



Sustainable Supply Chain Advisory Committee

September Meeting Summary

Date: September 25th | 11 am – 3 pm

Location: In-person at Port of Los Angeles and via phone conference

Attendees: Attachment A

Meeting Agenda: Attachment B

Key Discussion Items

(Action items in green)

1. POLA / POLB Update on CAAP Implementation
 - The ports finalized both feasibility studies and are now working on the economic analysis and vendor selection for a clean truck rate program. They intend to present a proposal to their boards in fall 2019.
 - The ports are discussing two memorandum of understanding (MOUs): one with the South Coast AQMD to capture emission benefits in the CAAP in the SIP; and the second between the two ports to improve efficiencies for optimal competitiveness and impact on air quality across the San Pedro Bay Port (SPBP) complex.
 - The Committee and port staff discussed the CAAP and the Port of Long Beach Master Plan.
 - The Port of Long Beach has been asked by its city council to conduct an economic impact analysis for automated equipment. A timeline has not been defined.
2. Review & Finalize July Meeting Summary
 - No corrections were submitted for the meeting summary and it was approved. **GNA will submit the final meeting summary to the FMC.**
 - A concern was raised that the Committee's website had been removed since the July meeting. The port staff explained that this is due to larger port website transitions. **The ports agreed to identify a solution to ensure that the Committee's website is accessible.**
3. Update on Port Demonstration Projects (POLB)
 - Heather Tomley and Chris Cannon presented on the scopes and status of the technology demonstration projects that are underway in the SPBP complex through both grant programs and the ports' Technology Advancement Program (TAP). **(see Attachment D)**
 - These projects encompass demonstrations of battery electric, fuel cell electric, and natural gas architectures in numerous yard truck, cargo handling, marine and rail applications, and include fuel supply infrastructure development and demonstration.



- The presenters noted that several projects reliant on electric vehicle (EV) charging installation have encountered delays due to UL listing requirements, adding time and cost to their implementation. Standardization of charging infrastructure was also discussed by the Committee as a critical need.
 - Committee members discussed the need for funding that targets early stage charging infrastructure to help projects overcome this hurdle. They also determined that sharing these challenges with policy makers and regulators could improve their ability to define charging standards and remove opportunities for escalating costs and delays.
4. Review of Recommendations & Progress to Date (POLA)
 - This agenda item was bypassed due to time constraints and is being considered for a future committee meeting.
 5. Planning for Truck Stakeholder Workshop
 - The Committee reviewed materials from the previous truck stakeholder roundtables, hosted in September 2017 and August 2018 with representatives from truck OEMs and the financial industries. The Committee agreed that a roundtable in 2019 should include an update on technology status, and then be focused on options for financing ZE and NZE trucks for port truck drivers.
 - The Committee tasked GNA with creating a list of questions to structure the roundtable, and engaging stakeholders to participate in the Committee's November meeting.
 6. Lunch
 7. Coordinated Advocacy & Legislative Engagement
 - CARB Special Board Hearing (At-Berth Regulation) – December 5, Oakland
 - i. This event was noted by the Committee.
 - SSCAC Coordination and Approach for 2020 Legislative & Advocacy Efforts
 - i. With early discussions about California's 2020 budget likely already underway, the Committee recommended submitting a letter to key leadership in Sacramento to emphasize the need for ongoing designated funding to achieve the aggressive goals of the CAAP and other similar initiatives.
 - ii. The Committee will draft and submit a letter in advance of the Committee's November meeting. The Committee's Prioritization Recommendation will serve as a foundation of this letter.
 8. Other Activities
 - Regional Goods Movement Demonstration Projects & Data Dashboard
 - i. There was discussion about the development of either a regional or a statewide online "dashboard" that will allow for stakeholders to get updates on the array of pilot and demonstration programs now underway. There was also discussion about the need for a regional EV charging plan to support ZE truck deployments.
 - CARB Low NOx Rule Update



- i. Jack Kitowski shared that CARB will present a Low NOx Omnibus measure in the spring of 2020, with intent to go into effect between 2024 and 2026.
- ii. There was discussion about the need for US EPA to approve a California waiver request in order for the new Low NOx standard to go into effect. There was also discussion about the potential applicability of the current CARB Optional Low NOx Standard to the Clean Truck Program.

