



November 21, 2025

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*Submitted via email to [caap@cleanairactionplan.org](mailto:caap@cleanairactionplan.org)*

**RE: Comments on 2024 Draft Cargo Handling Equipment Feasibility Assessment**

Dear Ms. Wunder and Ms. Tomley,

Thank you for the opportunity to comment on the 2024 Draft Cargo Handling Equipment Feasibility Assessment (“Draft Assessment”). We submit these comments on behalf of the undersigned organizations, which are members of the Trade, Health, and Environment (THE) Impact Project coalition. THE Impact Project includes community-based organizations, environmental justice groups, academic institutions, and national environmental NGOs. Many of our groups have been advocating for decades to address the public health and quality of life burdens caused by goods movement associated with the San Pedro Bay Ports.

Cargo handling equipment (“CHE”) emit harmful nitrogen oxides (NO<sub>x</sub>) and diesel particulate matter (DPM) pollution that worsen air quality, particularly for port-adjacent residents, and contribute to the South Coast Air Basin’s nonattainment of state and federal air quality standards. NO<sub>x</sub> and DPM emissions contribute to respiratory and cardiovascular diseases, asthma attacks, cancer, and premature death. Emissions from CHE are particularly harmful to portside communities because this equipment operates full-time on port property and in close proximity to nearby residents.<sup>1</sup> In recognition of the harmful pollution impacts of this equipment, the San Pedro Bay Ports committed in their 2017 Clean Air Action Plan Update to transition all cargo handling equipment to zero-emissions by 2030.

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<sup>1</sup> Cal. Air Res. Bd., Draft 2025 Cargo Handling Equipment Technology Assessment (2025), 1 [hereinafter “2025 CARB CHE Assessment”].

Now, the Ports' 2030 goal is less than five years away and the pace of progress to date indicates that the Ports will not be able to meet their commitment – with zero-emission cargo handling equipment making up only 3.5 percent of all CHE operating at the San Pedro Bay Ports in 2023. Keeping in mind the short timeframe left for the Ports to ramp up their progress, this comment letter focuses on the barriers and challenges highlighted by the Draft Assessment and offers recommendations for port policies that will accelerate deployment of zero-emission cargo handling equipment and infrastructure. We appreciate that the Draft Assessment incorporates our previous recommendations of (1) focusing solely on zero-emissions technologies, in keeping with the Ports' commitment to 100% zero-emission CHE; and (2) accounting for incentive funding in determining economic workability. As these feasibility assessments are intended to provide the Ports with a roadmap to achieve their CAAP goals, we request that this Draft Assessment be revised to include the proposed policy recommendations that will enable the Ports to achieve the 2030 goal.

### **I. The Ports Have Not Made Sufficient Progress in ZE CHE Deployment to Date.**

According to the Draft Assessment, zero-emissions electric technologies models are commercially available for the four types of CHE analyzed in the assessment. Specifically, the Assessment rates battery-electric top handlers, large-capacity forklifts, yard tractors, and grid-electric RTG cranes as fully commercially available.<sup>2</sup> Since the 2021 Feasibility Assessment, battery-electric CHE (with the exception of battery-electric RTG cranes) have also reached desired operational feasibility for port operations and are economically workable with incentives. Given the current state of technology, the Ports' inventory of zero-emissions cargo handling equipment is woefully behind.

Despite technological advancements, in 2023, zero-emissions CHE accounted for only 3.5 percent of all CHE operating at the Ports.<sup>3</sup> While the number of ZE CHE more than doubled between 2021 and 2023, diesel and other fossil-fueled CHE still comprise the majority of CHE at the Ports. Moreover, the Ports' inventory of non-ZE equipment actually increased between 2021 and 2023 for certain types of CHE. Compared to 2021, the Port of Los Angeles had 153 additional pieces of non-ZE yard tractors and six additional non-ZE RTG cranes.<sup>4</sup> Between 2021 and 2023, the Port of Long Beach added 38 non-ZE yard tractors and 3 non-ZE forklifts to their CHE inventory.<sup>5</sup>

The Ports' 2024 Emissions Inventories reveal that little progress has been made between 2023 and 2024 as well. Electric CHE account for 21 percent of CHE operating at the Port of Long Beach, and only 11 percent of CHE at the Port of Los Angeles.<sup>6</sup> While the uptick in ZE CHE

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<sup>2</sup> San Pedro Bay Ports, 2024 Zero-Emission Cargo Handling Equipment Feasibility Assessment (2025), 5-31 [hereinafter "2024 CHE Feasibility Assessment"].

<sup>3</sup> *Id.* at 3-1.

<sup>4</sup> *Id.*

<sup>5</sup> *Id.*

<sup>6</sup> Port of Long Beach, 2024 Emissions Inventory, 31; Port of Los Angeles, 2024 Emissions Inventory, 37, 40.

deployment since the 2021 Feasibility Assessment is an improvement, this progress is still not enough. Over 70 percent of CHE at the Port of Los Angeles and 64 percent of CHE at the Port of Long Beach remain diesel-powered.<sup>7</sup> This represents only a 1 percent decrease in diesel-powered CHE at both Ports since 2021. Moreover, as noted above, the Ports' inventory of certain non-ZE CHE have actually increased in this timeframe.

This slow rate of deployment has led to increased pollution burdens on our portside communities. In 2024, record-breaking container throughput resulted in an increase in CHE emissions at both Ports, compared to the previous year. Between 2023 and 2024, the Port of Long Beach saw a 40 percent increase in DPM emissions and 32 percent in NOx emissions from CHE.<sup>8</sup> These increases in CHE pollution are extremely concerning and indicate a trend of continued growth of port operations, which is not paired with a similar ambition in transitioning to ZE CHE technologies and supporting infrastructure. In light of the Draft Assessment's findings on feasibility of zero-emissions cargo handling equipment, this snail pace of ZE CHE adoption is inexcusable.

**a. Infrastructure Availability Remains a Major Barrier for the Ports' ZE CHE transition**

For years, the undersigned organizations have requested that the Ports conduct the planning activities needed to ensure that the 2030 100% ZE CHE goal is achievable. We appreciate that the Ports of Long Beach and Los Angeles have now undertaken and completed these studies. However, the lack of infrastructure remains one of the main barriers for the Ports to transition to 100% zero-emission cargo handling equipment. As the Draft Assessment notes, "end-to-end processes for installing chargers and associated electrical infrastructure," including design, permitting, procurement, and installation, generally exceed CHE delivery timelines, with on-terminal installations requiring 1 to 4 years and terminal and utility upgrades 4-5 years.<sup>9</sup> We understand that a transition to 100% zero-emissions is a massive undertaking that requires early, extensive planning. Yet, the Ports only completed the necessary zero-emission terminal transition studies in the past two years.

