant pre-buy of diesel truck purchases unless CARB and the state provide clear financial support for drivers to purchase NZE trucks in the immediate term.



- CARB reminded meeting participants that the Governor, state leaders and the regulatory agency is fully committed to a ZE pathway and that extensive funding is currently available with more coming. CARB disagreed with a member's assertion that agency support for NZE truck deployments over the next two years will achieve more emissions reductions than dedicating those resources for ZE deployments only during that time frame.
 - b. Volvo LIGHTS Charging Infrastructure Study
 - i. POLA summarized the terms of its ongoing study under the Volvo LIGHTS project, noting that it is focusing on scenarios that provide top-off charging opportunities (as opposed to full-fill) and prioritizing those that would support the anticipated early ZE truck deployments in/around the port complex. To date, the study has identified two locations for potential HD truck charging which are currently undergoing evaluation. The assessment is expected to be completed by the end of Q3 2021.
5. Debrief on May Meeting - ZE Fueling Infrastructure
- a. Summary of Discussion
 - b. Summary of Member Interim Meeting
 - c. Group Discussion
 - i. GNA presented a summary of the key speakers and topics covered in the May Deep Dive on ZEV Fueling Infrastructure (see **Attachment E**). Due to time constraints the members had requested an interim meeting in June to identify the most appropriate responses to this information and had defined several recommendations.
6. Review Draft Recommendations
- a. ILWU Local 13 asserted that it would not be able to approve these recommendations until they had been through an internal review.
 - b. CHE Infrastructure Funding
 - i. Member Dr. Joe Lyou recused himself from approving this recommendation given his joint role at the California Transportation Commission, which the recommendation identifies as a funding source.
 - ii. Dr. Lyou advised that funding covers infrastructure, and that port equipment may also be eligible.
 - iii. Other members present did not object to the recommendation as written, and GNA agreed to liaise with ILWU 13 to confirm approval pending the latter's internal review.
 - c. Drayage Truck Infrastructure Standards
 - i. Members requested that the first two directives in this recommendation be rephrased to clarify a tangible course of action. The important role of workforce development investments to meet the goals identified in the recommendation was also discussed.
 - ii. Referring to an earlier point regarding federal infrastructure funding, the Members suggested that the recommendation advise the ports, mayors, and



governor to coordinate with officials at all levels to secure funding under the first round expected later this year.

- iii. GNA agreed to provide an updated draft for member review that reflects these three points.

d. Utility Use of LCFS Holdback Funds

- i. EarthJustice presented this recommendation which was drafted based on Southern California Edison's recent proposal to invest in commercial fleet ZE fueling infrastructure using its available LCFS holdback funds. Mayor Garcetti's office expressed support but offered to discuss the proposal with LADWP to confirm that the proposal aligns with the program's structure and allowances.
- ii. The Committee agreed that the Mayor's office's support in vetting this information would be useful during the drafting stage for this particular recommendation. The Mayor's Office agreed to provide an update through GNA.

7. Legislative Update

a. AB1524, AB365

- i. POLA's legislative team advised that AB1524 has passed several Committees and is now being vetted by the Appropriations Committee. Meanwhile, AB365 remains on-hold and the team does not anticipate significant progress in the near term.

8. Conclusion & Next Steps

- a. Next Meeting: September 15th, 11 am - 3 pm, Zoom
 - i. Cargo Handling Equipment (*guest: operators*)
- b. 2021 Agenda:
 - i. November - Workforce Development (*guests: TBD*)
- c. GNA reminded members of the date and topic for the upcoming September meeting, and encouraged members to engage with GNA to develop the agenda for the two remaining meetings in 2021.