9. Future Agenda Items

- Mayoral participation
 - i. Both mayor's offices and port staff will work with GNA to identify a date that the Mayors are available to meet with the Committee.
- Truck Stakeholder Meeting
 - i. GNA will work with port staff to identify an invite list and discussion prompts for a truck stakeholder roundtable during the November Committee meeting.
- Priority Recommendations
 - i. Trucks
 1. The Committee noted that the California Energy Commission (CEC) has approved a new EV investment plan targeting regionally-focused infrastructure. The ports were encouraged to work with their utilities to capture this funding in support of their vehicle work.
 - a. GNA will work with Committee members to draft a recommendation that can be brought to a future meeting for review and approval.
 - ii. Cargo Handling Equipment
 - iii. Harbor Craft
 - iv. Ocean Going Vessels

10. Conclusion & Next Steps

- Committee members and the ports will pursue the actions recommended in this meeting, including assembling truck manufacturers and stakeholders for a roundtable in September to focus on NZE and ZE early action deployments and issues related to the CARB low NOx standard, and drafting recommendations to submit to Sacramento articulating the need for ongoing ZE and NZE focused-funding.



Attachment A

Meeting Attendees

SSCAC Committee Members	
Michele Grubbs	PMSA
Thomas Jelenic	PMSA
Naveen Berry	SCAQMD
Ian MacMillan	SCAQMD
Bonnie Soriano	CARB
Jack Kitowski	CARB
Joe Lyou	CCA
Louis Dominguez	San Pedro Neighborhood Council
Adrian Martinez	EarthJustice
Stella Ursua	Grid Alternatives
Marnie Primmer	FuturePorts (by phone)
Steve Cadden	CRT (by phone)
Los Angeles Port & City Staff	
Chris Cannon	Port of Los Angeles
Erick Martell	Port of Los Angeles
Max Reyes	City of LA, Mayor's Office
Irene Burga	City of LA, Mayor's Office
David Reich	City of LA, Mayor's Office
Long Beach Port & City Staff	
Rick Cameron	Port of Long Beach
Heather Tomley	Port of Long Beach
Justin Ramirez	City of Long Beach, Mayor's Office
Other Stakeholders	
Jacob Haik	Councilman Buscaino's Office
Meeting Facilitation Staff	
Erik Neandross	GNA
Lexi Wiley	GNA
Eleanor Johnstone	GNA
Patrick Couch	GNA



Attachment B

Meeting Agenda

11. POLA / POLB Update on CAAP Implementation
12. Review & Finalize July Meeting Summary
13. Update on Port Demonstration Projects (POLB)
14. Review of Recommendations & Progress to Date (POLA)
15. Planning for Truck Stakeholder Workshop
16. Lunch
17. Coordinated Advocacy & Legislative Engagement
 - CARB Special Board Hearing (At-Berth Regulation) – December 5, Oakland
 - SSCAC Coordination and Approach for 2020 Legislative & Advocacy Efforts
18. Other Activities
 - Regional Goods Movement Demonstration Projects & Data Dashboard
 - CARB Low NOx Rule Update
19. Future Agenda Items
 - Mayoral participation
 - Truck Stakeholder Meeting
 - Priority Recommendations
 - i. Trucks
 - ii. Cargo Handling Equipment
 - iii. Harbor Craft
 - iv. Ocean Going Vessels
20. Conclusion & Next Steps



Attachment C

July SSCAC Meeting Summary

Sustainable Supply Chain Advisory Committee

July Meeting Summary

Date: July 17th | 11 am – 3 pm

Location: In-person at Port of Long Beach and via phone conference

Attendees: Attachment A

Meeting Agenda: Attachment B

Key Discussion Items

(Action items in green)