The Ports' tardiness in conducting these planning activities means that the infrastructure is still not available to support a shift to 100% zero-emissions cargo handling equipment. According to the Draft Assessment, CHE electrification is estimated to increase peak power demand at container terminals by more than three times.<sup>10</sup> This projection is more optimistic than CARB's recent Draft Cargo Handling Equipment Technology Assessment, which notes that the San Pedro

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<sup>7</sup> *Id.*

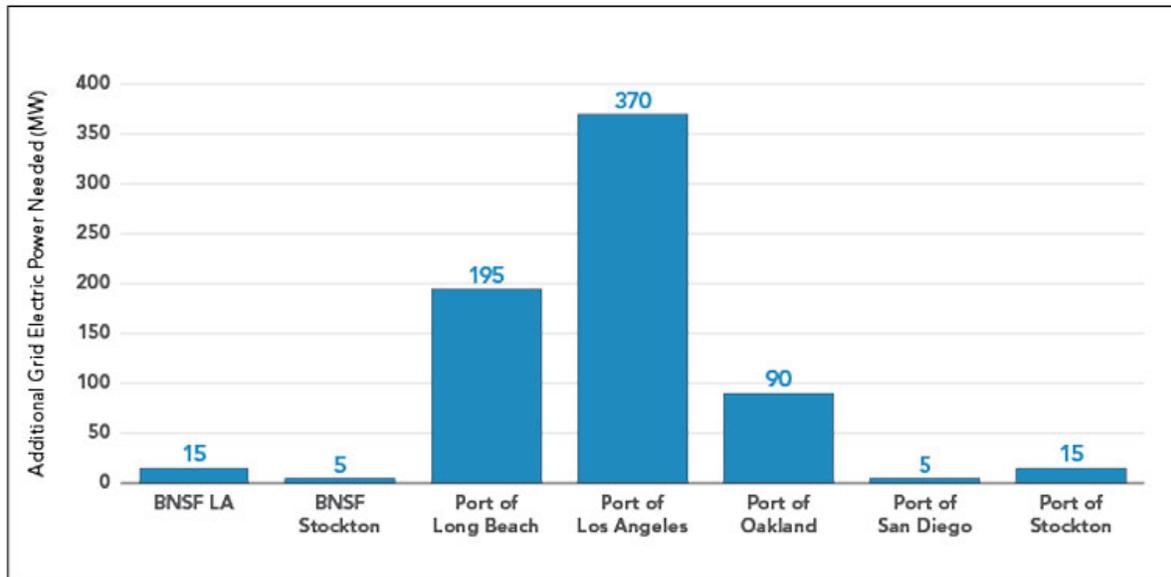
<sup>8</sup> Port of Long Beach, 2024 Emissions Inventory, ES-2.

<sup>9</sup> 2024 CHE Feasibility Assessment, *supra* note 2, at 4-6.

<sup>10</sup> *Id.* at 4-1.

Bay Ports have the largest power deficits, compared to other facilities, in terms of additional grid capacity needed to transition to 100% zero-emission CHE.<sup>11</sup>

**Figure F-2: Additional Load Capacity Needed to Support Fully Zero-Emission CHE by Facility**



Source: Cal. Air Res. Bd., Draft 2025 Cargo Handling Equipment Technology Assessment, App. F, F-7.

CARB projects that the Port of Los Angeles will require an additional 370 MW to support fully emission ZE CHE, which contrasts with the Port’s own ZE Terminal Transition Plan that estimates a needed increase to 211 MW.<sup>12</sup> The Draft Assessment and CARB’s recent report make clear that the Ports must speed up the installation of zero-emissions infrastructure.

**b. The Ports Must Focus on Building Infrastructure to Support Battery-Electric and Grid-Electric CHE.**

Extensive infrastructure challenges remain for port electrification, and to date, the Ports are not on track to achieve the 2030 100% ZE CHE goal. The rate of ZE CHE adoption is far too slow, and the Ports’ failure to act in a timely manner to ensure supporting infrastructure is available will further hinder progress.

Given the short timeframe left to ramp up ZE CHE adoption, the Ports must commit fully to building out infrastructure that support battery-electric and grid-electric CHE. The Ports do not have the luxury of time to further invest in hydrogen fuel cell technologies, which are not proven and still nascent relative to battery-electric and grid-electric CHE. Whereas electrical charging

<sup>11</sup> Cal. Air Res. Bd., Draft 2025 Cargo Handling Equipment Technology Assessment, App. F, F-7.

<sup>12</sup> See *id.*; 2024 CHE Feasibility Assessment, *supra* note 2, at ES-7.

infrastructure is rated as in a moderate state of readiness, hydrogen fueling infrastructure is still in the early planning stage and has a score of 0-0.5 for four of the five infrastructure criteria.<sup>13</sup>

The Draft Assessment rightly notes that there are significant safety concerns with hydrogen.<sup>14</sup> We have repeatedly expressed concerns about the use of hydrogen, particularly where battery-electric technology is proven. Hydrogen is a highly flammable substance with a lower autoignition temperature than methane. The use of hydrogen fuel cell technologies would require the buildout of infrastructure, including pipelines and refueling stations through densely populated neighborhoods. The transportation and storage of hydrogen present significant safety risks for workers and frontline communities. Moreover, hydrogen fuel cell cargo handling equipment are not commercially available or economically workable, even with incentives. In fact, the Draft Assessment notes that most manufacturers are delaying further development hydrogen fuel cell cargo handling equipment.<sup>15</sup>

CARB's Draft CHE Technology Assessment affirms that hydrogen fuel cell cargo handling equipment is currently not feasible due to a variety of factors, including immature technology, high costs, safety concerns, and the lack of standardized industry protocols for hydrogen fueling.<sup>16</sup> Given the state of this technology at this point, the Ports should not invest in hydrogen cargo handling equipment or hydrogen fueling infrastructure. Despite several demonstration projects to support hydrogen fuel cell CHE, terminal operators have not chosen to adopt this technology. The Ports cannot afford to waste time or resources to invest in technology that is not even commercially available at this point. Instead, the Ports must take immediate action to install electrical charging infrastructure, and identify and implement specific policies over the next years that will accelerate adoption of battery-electric and grid-electric CHE.