Attachment A
List of Meeting Participants

SSCAC Committee Members	
Marnie Primmer	FuturePorts
Thomas Jelenic	PMSA
Michele Grubbs	PMSA
Matt Miyasato	South Coast AQMD
Heather Arias	CARB
Joe Lyou	CCA
Stella Ursua	Grid Alternatives
Ray Familathe	ILWU-13
Adrian Martinez	EarthJustice
Jim Smith	International Brotherhood of Teamsters
Matt Schrap	Harbor Trucking Association
Los Angeles Port & City Staff	
Chris Cannon	Port of Los Angeles
Tim DeMoss	Port of Los Angeles
David Libatique	Port of Los Angeles
Erick Martell	Port of Los Angeles
Jennifer Cohen	Port of Los Angeles
Max Reyes	City of LA, Mayor's Office
Michael Samulon	City of LA, Mayor's Office
Lauren Faber O'Connor	City of LA, Mayor's Office
Irene Burga	City of LA, Mayor's Office
Jacob Haik	City of LA, Councilman Buscaino's Office
Long Beach Port & City Staff	
Rick Cameron	Port of Long Beach
Matt Arms	Port of Long Beach
Nina Turner	Port of Long Beach
Wei Chi	Port of Long Beach
Morgan Caswell	Port of Long Beach
Eleanor Torres	Port of Long Beach
Meeting Facilitation Staff	
Erik Neandross	GNA
Eleanor Johnstone	GNA
Patrick Couch	GNA
Other Stakeholders	



Regina Hsu	Earthjustice
Andre Freeman	CARB
Kim Heroy-Rogalski	CARB
Peter Christensen	CARB
Bonnie Soriano	CARB
Paul Arneja	CARB
Elaine Shen	South Coast AQMD



Attachment B

Meeting Agenda

1. POLA / POLB Opening Remarks
2. Review & Approve May Meeting Summary
3. Update on CARB Activities (CARB)
 - a. At-Anchorage Emissions Analysis
 - b. 2021-2022 State Budget
 - c. Project 800
 - d. Low NOx Omnibus
 - e. Advanced Clean Fleet Rule
4. POLA Infrastructure Updates
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Attachment C
CARB At-Anchor Emissions Analysis