1. **POLA / POLB Opening Remarks**
 - Chris and Heather kicked off the meeting by noting that the ports continue to work towards the goals outlined in the CAAP.
 - Ray Familathe was introduced as the new committee member to replace Peter Peyton.
2. **Review & Finalize May SSCAC Meeting Summary**
 - Meeting summary was circulated during the meeting, and committee members approved it after the meeting via email. **See Attachment C.**
 - The following edits were made to the May Meeting Summary:
 - Item 6, Update on Feasibility Assessments (GNA), bullet no. 2: the reference to “charging infrastructure” has been corrected to “charging and fueling infrastructure.”
 - Item 8, Update on 2019 Legislative Session (Erick Martell): the reference to “Skinner and O’Donnell bills” has been clarified to refer to SB 44 and AB 1262, respectively.
3. **Committee Vote on Funding Prioritization Recommendation & Discussion of Next Steps**
 - The committee approved the final version of the recommendation (**Attachment D**). The recommendation is being prepared to share with the port executive team and the mayors’ offices of Los Angeles and Long Beach, and then to publish on the SSCAC’s website.
 - *The committee observed that the website for the SSCAC is not current with all of the latest meeting summaries and recommendations. GNA and the Ports will review in advance of the next meeting to develop an updated approach to keeping the website updated.*
 - The committee discussed actions that it could take to advance the funding prioritization recommendation, including delivering presentations for funding agencies, advocacy



organizations and legislators that highlight the group's consensus on areas of necessary action in both the near- and long- term.

- The committee also discussed using the prioritization recommendation to inform agenda items for future meetings.
 - The committee expressed interest in convening truck manufacturers for a roundtable to discuss their near- zero and zero emissions technologies.
 - GNA to work with port staff to identify upcoming harbor commissioners' meetings where port staff and/or committee members can provide a summary of key issues that the multi-dimensional group has reached consensus on.

4. **Workforce Development Presentation (Long Beach Community College)**

- The Long Beach Community College presented on the findings of their Zero Emission Port Equipment Workforce Assessment (**Attachment E**), which was conducted as part of a demonstration project with the Port of Long Beach funded by the California Energy Commission (CEC). Based on information gathered through interviews and surveys with OEMs, terminal operators, and labor unions, and research of local college and educational program offerings, the project team identified training needs and opportunities to transition the workforce to support electrified equipment. The study's recommendations included:
 - Expanding existing electrical and advanced transportation training programs to support the rising and existing workforce in community and city colleges.
 - Develop partnerships between schools and local labor unions to provide trainings.
 - Make funding available at the state level to support trainings and program development, including faculty growth.
 - Continue to assess workforce gaps and share knowledge of zero emission equipment performance and maintenance as technology is deployed at ports.
- The presenters commented that there is a strong appetite for this work in other cities across the U.S., but that there are few examples of it to date.
- The committee noted that the study provides a valuable baseline of available resources and the anticipated training needs.
 - It was agreed that the Ports and committee members would work together to identify opportunities to fund a wider, regional study in the future, and consider training requirements in their conversations with electric equipment vendors.
 - The committee recommended including training needs on their agenda for a future truck manufacturer roundtable (see Agenda Item 3).

5. **AMP Alternative Presentation (POLA & POLB)**

- Morgan Caswell (POLB) presented on the AMP alternative technologies that the ports have demonstrated and deployed since 2008, when ships began using shore power at berth (**Attachment F**). The presentation reviewed the emissions reduction effectiveness of these technologies, and highlighted the need for more solutions suitable to a wider range of vessel types in order to meet the expected CARB at-berth and at-anchor rules.



- Caswell pointed out that retrofitting tankers for shore power is rarely done, and that the one project that achieved this was at POLB and revealed the distinct challenges for that vessel type, including fire hazards.
- Caswell also pointed out the pros and cons of land- and barge- based emissions capture systems, including connection times and spatial requirements.
 - The committee discussed a need to understand the broader landscape of marine emission reduction strategies; the Ports agreed to provide a presentation on strategies and technologies other than AMP and bonnets at a future meeting.
- Caswell and Heather Tomley said that the ports understand which available technology achieves the required emissions reductions, and that the most significant challenge today is accessing sufficient funds to move it forward due to the equipment's cost.
- The committee discussed the challenge of funding marine and non-stationary projects due to funding agency restrictions.
 - The committee agreed to develop a coordinated approach to recommend to key funding agencies that incremental marine and non-stationary funds be made available.