## **II. The Draft Assessment Must Include Policy Recommendations for Accelerating ZE CHE Deployment**

To enhance the usefulness of the Feasibility Assessment, we strongly recommend that the document be revised to include concrete policy options that the Ports can implement to accelerate the pace of progress towards 100% ZE CHE. We have offered this suggestion in our comments on previous Feasibility Assessments and these revisions are even more important now as the 2030 deadline is fast approaching. Specifically, we request that the Assessment include the following policy recommendations:

- Identify a pathway to 100% ZE CHE by 2030;
- Increase budget allocations for ZE CHE and supporting infrastructure; and
- Work with terminal operators to ensure replacement and purchases of additional CHE are zero-emissions.

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<sup>13</sup> 2024 CHE Feasibility Assessment, *supra* note 2, 4-6, 4-9.

<sup>14</sup> *Id.* at pg. 4-8.

<sup>15</sup> *Id.* at 5-31.

<sup>16</sup> 2025 CARB CHE Assessment, *supra* note 1, 148-154.

**a. The Ports Must Establish a Roadmap to 2030 Goal**

As with previous Feasibility Assessments, we ask that the Ports establish interim goals and provide a roadmap for the transition to 100% zero-emissions CHE by 2030. With the slow rate of ZE CHE deployment to date, it is difficult to envision a path for the Ports to achieve the CAAP goal. A roadmap will be critical to reestablish the Ports' commitment to transitioning to 100% ZE CHE, indicate to the public the Ports' confidence in achieving the 2030 goal, and send an important market signal to industry that there will be growing demand for these technologies.

The development of such a roadmap will aid the Ports in identifying and prioritizing critical, near-term actions that need to be taken, such as installation of zero-emissions infrastructure at specific terminals and what types of demonstration projects would be most beneficial. Identifying these gaps will allow the Ports to take the necessary steps to speed up progress, such as establishing a dedicated equipment development and testing department within the Ports and developing short-term strategies for community protection as the Ports accelerate deployment of ZE CHE. It is also essential for improving public transparency and enabling community to track the Ports' progress over the next four years.

We recognize that the Ports have made significant steps in recent years by partnering with state and federal agencies to fund deployment of ZE CHE and supporting infrastructure. Through the EPA Clean Ports Program, the Port of Los Angeles plans to deploy nearly 425 battery-electric, human-operated CHE and supporting infrastructure. The Port of Long Beach's SWIFT Program will deploy 65 pieces of ZE CHE and fund key charging infrastructure. The Ports' roadmap should highlight these programs, explain how these deployments will help close the gap towards 100% ZE CHE, and identify actions that the Ports plan to take to address any remaining challenges in meeting the 2030 goal.

**b. Increase Budget Allocations for Zero-Emission Cargo Handling Equipment & Infrastructure**

We also ask that the Ports devote more funds from their annual budgets towards human-operated zero-emission cargo handling equipment. The Draft Assessment notes that battery-electric yard tractors, top handlers, large-capacity forklifts, and RTG cranes are economically workable with incentives. As technological and commercial availability no longer pose a barrier, the Ports allocate a portion of their budgets to incentive programs that will fund procurement of zero-emissions equipment, including human-operated ZE CHE, and installation of supporting infrastructure.

Moreover, the Draft Assessment indicates that demonstration projects are still needed, particularly as zero-emission technologies continue to advance and to work through previously

identified issues.<sup>17</sup> Therefore, in addition to incentive funding, the Ports should increase funding for additional human-operated ZE cargo handling equipment demonstration projects.

**c. Replacement & Purchase of Additional CHE Must be Zero-Emissions**

At this juncture, it is unacceptable for the Ports to be adding non-ZE CHE to their inventory. Considering the lifespan of terminal equipment, any purchases of non-ZE cargo handling equipment now will bring the Ports further away from meeting the 2030 goal.

The Ports should immediately implement a requirement that all new purchases of CHE be zero-emissions, and work with terminal operators to install the necessary infrastructure to support this equipment.

**d. The Ports' Transition to ZE Should Be Paired with Good Jobs for Workers**

We want to emphasize again that the transition to zero-emission CHE cannot be conflated with automated technologies, and urge the Ports to invest in human-operated zero-emission equipment, including zero-emission CHE, in moving towards the 2030 goal. We appreciate that the Ports have committed to human-operated ZE CHE in certain grant applications. We now ask that the Ports' own funding policies reflect that commitment to human-operated ZE cargo handling equipment as well. The transition to zero-emissions is an opportunity to bring good green jobs to the Los Angeles area, and a focus on human-operated zero-emissions equipment must remain a priority for the Ports.

**III. Conclusion**

As the 2030 deadline is fast approaching, the Ports must act quickly to ensure that the CAAP 100% ZE CHE goal is achievable. We request that the Ports immediately start a public process to formulate the policies and plans needed to achieve this goal. Thank you for your consideration of these comments, and we would welcome the opportunity to further discuss the proposed recommendations.

Sincerely,

Regina Hsu  
Earthjustice

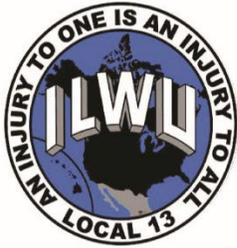
Cristhian Tapia-Delgado  
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<sup>17</sup> 2024 CHE Feasibility Assessment, *supra* note 2, at 3-5.



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November 19, 2025

Sent via Electronic Mail to [caap@cleanairactionplan.org](mailto:caap@cleanairactionplan.org)

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Long Beach, CA 90802

Mr. Eugene Seroka  
Executive Director  
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Dear Mr. Cordero and Mr. Seroka:

We write on behalf of the International Longshore and Warehouse Union (ILWU), Locals 13, 63, and 94 and our over 10,000 full-time members and over 5,000 part-time casual workers, to provide feedback on the 2024 Draft Feasibility Assessment for Cargo Handling Equipment.

ILWU Locals 13, 63, and 94 represent the longshore workers, marine clerks, and foremen who keep critical cargo flowing through the San Pedro Bay Ports of Long Beach and Los Angeles (Ports). Our members have helped maintain the Ports' status as the busiest ports in the Western Hemisphere and have consistently broken cargo volume records, even during a global pandemic.

Over nearly the past two decades, the global supply chain has experienced a period of tremendous uncertainty and volatility. Conversely, the essential working people of the ILWU have been a model of stability, allowing the Ports to remain continually open throughout the pandemic, recessions, unprecedented tariffs and geopolitical upheaval. Respectfully, it has been our honor to coordinate, cooperate, and collaborate with the Ports to provide for the common good, to serve the Port's customers, the State of California, and the Nation during these challenging years.

Most recently, we have worked together with the Ports, industry partners, supply chain stakeholders, environmental groups, and community members to arrive at a Cooperative Agreement between the Ports and the South Coast Air Quality Management District (SCAQMD). We believe that this approach will produce the best results possible for all involved parties, as we

understand and appreciate the importance of improved air quality and reduced emissions; longshoremen, marine clerks, and foremen at the Ports feel the effects of emissions more than anyone as we work and live closest to the Ports. In fact, approximately 53% of our members and their families live within 5 miles of the Ports and nearly 74% live within 10 miles of the Ports. Consequently, our members are part of the fabric of these communities and contribute substantially to the overall well-being of these neighborhoods.