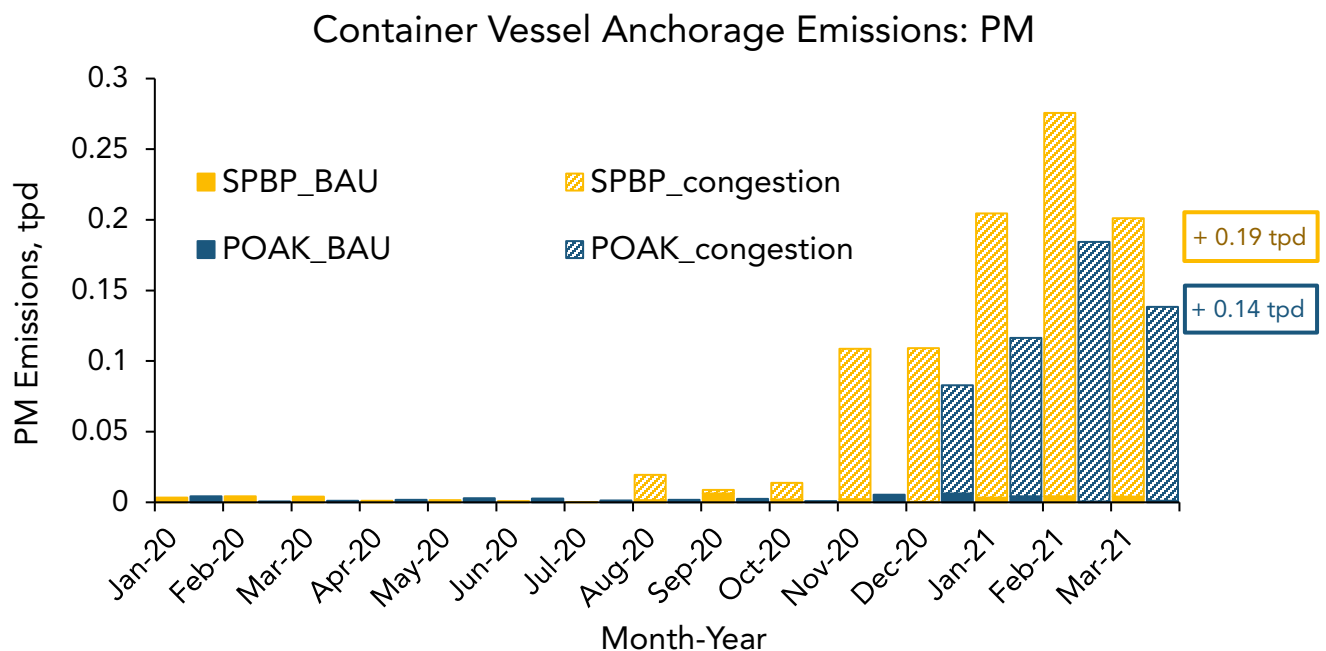
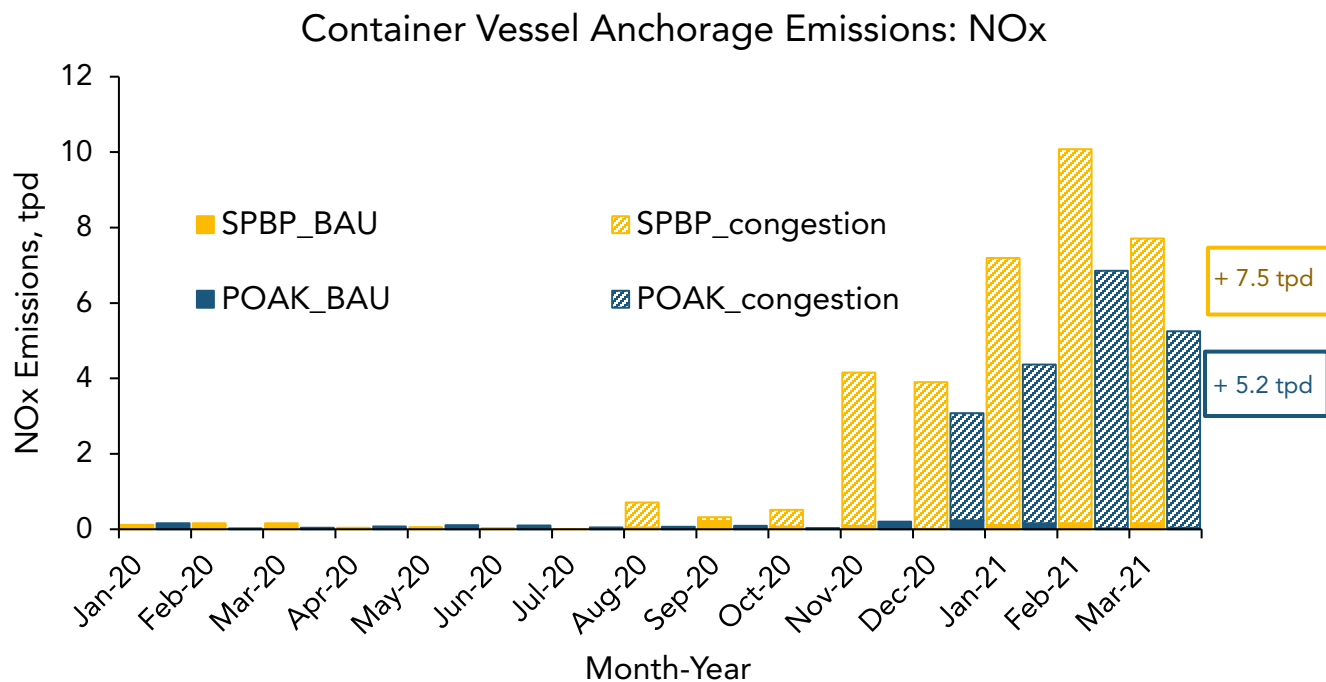
Emission & Health Impacts from Vessels at Anchor

Quantifying emissions and health impacts of recent changes in container vessels at anchor near Ports of Los Angeles and Long Beach (SPBP) and the Port of Oakland (POAK).