6. Electric Utility Infrastructure Study (POLA)

- An engineer from POLA described the port's 20-year electricity demand forecast, which indicates a supply shortage over the long term, although the shortage is expected to be less severe than preliminary estimates had indicated.
- The forecast indicates that the majority of electricity can be obtained from the grid, with the remainder being provided from anticipated solar resources. Considerations of future traffic flow and cargo volumes were made.
 - The port indicated that management of demand peaks and valleys was an important area of research and that they are evaluating technology solutions.
- The committee discussed the assumptions behind the port's study, and the need to collect data on all demonstration projects at the ports over the next several years so that electricity supply forecasts may be founded on the most recent information.
 - The committee supported developing a clearinghouse where all demonstration projects could be tracked, and regular updates could be made available for decision makers.
 - The ports noted that they currently produce monthly reports, which may be shared with the committee.

7. Future Agenda Items

- Next SSCAC Meeting: September 25th
- Agenda Topics:
 - Mayor Garcetti and Mayor Garcia's participation at the September meeting
 - The Mayors' offices and ports' government affairs teams are coordinating to confirm this.
 - Discussion of CARB timeline to adopt a low NOx standard
 - Update on Truck Rate Study
 - Truck manufacturer roundtable



8. Conclusion & Next Steps

- Committee members and the ports will pursue the actions recommended in this meeting, including developing resources to facilitate action on the prioritization recommendation, assembling truck manufacturers and stakeholders for a roundtable in September to focus on NZE and ZE early action deployments and issues related to the CARB low NOx standard.