We respectfully remind the Ports that Economic Justice is as important to these disadvantaged communities surrounding the Ports as Environmental Justice. The Coastal Regions of California face several economically based challenges such as homelessness and obtaining affordable housing, accessing quality health care, the rising cost of higher education, and more. All of these issues are greatly remediated by the living wages that union jobs provide within California's Ports. Additionally, the California Coastal Commission and the Ports, as representatives of the state and their respective cities, have a duty, as detailed in the California Coastal Act (CCA), to balance the socioeconomic well-being of these disadvantaged communities with environmental mandates.

It is not lost on us that the Ports, acting as landlords, lease their properties to private entities engaged in the business of marine terminal operations. Most of these companies are either subsidiaries of extremely powerful ocean carriers or equally powerful private equity firms. Therefore, when the Ports are charged with the duty of optimizing Port operations, we must ask from whose point of view we are measuring this progress? Is it for the people who reside adjacent to the Ports, the Port's customers, or simply the business interests of these global corporations?

Upon our review of the 2024 San Pedro Bay Ports Zero-Emission (ZE) Cargo Handling Equipment Feasibility Analysis (Analysis) we note the tremendous work that has been undertaken by original equipment manufacturers, marine terminal operators, our railroad partners at Pacific Harbor Lines, the drayage community, government agencies, organized labor and others, to achieve the impressive results that we have collectively accomplished to date. While there is much more work to be done, we look forward to our continued participation in ongoing demonstration projects where our members' insights, recommendations and involvement aid in the advancement of our clean air goals.

The Ports' Analysis focuses on five (5) parameters defined in the framework:

1. Commercial Availability
2. Technical Viability
3. Operational Feasibility
4. Infrastructure Readiness
5. Economic Workability

We believe that the prospects of Commercial Availability, Infrastructure Readiness, and Economic Workability are heavily dependent on grant funding that is principally sourced from public agencies, including federal, state, regional, and local sources. While we appreciate that the equipment itemized in the Analysis is human-operated, we also recognize that automation and artificial intelligence is increasingly being utilized in not only newly introduced equipment, but in retrofits of existing equipment as well.

We believe that human-operated cargo handling equipment (CHE) is superior to automated equipment for many reasons. We have arrived at this conclusion due to our over ten years of firsthand experience working alongside automated equipment on the docks, as well as based on the findings of numerous independent studies on the subject from respected institutions such as McKinsey and Company, The Economic Roundtable, the International Transport Workers' Federation (ITF), and Prism Economics. Automated equipment is not more cost effective than human-operated equipment when examined in terms of its total cost of ownership, and is not more efficient in terms of supporting higher cargo throughput at the Ports, when compared with terminals that utilize human-operated equipment. Automation merely shifts labor costs into capital and other costs, while giving foreign owned corporations far greater control of our nation's ports.

It is for this reason that we request language be added in the Ports' policy documents committing that no public funds or grants, including but not limited to Port funds, be used to purchase, require, incentivize, encourage, or otherwise promote any automated, remotely controlled, or remotely operated equipment, automate any equipment that is currently human-operated, or to put in place infrastructure to support automated, remotely controlled, or remotely operated equipment. Similar language already exists in both federal and state legislation that provides critical funding to the Ports. In addition, we were encouraged to see that the Ports included a reference to federal and state funding restrictions in their respective Legislative Texts and Board Reports related to the adoption of the aforementioned Cooperative Agreement with the SCAQMD. It reads as follows:

“Within the zero-emission infrastructure plans, the ports will identify project cost estimates and projected funding sources to implement the identified infrastructure, which may include a combination of port funding, tenant contributions, and grants. The Port will need to evaluate potential sources of federal, state and local grant funding, recognizing that any available zero-emissions grant funding may have restrictions that include short timelines for when funds must be spent or restrictions for purchase of equipment only and not infrastructure development. In addition, funds awarded under 42 US Code 7433 for the purchase or installation of zero-emission port equipment or technology are for “human-operated equipment or human maintained technology.” Funds awarded under California Streets and Highway Code Section 2192(c)(3) “shall not be allocated to a project that includes the purchase of fully automated cargo handling equipment.”

We ask that, as major stakeholders at the Ports, we schedule meetings soon to ensure that this plan of action is implemented.

Additionally, we seek to address our concerns regarding the maintenance and repair, as well as manufacturer support for new pieces of ZE CHE introduced in the Ports. We are alarmed to read in the Analysis that equipment manufacturers may be performing troubleshooting, repair, and maintenance of equipment used by our members. Pages 3-3 and 3-4 of the Analysis state in relevant part:

**“Reliability Issues with Early-Generation Equipment:** Early-generation ZE CHE often encountered unexpected failures under real-world conditions, leading terminal operators to require frequent manufacturer involvement for troubleshooting and maintenance.”

**“Reliance on Manufacturer Support:** Terminal Operators often depend on manufacturers for repairs and replacement parts, which can lead to delays if manufacturers cannot quickly obtain replacement parts or assign personnel to make timely repairs. Many terminal operators value on-site and local manufacturer support to minimize downtime and ensure timely maintenance.”

These statements, unfortunately, give rise to a belief that terminal operators may be using equipment development protocols, manufacturers warranties, remote logins, and other technologies to perform troubleshooting, repair, and maintenance of equipment used by our members without our members’ knowledge or involvement.

One way in which to lessen this concern is through on-going, advanced training of our workforce. Thankfully, this need for on-going workforce training was recognized by the Ports on page 3-4 of the Analysis:

**“Specialized Maintenance Needs:** Terminal Operators noted that ZE CHE have high-voltage systems and advanced powertrains, requiring maintenance crews trained in electrical safety and battery management. This new technical requirement has created a need for internal workforce development, including specialized training to maintain equipment reliability.”

**“Training and Safety Adjustments:** Terminal Operators indicated that ZE CHE requires adjustments to safety protocols and comprehensive training for staff. Operators have implemented safety modifications and software updates to address unique safety risks (e.g., regenerative braking, thermal events, and charging cable management) associated with ZE equipment.”

Thank you for the opportunity to continue working with the Ports in order to address the above concerns, while continuing to make progress on the important work of advancing environmental justice and economic justice simultaneously. We look forward to meeting with you soon.