- Recent increases in marine congestion at major California ports have seen up to 40 vessels queued near the San Pedro Bay Ports (SPBPs), and up to 20 vessels queued near the Port of Oakland. This increase in congestion is very unusual and is assumed to be caused by the significant increase in imports as well as shortages of both equipment and labor to handle them. Prior to this, on average these ports have only one vessel at anchor waiting to unload.
- This document focuses on the emissions and potential health impacts of this congestion due to the abnormally high number of container vessels at anchor waiting to unload at the Ports of Los Angeles, Long Beach, and Oakland.
- When at anchor, marine vessels rely on their auxiliary engines to provide power needed for critical shipboard functions like refrigeration, cooling, and circulating fresh and saltwater, similar to at-berth operations. The auxiliary engine emissions from anchored vessels have substantial implications for portside communities from increased particulate matter (PM) emissions, as well as contributions to smog-forming oxides of nitrogen (NOx).
- In March 2021, the SPBPs saw an average increase of 50 percent in cargo movement (twenty-foot equivalent units - TEU) compared to the same time in 2019 prior to the COVID-19 pandemic.
- Overall, the three major ports in California have seen an increase of about 44 percent in cargo movement as compared to the same time in 2019.

Ports	Port's TEU Data			
	March 2019	March 2020	March 2021	Percent increase since <u>2019</u>
Port of Los Angeles	650,977	449,568	957,599	47%
Port of Long Beach	552,821	517,664	840,387	52%
Port of Oakland	213,972	190,188	241,470	13%
Total	1,417,771	1,157,420	2,039,456	44%

- The following two figures illustrate how NOx and PM emissions associated with anchored container vessels increased sharply at California's major ports beginning in November 2020, peaked in February 2021, and have been declining since although they are still much higher than historical averages.



- To put this into context, CARB's current emissions inventory estimates that Ocean Going Vessels (OGV) within 3 nautical miles (nm) of the coast of the South Coast Air Basin emit approximately 0.4 tons per day (tpd) of PM, and 13.8 tpd of NO_x.

- In the San Francisco Bay Area, OGVs contribute approximately 12.8 tpd of NO_x and 0.25 tpd of PM within 3 nm of the coast. These include emissions associated with at-berth, at-anchorage, and transit/maneuvering operations.
- To provide context and qualitative information on potential health impacts in the South Coast Air Basin (SCAB) from the increased anchorage emissions at the Ports of Long Beach and Los Angeles, CARB staff relied on the estimates of health benefits developed for the At Berth Regulation.
- The estimated annual emission increases¹ from higher anchorage activities are quite similar to the emission reductions from implementing At Berth regulation in SCAB in 2025 when auto carrier requirements begin. Therefore, in comparison, the annual health disbenefits from increased anchorage emissions will likely be comparable to the estimated numbers of cases of mortality and illness listed in the table below for the At Berth Regulation in year 2025.

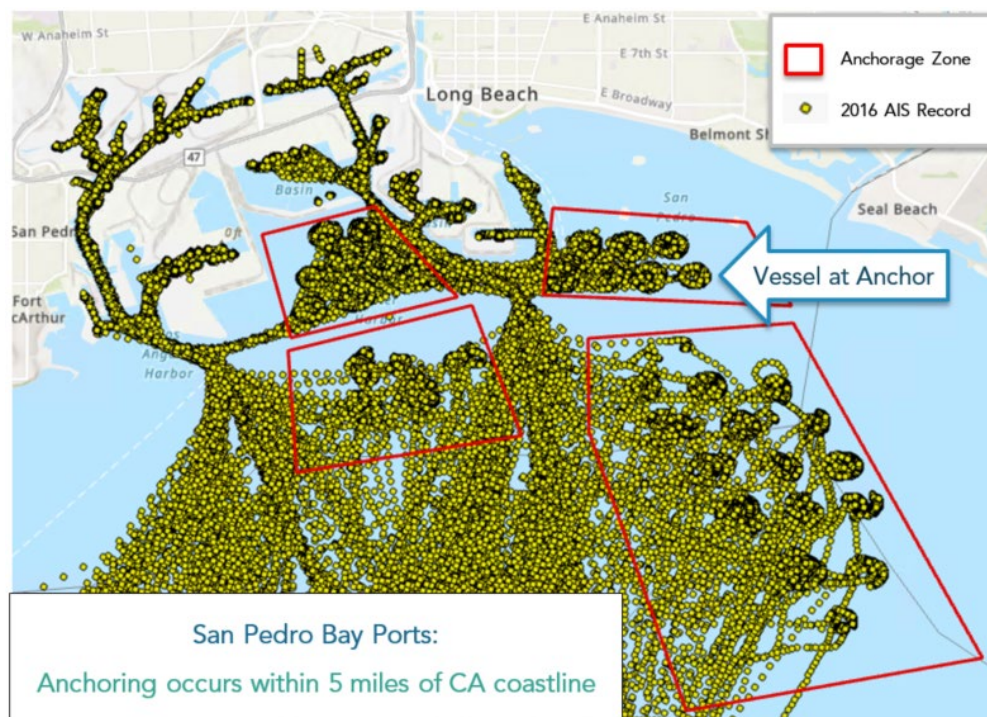
Health Outcomes for implementing At Berth Regulations at South Coast Air Basin in year 2025