Attachment D

Presentation: Port Demonstration Project Update



SAN PEDRO BAY PORTS **CLEAN AIR ACTION PLAN**

Status Update on Current Technology Demonstrations

Sustainable Supply Chain Advisory Committee
September 25, 2019

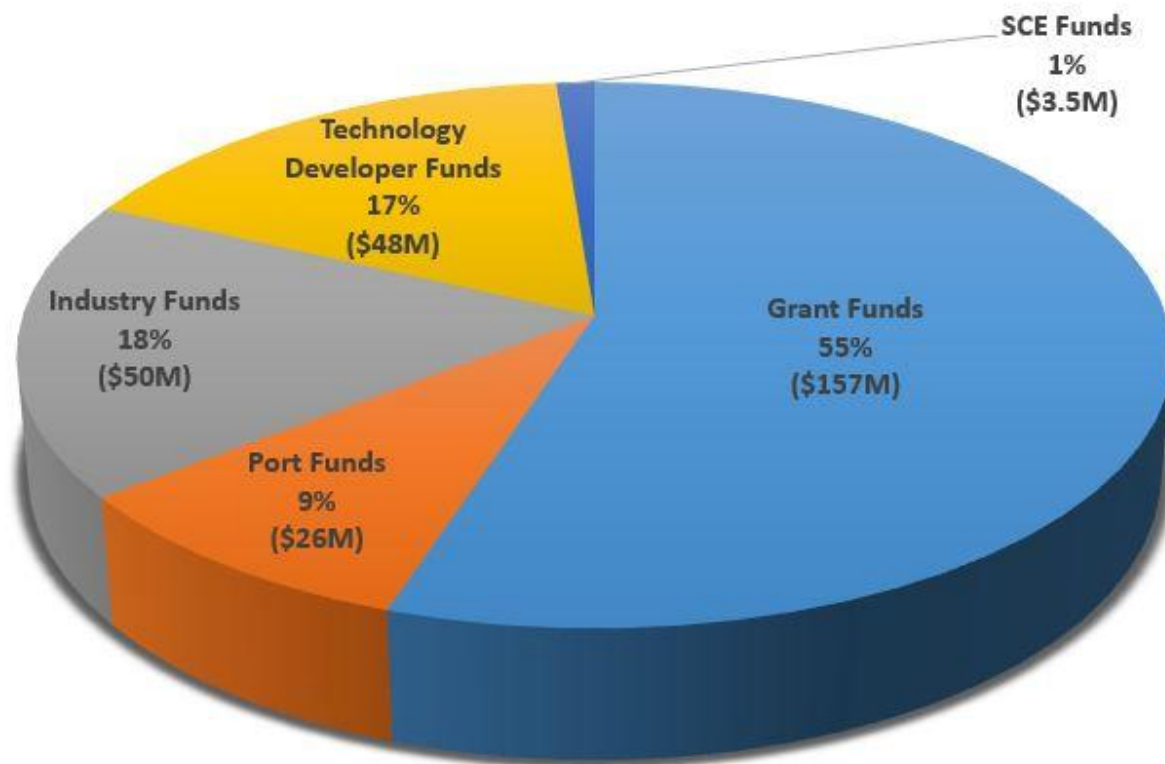


Current Technology Demonstrations at the Ports

- Port of Long Beach Grant-Funded Technology Demonstrations
- Port of Los Angeles Grant-Funded Technology Demonstrations
- Update on the Ports' Technology Advancement Program



Ports' Grant-Funded Technology Demo - Contributors



Total Cost as of June 2019 = \$285M



\$73 MILLION

GRANT-FUNDING FOR ZERO-EMISSIONS PROJECTS at PORT OF LONG BEACH





POLB Grant-Funded Technology Demo

ZE EQUIPMENT TRANSITION PROJECT CEC \$9.75 MILLION

LBCT, Pier E / SSA, Pier J / ITS, Pier G

- 10 Electric Yard Tractors w/200 kW AC Chargers
- 2 Electric Yard Tractors with Smart-Plug Capability w/150 kW AC Chargers
- 9 Electric Rubber Tire Gantry Cranes
- 4 LNG Plug-In Hybrid Electric Trucks

Status Update

- BYD 200 kW EVSEs and Cavotec 100 kW SPS installed at ITS and LBCT
- BYD Electric Yard Tractors at facility built and ready to be delivered upon EVSE certification (expected late Fall)
- BYD/Cavotec Electric Yard Tractor delivered to LBCT with SPS certification in progress
- Civil work by POLB and SCE near completion at all sites
- Technology integration for the first of nine eRTGs underway at SSA
- US Hybrid LNG Hybrid Electric Trucks undergoing technology integration before delivery to TTSI
- Demonstration Start: ~November/December 2019





POLB Grant-Funded Technology Demo

JOINT COMMAND AND CONTROL CENTER MICROGRID PROJECT CEC \$5 MILLION

Joint Command and Control Center

- Solar Carport (300 kW)
- Install Energy Control Center – Microgrid Controls and Stationary Battery Energy Storage System (330 kW)
- Integrate Microgrid-Extending Mobile Battery Energy Storage System (200 kWh)

Status Update

- 50% of the design phase is complete
- Launched workforce development with Long Beach City College
- Construction Start: ~March 2020





POLB Grant-Funded Technology Demo

C-PORT PROJECT CARB \$5.3 MILLION

LBCT, Pier E and SSA, Pier J

- 3 Electric Top Picks w/200 kW AC Chargers
- 1 Electric Yard Tractor w/70 kW Charger
- 1 Fuel Cell Yard Tractor

Status Update

- Kalmar-TransPower Electric Yard Tractor currently in operation at LBCT
- Hydrogen Sinotruk Fuel Cell Yard Tractor undergoing additional modifications
- One Taylor-BYD Electric Top Handler delivered to Pier E and two will be delivered soon at SSA
- BYD EVSE awaiting final approval by the City with commissioning anticipated for late Fall 2019
- Demonstration Start: ~September 2019 – December 2019





POLB Grant-Funded Technology Demo

PAVE PROJECT CEC \$8 MILLION

TTI, Pier T

- 6 Electric Yard Tractors
- Install Electric Charging Infrastructure, DC Fast Charging System and Battery Storage

Status Update

- 100% design phase is complete; advertisement anticipated for December 2019
- Coordination with ChargePoint, TransPower and Kalmar on design specifications is in progress
- TransPower Energy Storage System design underway
- Data collection test plan development underway
- Demonstration Start: ~January 2021