Sincerely,



Gary Herrera  
President  
ILWU Local 13



Danny Vilicich  
President  
ILWU Local 63



Daniel G. Miranda  
President  
ILWU Local 94

cc: Long Beach Mayor, Rex Richardson  
Los Angeles Mayor, Karen Bass  
Los Angeles Councilmember, Tim McOsker  
Port of Long Beach, COO, Noel Hacegaba  
Port of Los Angeles, Deputy Executive Director, David Libatique  
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November 21, 2025

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Subject: Comments on Draft 2024 Zero-Emission Cargo Handling Equipment Feasibility Assessment

Dear Mses. Wunder and Moilanen:

Thank you for the opportunity to provide comments on the draft 2024 Zero-Emission Cargo Handling Equipment Feasibility Assessment (Feasibility Assessment). PMSA, representing marine terminal operators and ocean carriers, provides the following comments to ensure that analysis provides the most realistic examination of current available technology available.

PMSA appreciates the work that went into producing the draft Feasibility Assessment. While we acknowledge that the evaluation of developing technology is as much qualitative as it is quantitative, concerns remain regarding conclusions that are not supported by evidence, the use of manufacturer marketing claims that have not been borne out through demonstrations, and cost estimates that underestimate the true cost of operating zero-emissions equipment. It is critical that these concerns are addressed. Unless shortcomings that exist in the current state of technology are identified and set for improvement, manufacturers will not be pressed to make rapid improvements and a smooth transition to a zero-emissions future will not be possible.

#### **Basis for Assessment**

It is unclear when data was collected for the analysis used in the report. It appears that the report attempts to assess the state of technology based on what has happened between 2021-2024. However, there are number of instances where the Feasibility Assessment refers to “commercially available [yard tractor] models with battery capacities greater than 300 kWh”. However, these models were not commercially available in 2024. To our knowledge, no 300-kWh yard tractors have been demonstrated in San Pedro Bay. While everyone welcomes higher capacity zero-emission CHE, they must be demonstrated successfully before declaring that

“[b]attery-electric yard tractors have been proven to work in a final form and under expected conditions (TRL 9).” The Feasibility Assessment goes on to say that “As of the end of 2024, battery-electric yard tractors are categorized as operationally feasible” even though the equipment that it relies on make that conclusion was not commercially available in 2024. The report should be revised to clarify what data is being used and how. The report should not rely on undeployed equipment for its assessment. Rather, it should rely only on demonstrated successful uses across all equipment duty cycles as of the end of 2024.

### **Readiness of Yard Tractors and Top Handlers**

In fact, battery electric (BE) yard tractors have not been demonstrated to meet the two shift minimum requirement for viability on a container terminal across all duty cycles. While the technology is improving and every generation demonstrates increasing capability, BE yard tractors cannot meet the two-shift/16-hour range requirements across all tasks as the report acknowledges. Yard tractors are interchangeable. As such, they must meet duty cycle requirements wherever they may be deployed, including rail and vessel operations. The report cannot both conclude that the equipment cannot meet range requirements (“10-14 hours in rail-side operations”) and then conclude that the equipment is operationally feasible. It clearly fails to meet the stated metric. In addition, from the context of the paragraph, this performance claim appears to be based on equipment (equipment with “battery capacities over 300 kWh”) that has never been deployed or tested in San Pedro Bay. The Feasibility Assessment’s conclusion will only serve to confuse stakeholders. The report should be revised to clearly state that BE yard tractors are not operationally feasible as of the end of 2024.

For both yard tractors and top handlers, the Feasibility Assessment differentiates between container yard work and rail yard work. This approach is wrong. As already stated, this approach ignores the idea that the equipment is interchangeable. In order to transition from diesel to zero-emissions equipment, the zero-emissions equipment must be capable of doing **all** the tasks of a diesel unit.

While the ability to complete two shifts in one operational mode is an important sign of progress, failure to complete two shifts in all operational modes means that the equipment is **NOT** operationally feasible. The report should remove any conclusions that equipment is operationally feasible based on the ability to partially complete tasks those units are responsible for.

### **Equipment Reliability**

While capability, as measured by the ability to work two shifts without recharging, is an important metric, so is equipment reliability. PMSA has repeatedly raised the issue of

equipment reliability metric multiple times. As a technology that has been improved over multiple decades, diesel equipment is highly reliable with very low downtime. In order for either BE or fuel cell (FC) technology to replace diesel equipment, those new technologies must have a commensurate downtime. Downtime reflects multiple elements: the reliability of equipment components, the availability of replacement parts, the speed of obtaining warranty service, and difficulty of conducting maintenance.

The report should quantify the downtime of BE and FC equipment and compare it to diesel. BE and FC equipment should only be categorized as proven when it has achieved a comparably low downtime.

### **Infrastructure Readiness**

The Feasibility Assessment contends that infrastructure improvements will be complete in 4-5 years. This is unrealistic for a number of reasons. As you know, through the Cooperative Agreement with the South Coast Air Quality Management District (SCAQMD), both ports will be completing infrastructure plans for CHE in December 2027. Once work commences, the ports will be competing with other high priority demands of infrastructure improvements, including rebuilding from the Palisades and Eaton fires, preparation for the 2028 Olympics in Los Angeles and Long Beach. During the SCAQMD Mobile Source Committee on October 17<sup>th</sup>, the Los Angeles Department of Water and Power acknowledged that they currently do not have sufficient resources to meet all these demands will need to rely on third-party resources that the agency does not currently have available. The uncertainty this creates along with “factoring in permitting, design, procurement, and construction timelines” leaves no confidence that work can be complete in five years.

In addition, last year The National Infrastructure Advisory Council reported that “transformer lead times have been increasing for the last 2 years – from around 50 weeks in 2021, to 120 weeks on average in 2024. Large transformers, both substation power and generator step-up transformers, have lead times ranging from 80 to 210 weeks.”<sup>1</sup> With the design work and permitting still pending, the lead time for key electrical infrastructure seems to place infrastructure readiness well outside a five-year window at the least.

The Feasibility Assessment appears to put forward a schedule based on perfect achievement of goals and milestones, even those outside the control of the ports and terminal operators. The

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<sup>1</sup> [https://www.cisa.gov/sites/default/files/2024-09/NIAC\\_Addressing%20the%20Critical%20Shortage%20of%20Power%20Transformers%20to%20Ensure%20Reliability%20of%20the%20U.S.%20Grid\\_Report\\_06112024\\_508c\\_pdf\\_0.pdf](https://www.cisa.gov/sites/default/files/2024-09/NIAC_Addressing%20the%20Critical%20Shortage%20of%20Power%20Transformers%20to%20Ensure%20Reliability%20of%20the%20U.S.%20Grid_Report_06112024_508c_pdf_0.pdf)

ports have access to detailed information on implementation schedules for complete and ongoing demonstrations. That data should be used to inform likely schedules. Based on discussions with members, PMSA believes that infrastructure will be ready in 8-10 years. While our members hope that infrastructure will be delivered more expeditiously, there has been no evidence presented to date that it will.