Outcomes	Incidence Reduction
Cardiopulmonary mortality	20
Hospitalizations for cardiovascular illness	3
Hospitalizations for respiratory illness	3
Emergency room visits for asthma	10

- CARB staff is evaluating anchorage emissions as a component of the required 2022 Interim Evaluation for the At Berth Regulation. In the At Berth Regulation Resolution, the Board directed the staff to review the potential feasibility of control technologies for vessels at anchor and to publish the findings in a report by December 1, 2022.

¹ Between April 2020 and March 2021

- The following two figures provide vessel locational information from 2016 AIS² data that was the basis for the emissions estimates provided in this analysis.



² The automatic identification system (AIS) is an automatic tracking system that uses transceivers on ships provides information such as unique identification, position, course, and speed.



Attachment D
POLA RFI Summary

**THE PORT
OF LOS ANGELES** 

America's Port®

Clean Truck Zero Emission Funding Program

Summary of RFI responses


[DISCUSSION DRAFT – July 21, 2021]



**THE PORT
OF LOS ANGELES** 

Background



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- A vertical green line with four circular markers and a downward-pointing arrow at the bottom, indicating a chronological sequence of events.
- In 2017, the San Pedro Bay Ports (SPBP) adopted the 2017 Clean Air Action Plan (CAAP) Update, which established a goal of 100% zero emissions (ZE) drayage trucks serving SPBP by 2035.
 - In September 2020, Governor Newsom signed an Executive Order that will lead to the development of a rule that, if approved, is consistent with the above CAAP goal.
 - In October 2020, the Port of Los Angeles (POLA) issued a Request for Information (RFI) to solicit information from industry and stakeholder participants relating to strategies to accelerate ZE truck deployment in SPBP and meet the goal of 100% ZE trucks by 2035.
 - In January 2021, POLA received 17 RFI responses. Entities included ZE truck manufacturers, charging infrastructure manufacturers, ZE program developers, investment banks, and an environmental nonprofit.

Overview



- **The RFI solicited proposed models and/or programs for leveraging the collected CTF to purchase and advance deployment of zero emissions trucks**
- **Respondents were instructed to provide the following information:**
 - Commercial Considerations
 - Describe business model, execution time, and advantages of proposal
 - Technical Considerations
 - Describe how the ZE truck and charging industries will progress and how the proposed concept will respond to those changes
 - Funding and/or Financing considerations
 - Outline the public and non-public sources of funds and overall financial approaches.
 - Other
 - Describe private sector interest, strengthen program development, and mitigate risks.

Response Summary



- 17 full responses were submitted
 - Respondents included
 - Truck OEMs
 - Capital Financing Firms
 - Infrastructure Manufacturers
 - Project Teams
 - Varied from proposed structures and systems to general advice

Commercial considerations - general

Charging infrastructure considerations

- ▶ **Centralized charging infrastructure:** Most respondents suggested centralized charging infrastructure at or near the SPBP complex would be most efficient for operations and project execution
 - ▶ Respondents also expressed interest in smaller charging sites at/near fleet sites or waiting areas
- ▶ **Public funding needs:** Recommended public funding levels varied among responses ranging from no public funding required through large investments of \$200 million upfront and several billions of dollars through 2035 would be required.
- ▶ **Planning, permitting, and utilities:** Respondents state that permitting and utility engagement remain significant challenges.