POLB Grant-Funded Technology Demo

START PROJECT CARB \$50 MILLION

SSA, Pier C and Shippers Transport

- 33 Electric Yard Tractors w/175 kW DC Fast Chargers
- 1 Electric Top Handler w/200 kW AC Fast Charger
- 1 Near-Zero Emission Tugboat
- 2 Tier 3 Ships
- 5 Electric Trucks w/150kW DC Fast Chargers
- 2 Public Access Electric Drayage DC Fast Chargers (150 kW)

Status Update

- Southern CA Edison Charge Ready Transport Program to support infrastructure installation at POLB
- Electric Yard Tractors currently in production with an anticipated delivery for Spring 2020
- POLB in the process of selecting EVSE provider for the Electric Drayage Trucks; EVSE provider for Electric Yard Trucks formally announced in July 2019
- Finalize purchase contract between Peterbilt and Shippers Transport for electric drayage trucks
- Demonstration Start: ~2020





Electric Vehicle Supply Equipment (EVSE) Update





BYD/Cavotec Yard Tractor





Kalmar Battery Electric Yard Tractor





Matson Tier 3 OGV





POLA Grant-Funded Technology Demo - Update

Green Omni Terminal Project CARB \$14.5 Million Pasha

- 4 electric yard tractors (BYD and TransPower)
- 2 electric Class 8 on-road trucks
- 3 electric heavy duty forklifts
- ShoreKat land-based at-berth emissions control system
- Solar rooftop array with microgrid controls and battery storage

Status Update:

- TransPower yard tractors are in use
- Charger certification is still being reviewed
- BYD yard tractors On Road Trucks are at terminal and are being commissioned
- 1 Forklift is at the terminal and is in use
- ShoreKat had been used against 4 ships
- Pasha is contracting with Solar providers



POLA Grant-Funded Technology Demo - Update

Advanced CHE Demonstrations CEC \$10.3 Million Everport

- 20 RNG yard tractors
- 5 electric yard tractors (BYD), standard chargers
- 3 electric yard tractors (BYD), advanced charging system
- 2 electric top handlers, standard chargers

Status Update:

- RNG Fueling equipment certified
- 7 RNG fueled yard tractors delivered
- 2 electric top handlers delivered
- 5 electric yard tractors delivered
- Standard chargers being certified for use



POLA Grant-Funded Technology Demo - Update

AID Project CEC \$7.8 Million WBCT (China Shipping)

- 10 battery-electric yard tractors
- 12 Wireless charging stations
- Peak-shaving storage system

Status Update:

- Contract approved
- Yard tractor manufacturer selected
- Initial design work underway



POLA Grant-Funded Technology Demo - Update

Shore to Store Project CARB \$41 Million Various Partners off-Port Property

- 10 H₂-electric Class 8 trucks
- 2 heavy duty H₂ fueling stations
- 2 electric yard tractors with charging infrastructure at Port of Hueneme (POH)
- 2 Zero-emission forklifts

Status Update:

- First 5 trucks in development
- Expected Delivery in November
- Equipment orders for H₂ stations submitted
- Infrastructure design at POH complete



Kenworth Toyota Zero Emissions Truck





Battery Electric Yard Tractors





Taylor Battery Electric Top Handler






Ports' Technology Advancement Program Update

- Effenco Rapid Deployment of Electric Active Stop-Start™ Technology for Zero-Emission Idling from Port Yard Tractors Project - Contract Executed
- Harley Marine Electric Drive Tugboat Design Project - Contract Finalized/POLA Board Approval Pending
- PASHA C9 Class LNG Powered Container Vessel Repower Project – Contract Finalized/Board Approval Pending
- PASHA Ohana Class LNG Powered Container New Build Project – Contract Finalized/Board Approval Pending



Nett Technologies BlueMAX™ Harbor Craft Demo



An aerial photograph of a large port and city. The port area is filled with numerous ships, including large cargo vessels and smaller boats, docked at various piers. The city is visible in the background, with a dense urban landscape. The water is a deep blue, and the sky is clear with some light clouds. A semi-transparent teal box is overlaid on the center of the image, containing the text "Thank you! Questions?".

Thank you!
Questions?