### **Grid Reliability**

To the degree that BE CHE becomes the expected technology to be deployed in San Pedro Bay, grid reliability will only grow in importance. Already, the Wall Street Journal<sup>2</sup> and the Los Angeles Times<sup>3</sup> have reported on the grid reliability problems in San Pedro Bay. While steps have been taken to address this problem, by some metrics the issue has only grown worse in 2025.

Simply put, marine terminal operators cannot transition to a battery electric future without a reliable grid. The Feasibility Assessment needs to discuss the obstacles presented by current grid reliability issues, identify metrics for grid reliability, and outline improvements necessary to engender the confidence necessary to transition to CHE that is supported by the grid.

### **Cost of Fuel/Electricity**

The report misstates both the cost of diesel fuel and electricity, resulting in incorrect total cost of ownership. PMSA has separately provided to the ports' consultant redacted invoices for diesel fuel and electricity. For diesel, PMSA members are reporting costs of approximately \$2.90/gallon. For electricity, costs vary between \$0.20-\$0.36/kWh, with approximately \$0.27/kWh appearing to be mid-range. These numbers are substantially different from those presented in the report. The total cost of ownership in the Feasibility Assessment should be recalculated with these numbers. As an additional note, it is important that any analysis includes the cost of city-required utility taxes, 12.5% in Los Angeles and 5% in Long Beach.

### **Manufacturing Schedule**

The analysis of CHE manufacturing capacity is flawed. The analysis assumes that all manufacturing capacity available at original equipment manufacturers (OEM) could be directed to meet demand in San Pedro Bay. In fact, the available resources of any manufacturer are dependent on the demand from all customers, both for zero-emission equipment and conventional equipment. No manufacturer will support a business model based on serving a

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<sup>2</sup> <https://www.wsj.com/articles/the-port-of-los-angeles-has-a-power-problem-ae614e2f>

<sup>3</sup> <https://www.latimes.com/business/story/2024-08-16/power-outages-a-growing-concern-for-port-of-los-angeles-now-and-down-the-road>

single port complex. In fact, if any OEM's only customers are San Pedro Bay terminals, they are unlikely to have a sustainable business model. OEMs have stated that the ability to meet demand from one customer is dependent on demand from other customers.

The analysis of manufacturing capacity must be redone with consideration of demand from other OEM customers. Failure to do so will render the discussion contained in the Feasibility Assessment meaningless.

### **Straddle Carriers**

PMSA is disappointed that straddle carriers were not considered in the report. Straddle carriers have been deployed in large numbers in the Port of Los Angeles. In Los Angeles, straddle carriers make up approximately 9% of all CHE and are more prevalent than rubber-tired gantry cranes, which were included in the report. The absence of straddle carriers represents a major gap in the Feasibility Assessment and raises questions about how that equipment will be considered in the policy decisions for the transition to zero-emissions.

### **Conclusion**

PMSA appreciates the opportunity to continue working with the ports of Long Beach and Los Angeles on the development and assessment of zero-emission CHE. This work is instrumental in achieving the shared goal of a zero-emissions future. The Feasibility Assessment represents an important step in that process. While we appreciate all the efforts in developing the report, there are key issues that are inaccurate or do not represent the issue in its complete and accurate context. Accordingly, PMSA requests that the Feasibility Assessment be revised in light of the comments above.

Sincerely,



Thomas Jelenić  
Vice President

**Leung, Julie**

---

**From:** Jacobs, Jeff@ARB <Jeff.Jacobs@arb.ca.gov>  
**Sent:** Tuesday, November 18, 2025 8:25 AM  
**To:** Szoke, Rose; TPisano@portla.org; Goldberg, Jacob; Rao, Leela; Leung, Julie; AColuso@portla.org; bford@portla.org; mwartian@burnsmcd.com; DeMoss, Timothy  
**Cc:** Green, Alyssa@ARB; Yamashita, Lea@ARB; Johnston, Jesica@ARB; Howe, Joelle@ARB; Gilani, Greg@ARB; Tang, Tianbo@ARB  
**Subject:** Meeting Follow-Up: 2024 Zero-Emission Cargo Handling Equipment Feasibility Assessment

Hello San Pedro Bay Ports Team,

Thanks for meeting with us on November 6, 2025, to discuss your Draft 2024 Zero-Emission Cargo Handling Equipment Feasibility Assessment. In addition to the comments during our discussion, we would like to share additional feedback on the assessment and note some possible clerical errors.

### **Microgrids**

We recommend including the role of microgrids (especially renewable-based systems) within seaport environments as part of your infrastructure discussion. This would demonstrate how these systems can support zero-emission equipment operation, mitigate grid stress from high-power charging loads, and enable more flexible, reliable energy management for seaport electrification initiatives.

### **Total Cost of Ownership (TCO) Time Frame**

For the TCO analyses, we recommend specifying the basis for choosing a 10-year period. It is unclear whether the 10-year period is based on the average operational lifetime of CHE at the Ports, was chosen for analytical consistency with other studies, or something else.

### **Possible Clerical Errors**

- Figure ES-7 says there are six OEMs offering grid-electric RTGs. Page 5-24 says there are seven.
- On page 5-24, *Sandy* is listed as an OEM offering grid-electric RTGs. We believe that this should be *Sany*.

Thank you again for your time. Let us know if you have any questions.

Sincerely,  
Jeff Jacobs



Jeff Jacobs  
Air Resources Engineer  
Freight Policy Section  
Transportation and Toxics Division  
279-208-7623

Fwd: CHE Public comment

Attachment List

----- Start Forwarded Message -----

Sent: Fri, 10 Oct 2025 14:36:32 -0700

From: Mark Jurisic

To: [caap@cleanairactionplan.org](mailto:caap@cleanairactionplan.org)

Subject: Public comment

Good day.