Fleet considerations

- ▶ **Smaller/less creditworthy fleets:** The ZE Trucks-as-a-Service rental model, allows smaller and/or less creditworthy fleets access to ZE trucks
 - ▶ Pools risks across operators of varying financial strength.
- ▶ **Alternative approaches to support smaller and less creditworthy fleets:**
 - ▶ Subsidies based on need
 - ▶ Providing an additional 'early adoption' incentive
 - ▶ Support for a secondary market for EV's.
- ▶ **ZE trucks competitiveness:** ZE trucks have higher upfront purchase prices than diesel trucks, have lower fueling and maintenance costs and can be highly competitive with diesel on a Total Cost of Ownership (TCO) basis.

Operational considerations

- ▶ **Delivery and maintenance challenges:** Respondents intend to address delivery and maintenance challenges through scale.
- ▶ **Insurance challenges:** Respondents plan to manage insurance challenges through scale – insuring ZE trucks through larger pools as opposed to on an individual vehicle/operator basis.
- ▶ **Charging cycles:** Uncertainty around charging cycles would be managed through strategic location of charging sites, software optimization, coordination with utilities, and education of fleet operators.
- ▶ **Charging costs:** Respondents suggested that ZE truck charging costs would generally be more stable and lower than diesel fueling costs. Respondents suggested fixed pricing paid on a periodic basis.

Commercial considerations – operating model



Respondents offered a wide range of commercial approaches to consider, including traditional leasing and direct sales from manufacturers to operators, but the most common alternative models proposed were “as-a-service” models for ZE trucks and/or charging.

Suggested Operating Model	Description
ZE Trucks-as-a-Service	<ul style="list-style-type: none">▶ Proposed entity purchases, finances, and maintains ZE trucks in a centralized fleet.▶ Proposed entity rents out ZE trucks to operators for a rental fee (e.g. hourly, daily, weekly, monthly, per mile rate).▶ Rental fees would cover truck capital cost, cost of financing and maintenance costs.▶ The rental fee could also include access to charging infrastructure or could be combined with an optional Charging-as-a-Service arrangement described below.▶ Respondents suggested provision of financial incentives used to reduce user TCO.
Charging-as-a-Service	<ul style="list-style-type: none">▶ Proposed entity designs, builds, finances, and maintains charging infrastructure▶ Proposed entity provides access to charging facilities and services on a subscription basis or on a usage basis.▶ Respondents suggested provision of financial incentives used to reduce user TCO.
Direct leasing/sales	<ul style="list-style-type: none">▶ Operators buy and/or lease new and/or used trucks from sellers or equipment manufacturers.▶ Respondents suggested provision of financial incentives to directly benefit individual operators.

Technical considerations

Program evolution as technology advances

- ▶ Reduce the subsidy provided as ZE truck costs decrease.
- ▶ In the short term, ZE trucks with shorter ranges can be applied to shorter drayage trips while technology improves. If battery technology improves, ZE trucks will be able to take on more work and chargers can be installed farther away from the Port.
- ▶ The ZE Trucks-as-a-Service model would be able to flexibly upgrade offered trucks as the technology improves
- ▶ Some respondents noted that procurement of ZE trucks and charging infrastructure from multiple Original Equipment Manufacturers (OEM) will improve competition and to benefit from technology advances.

Approach to accelerate ZE truck production

- ▶ Respondents provided varied information in terms of OEM ability to scale up production.
- ▶ According to respondents, a scale of over 1,000 trucks per year is needed to both ensure that Program needs are met and to make investment in manufacturing worthwhile for OEMs.
- ▶ Respondents have stated that ZE truck adoption is constrained by quality of charging infrastructure, and OEMs may wait for this to be ready before accelerating production. Some respondents have stated that they can make this investment in charging infrastructure.
- ▶ Heavy duty ZE vehicles have not been delivered in the USA at the scale required by the Program

Implementation of charging infrastructure

- ▶ Respondents stressed the importance of construction timing corresponding with the level of ZE truck deployment.
- ▶ Respondents suggested that charging infrastructure implementation requires a phased infrastructure development plan including coordination with utilities and several stakeholders.
- ▶ Respondents believed that feasibility studies into charging large numbers of trucks at specific sites may be required in order to determine supply constraints.
- ▶ Several respondents recommend that charging technology be interchangeable and scalable

Financing/funding considerations



Several respondents stated that Rate funding was too low, while others stated that it could be sufficient with the inclusion of safeguards. Existing grants and incentives were viewed as helpful, but not significant enough to impact Project economics.