My name is Mark Jurisic and I have been working for the ILWU Local 13 of alternative energy/ fuels as they relate to the San Pedro Port Complex for the last 5 years. I can proudly say that the work both ports have done over the last two decades have made this Port Complex the cleanest in the entire world. A fact that has not been celebrated enough. Despite this incredible achievement we are asked to do more and I believe, with the leadership from both ports, we will achieve our zero emissions goals within ten years. This goal is achievable if labor, employers, businesses, the ports, local and state politicians work on a sustainable plan. The issue is a monumental one but not an impossible one. As this issue evolved the two main solutions seem to be the development of hydrogen as an alternative fuel or electrification via battery electric technology. Both are new emerging technologies that bring their own issues and challenges, but the biggest problem is that everyone believes they have to choose one over the other. That is a false assumption. The reality is, if we are to reach zero emissions in a timely fashion, we will need both. There are currently quite a few pieces of equipment in use in both ports that are being used to move cargo that are either hydrogen powered or run off of batteries. I won't get into the details of the performance but they are all working. Like I said I think we can do this in the next ten years but all parties have to embrace the dual technology to reach zero emissions within the allotted time frame.

Mark Jurisic

----- End Forwarded Message -----

1.69 KB

msg-16660-4.html

Fwd: Comments on cargo handling equipment  
From: CAAP <caap@cleanairactionplan.org>  
Time:  
2025-10-10 15:01 GMT-07:00  
To: [rose.szoke <rose.szoke@polb.com>](mailto:rose.szoke@polb.com) [tpisano <tpisano@portla.org>](mailto:tpisano@portla.org)

Attachment List

Hi,

Forwarded comments we are receiving for CHE feasibility study. I will dump them into the CHE folder.

Amber

----- Start Forwarded Message -----  
Sent: Fri, 10 Oct 2025 13:23:23 -0700  
From: Christine Robles <[christine1fab1@gmail.com](mailto:christine1fab1@gmail.com)>  
To: [caap@cleanairactionplan.org](mailto:caap@cleanairactionplan.org)  
Subject: Comments on cargo handling equipment

Hello,

My son is 22 yrs old and was born in Wilmington CA, ever since he was 3 months old he has suffered from chronic asthma to the point where he's been hospitalized at Long Beach Memorial Hospital Throughout the years I've noticed when there is heavy traffic at the port (cargo ships) he suffers greatly just doing what we all take for granted "breath" we now live in San Pedro and he works locally at SP TARGET I hope the port can get the air clean enough with all the equipment and large vessels plugged in appropriately so Kobe can one day breath normally.

Thank you

Best,  
Christine Robles

----- End Forwarded Message -----

907 B

msg-32058-9.html

Fwd: Draft 2024 Feasibility Assessment Comments  
From: CAAP <caap@cleanairactionplan.org>  
Time:  
2025-10-10 15:23 GMT-07:00  
To: [rose.szoke <rose.szoke@polb.com>](mailto:rose.szoke@polb.com) [tpisano <tpisano@portla.org>](mailto:tpisano@portla.org)

Attachment List

----- Start Forwarded Message -----  
Sent: Fri, 10 Oct 2025 19:51:00 +0000  
From: "Backlund, Ed"  
To: "[caap@cleanairactionplan.org](mailto:caap@cleanairactionplan.org)"  
Subject: Draft 2024 Feasibility Assessment Comments

To whom it may concern:

Thank you for sharing this draft feasibility assessment for the community's review and feedback.

I note that the draft does not capture a substantial number of the existing grid-electrified equipment within the port, specifically in excluding STS Cranes, RMG Cranes, and ASC Cranes:

- \* STS Cranes: 157
- \* RMG Cranes (railyards): 9 (3 TraPac + 6 LBCT)
- \* ASC Cranes (container stacking): 98 (29 TraPac + 69 LBCT)

As a civil engineer who has worked in and around container terminals for over a decade, I believe that these additional equipment are critical to quantify in any assessment of a port's container handling equipment.

Including these will enable a more correct and holistic view of zero emissions cargo handling equipment at the San Pedro Bay ports: both of progress toward the 2030 zero emissions goal, and of total power grid load associated with container handling.

Thank you for your consideration.

Respectfully yours,  
Ed

Ed Backlund, PE (NY)  
Senior Project Manager - Port Planning  
Ports & Terminals  
T: +1 332 255 6069  
C: +1 607 372 9181  
601 S Figueroa St, Suite 4300  
Los Angeles, CA 90017

[Hatch-email]

\*\*\*\*\*

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which is privileged, confidential or proprietary.

Internet communications cannot be guaranteed to be secure or error-free as information could be intercepted, corrupted, lost, arrive late or contain viruses. By communicating with us via e-mail, you accept such risks. When addressed to our clients, any information, drawings, opinions or advice (collectively, "information") contained in this e-mail is subject to the terms and conditions expressed in the governing agreements. Where no such agreement exists, the recipient shall neither rely upon nor disclose to others, such information without our written consent. Unless otherwise agreed, we do not assume any liability with respect to the accuracy or completeness of the information set out in this e-mail. If you have received this message in error, please notify us immediately by return e-mail and destroy and delete the message from your computer.

----- End Forwarded Message -----

9.4 KB

msg-16663-4.html

3.13 KB

image001.png

Re: Fact-checking of SSA projects referenced in draft CHE feasibility study

Thank you very much, Abigail!

Best,  
Matt

Sent from my iPhone

On Dec 16, 2025, at 10:54 AM, Abigail Struxness <[abigail.struxness@ssamarine.com](mailto:abigail.struxness@ssamarine.com)> wrote:

Hi Matt,

We have 5 high capacity lifts in service at Pier F. The 55k lb forklift arrived in 2024, the 4 36k arrived in 2025.

Thanks,  
Abigail

Abigail Struxness  
Director of Sustainability  
206-637-1348  
[Abigail.Struxness@SSAMarine.com](mailto:Abigail.Struxness@SSAMarine.com)<<mailto:Abigail.Struxness@SSAMarine.com>>

From: Wartian, Matt J <[mwartian@burnsmcd.com](mailto:mwartian@burnsmcd.com)>  
Sent: Monday, December 15, 2025 11:45 AM  
To: Abigail Struxness <[Abigail.Struxness@ssamarine.com](mailto:Abigail.Struxness@ssamarine.com)>; [caap@cleanairactionplan.org](mailto:caap@cleanairactionplan.org)  
Cc: Matthew W. Sullivan <[Matthew.Sullivan@SSAMarine.com](mailto:Matthew.Sullivan@SSAMarine.com)>; Meghan Weinman <[Meghan.Weinman@ssamarine.com](mailto:Meghan.Weinman@ssamarine.com)>  
Subject: RE: Fact-checking of SSA projects referenced in draft CHE feasibility study

Hi Abigail, Thank you very much for taking time to provide comments on the Draft ZE CHE Feasibility Assessment. Can you please clarify how many of the Wiggins eBull forklifts are in service at Pier F? Thank you,  
Matt Matt Wartian, Ph.D. Ports  
ZjQcmQRYFpfptBannerStart  
This Message Is From an External Sender  
This message came from outside your organization.  
ZjQcmQRYFpfptBannerEnd  
Hi Abigail,

Thank you very much for taking time to provide comments on the Draft ZE CHE Feasibility Assessment. Can you please clarify how many of the Wiggins eBull forklifts are in service at Pier F?