Rate funding

Among respondents who noted that Rate funding was sufficient, as well as those who noted it was insufficient, the following enhancements were recommended:

- ▶ Assurance that Rate revenues will not be diverted.
- ▶ Application of 100% of Rate funding to ZE trucks and exclusion of Near Zero Emissions (NZE) trucks from the Program.
- ▶ Use of Rate as a backstop to provide Project entity with minimum revenue early in the Program.
- ▶ Ensure Rate collection starts as soon as possible to capitalize the Program.

Among respondents who noted that Rate funding was insufficient, the following enhancements were recommended:

- ▶ Increase the Rate to generate additional funds and to further disincentivize diesel trucks.
- ▶ Enact strict bans on new diesel trucks.
- ▶ Coordinate with State agencies to push for changes to laws in order to make diesel more costly and to raise additional transition revenues.
- ▶ Ensure involvement by both ports in the Project upfront so that scale-related benefits can be realized faster.
- ▶ Advance over \$100M in Rate revenue in order to make a large upfront investment in ZE trucks and charging infrastructure.

Additional comments/considerations



- ▶ **Grants:** Respondents stated that currently available grants were insufficient to make a material impact on the Program's financial viability
- ▶ **Taxation:** Respondents stated that taxes on ZE trucks alone can exceed the cost of a used diesel truck. Respondents recommending that SPBP structure Rate funds and other incentives as "discounts" instead of rebates in order to reduce tax effects.
- ▶ **Financing:** Some respondents suggested that SPBP leverage the credit strength of the Harbor Department to support the Program through the following financing approaches:
 - ▶ Provision of revenue guarantees to reduce risks in early years of Project.
 - ▶ Provision of loan guaranty for operators using commercial loans to purchase ZE trucks.
 - ▶ Establishment of a revolving loan fund to provide operators with relatively inexpensive financing (can be public or public-private).
 - ▶ Utilize cash and municipal bonds to support the Program.
- ▶ **NZE incentives:** Some respondents noted that parallel incentives for NZE trucks would adversely impact the deployment of ZE trucks.
- ▶ **Hydrogen:** Several respondents noted that hydrogen fuel cell electric trucks have distinct advantages in some duty cycles when compared to battery-electric models. A Project entity should be able to work with hydrogen fuel.

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THANK YOU





Attachment E
Presentation

Sustainable Supply Chain Advisory Committee Meeting

July 21st, 2021

Agenda

1. Port Opening Remarks
2. Review & Approve May Meeting Summary
3. Update on CARB Activities
 1. At-Anchorage Emissions Analysis
 2. 2021-2022 State Budget
 3. Project 800
 4. Low NOx Omnibus
 5. Advanced Clean Fleet Rule
4. POLA Infrastructure Updates
 1. ZE RFI Summary
 2. Volvo LIGHTS Charging Infrastructure Study
5. Debrief on May Meeting – ZE Fueling Infrastructure
6. Review Draft Recommendations
 1. CHE Infrastructure Funding
 2. Drayage Truck Infrastructure Standards
 3. Utility Use of LCFS Holdback Funds
7. Legislative Update
 1. AB1524, AB365
8. Conclusion & Next Steps
 1. Next Meeting: September 15th, 11 am – 3 pm
 1. Cargo Handling Equipment (Guest: Operators)
 2. 2021 Agenda:
 1. November – Workforce Development (Guest: TBD)

1. Port Opening Remarks



2. Review & Approve May Meeting Summary

3. Update on CARB Activities

1. At-anchorage Emissions Analysis
2. 2021-2022 State Budget
3. Project 800
4. Low NOx Omnibus
5. Advanced Clean Fleet Rule

4. POLA Infrastructure Updates

1. ZE RFI Summary
2. Volvo LIGHTS Charging Infrastructure Study

5. Debrief on May Meeting – ZE Fueling Infrastructure

1. Current Regional Planning Activities – Presented By:
 - a. CEC – Regional Blueprint; RHETTA
 - b. SCAG – ZE Infrastructure Study
2. SCE & LADWP on Charging Infrastructure Development – Topics addressed:
 - a. Forecasting Demand for On and Off-Dock Port Activity
 - b. Resilience Planning
3. Port Infrastructure Planning – Presented By:
 - a. POLB – Fueling/Charging Study

6. Review Draft Recommendations

1. CHE Infrastructure Funding
2. Drayage Truck Infrastructure Standards
3. Utility Use of LCFS Holdback Funds

7. Legislative Update

1. AB1524, AB365

8. Conclusion & Next Steps

1. Next Meeting – **Wednesday, September 15th, 11 am – 3 pm**, Zoom
2. 2021 Agenda –
 1. September – Cargo Handling Equipment (guest: operators)
 2. November – Workforce Development (guest: TBD)

Appendix

May 2021 Background: Port On-Dock ZE Fueling Needs

On-Dock – Shore Power

Population:

- OGVs: ~3,800 arrivals/yr (45% POLA | 55% POLB)
- Harbor Craft: 279 vessels (72% POLA | 28% POLB)

On-Dock – Cargo Handling Equipment (non yard truck)

Population: 1,831 units, ~14% BEV (forklift/crane/other)

- POLA: 1,073 units
 - 483 forklifts | 198 top handlers | 98 RTGs | 40 straddle carriers | 254 Other
- POLB: 771 units
 - 232 forklifts | 188 top handlers | 54 RTGs | 20 sweepers | 277 Other

On-Dock – Electrified Transportation Refrigeration Units

Population: ~16,000 (both ports)

On-Dock – Yard Trucks

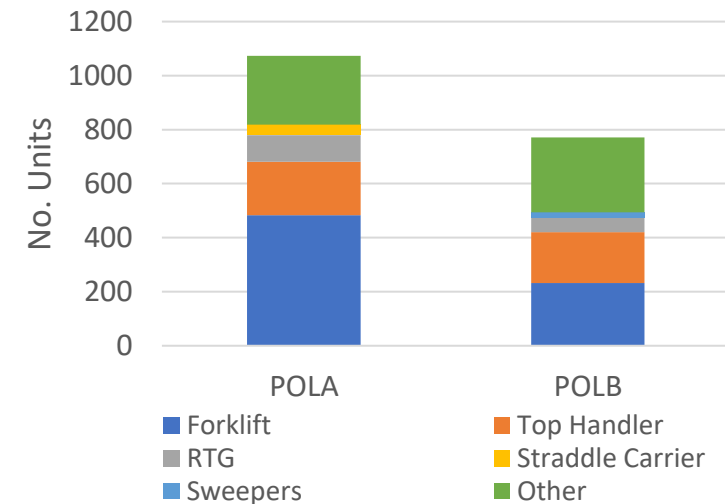
Population: 1,672 (58% POLA | 42% POLB)

- Approx. 15 BEV and 10 FCEV in demonstration

On-Dock – Locomotives

Population: approx. 8,000 trains/year, 12,000 visits/year

CHE Population in the SPBP



May 2021 Background: HD BEV Truck Fueling Needs

Off-Dock: Class 8 Drayage Trucks

Population: 18,379 Class 8 Drayage trucks total

- 13,748 active (75% of total population)
- 95% Diesel – 5% Natural Gas – <1% Other
- Majority of trucks driven by IOOs

Fuel Requirements

- 42% of fleet can rely on private fueling solutions; 58% require public access solutions
- 100% BEV Fleet: 6.5 - 10.7 GWh ; est. 1,200-2,000 charging stalls @ 150 kW (\$200K TIC/stall)*
- 100% FCEV Fleet: 272,400 – 445,900 kg ; est. 100-175 stations @ 1,500 kg/day capacity (~\$8MM TIC/station)*

Critical Compliance Targets

- 2020: MY2014 required for new port truck registrations; ZE rate-exempt
- 2023: MY2010 or newer required to remain in truck registry; NZE or better required
 - Potential CARB Advanced Clean Fuel Rule requirement for ZE trucks beginning Jan. 1, 2023
- 2035: 100% ZE drayage truck goal