Thank you,  
Matt

Matt Wartian, Ph.D.  
Ports & Maritime  
Burns & McDonnell  
4225 Executive Square, Suite 400  
La Jolla, CA 92037  
Phone: 760-809-1959  
[mwartian@burnsmcd.com](mailto:mwartian@burnsmcd.com)<<mailto:mwartian@burnsmcd.com>>  
<https://url.us.m.mimecastprotect.com/s/uaq4CW6l4jH6Lo5zf6fgFow04g?>

[domain=burnsmcd.com](https://url.us.m.mimecastprotect.com/s/ty1RCXD04kt4PrXBUVh3FWTsbf?domain=burnsmcd.com)<[https://url.us.m.mimecastprotect.com/s/ty1RCXD04kt4PrXBUVh3FWTsbf?](https://url.us.m.mimecastprotect.com/s/ty1RCXD04kt4PrXBUVh3FWTsbf?domain=burnsmcd.com)  
[domain=urldefense.com](https://url.us.m.mimecastprotect.com/s/L_26CYEnglIDWBLki9i1Fx3Uxz?domain=urldefense.com)>

Sustainable, Resilient Solutions for Ports and Maritime Facilities | Learn  
more<[https://url.us.m.mimecastprotect.com/s/L\\_26CYEnglIDWBLki9i1Fx3Uxz?domain=urldefense.com](https://url.us.m.mimecastprotect.com/s/L_26CYEnglIDWBLki9i1Fx3Uxz?domain=urldefense.com)>

From: Abigail Struxness <[Abigail.Struxness@ssamarine.com](mailto:Abigail.Struxness@ssamarine.com)<<mailto:Abigail.Struxness@ssamarine.com>>>  
Sent: Thursday, November 20, 2025 4:43 PM  
To: [caap@cleanairactionplan.org](mailto:caap@cleanairactionplan.org)<<mailto:caap@cleanairactionplan.org>>  
Cc: Matthew W. Sullivan <[Matthew.Sullivan@SSAMarine.com](mailto:Matthew.Sullivan@SSAMarine.com)<<mailto:Matthew.Sullivan@SSAMarine.com>>>;  
Meghan Weinman <[Meghan.Weinman@ssamarine.com](mailto:Meghan.Weinman@ssamarine.com)<<mailto:Meghan.Weinman@ssamarine.com>>>  
Subject: Fact-checking of SSA projects referenced in draft CHE feasibility study

Hello CAAP team:

SSA submits the following fact-checking to the draft CHE Feasibility Study related to projects that reference our terminals. Please let us know if you have any questions.

ES-7 Overall Feasibility: Paragraph references eRTG “strong performance for several years at POLB.” Is this only referring to the SSA deployment of eRTG at Pier J or to other projects at other terminals? Note that the eRTG at Pier J was a retrofit project versus purchase of new equipment.

2-2 Table 2-1: Top handler vendor is named Taylor, not Terberg Taylor. Terberg is the name for the UTRs.

5-9 Battery Electric Top Handlers: Demonstration was at SSA’s Pier J, not Pier C.

5-16 Battery Electric Large Capacity Forklifts: SSA Pier F commissioned DCFC for high capacity Wiggins forklifts (36-55k) in Spring 2024. Forklifts are in operation.

Best,  
Abigail

Abigail Struxness  
Director of Sustainability  
206-637-1348  
[Abigail.Struxness@SSAMarine.com](mailto:Abigail.Struxness@SSAMarine.com)<<mailto:Abigail.Struxness@SSAMarine.com>>

Fwd: CAAP - assessment of new cargo handling equipment technology (invited public comment)  
From: CAAP <caap@cleanairactionplan.org>  
Time:  
2025-10-27 15:05 GMT-07:00  
To: [rose.szoke <rose.szoke@polb.com>](mailto:rose.szoke@polb.com) [tpisano <tpisano@portla.org>](mailto:tpisano@portla.org)

Attachment List

----- Start Forwarded Message -----

Sent: Mon, 27 Oct 2025 14:30:58 -0700

From: "E. Franklin"

To: [caap@cleanairactionplan.org](mailto:caap@cleanairactionplan.org)

Subject: CAAP - assessment of new cargo handling equipment technology  
(invited  
public comment)

I feel that the zero-emissions goals can be reached by converting to manually operated zero-emissions equipment that would encourage the continued employment of the workforce that supports the local, state, and national economies.

Please be mindful of this as you make decisions that may alter more than just the air quality.

Thank you,

Earl Franklin

----- End Forwarded Message -----

854 B

msg-29288-2.html

Fwd: CAAP - assessment of new cargo handling equipment technology (invited public comment)  
From: CAAP <caap@cleanairactionplan.org>  
Time:  
2025-10-27 15:06 GMT-07:00  
To: [rose.szoke <rose.szoke@polb.com>](mailto:rose.szoke@polb.com) [tpisano <tpisano@portla.org>](mailto:tpisano@portla.org)

Attachment List

----- Start Forwarded Message -----

Sent: Mon, 27 Oct 2025 12:36:38 -0700

From: Arlecia Halley

To: [caap@cleanairactionplan.org](mailto:caap@cleanairactionplan.org)

Subject: CAAP - assessment of new cargo handling equipment technology  
(invited  
public comment)

To whom it may concern,

I feel that the zero-emissions goals can be reached by converting to manually operated zero-emissions equipment that would encourage the continued employment of the workforce that supports the local, state, and national economies.

Please be mindful of this as you make decisions that may alter more than just the air quality.

Thank you,  
Arlecia Powell-Halley

----- End Forwarded Message -----

902 B

msg-29288-4.html

Fwd: CAAP - assessment of new cargo handling equipment technology (invited public comment)  
From: CAAP <caap@cleanairactionplan.org>  
Time:  
2025-10-27 15:06 GMT-07:00  
To: [rose.szoke <rose.szoke@polb.com>](mailto:rose.szoke@polb.com) [tpisano <tpisano@portla.org>](mailto:tpisano@portla.org)

----- Start Forwarded Message -----

Sent: Mon, 27 Oct 2025 12:12:08 -0700  
From: Seth Halley  
To: [caap@cleanairactionplan.org](mailto:caap@cleanairactionplan.org)  
Subject: CAAP - assessment of new cargo handling equipment technology  
(invited public comment)

To whom it may concern,

I feel that the zero-emissions goals can be reached by converting to manually operated zero-emissions equipment that would encourage the continued employment of the workforce that supports the local, state, and national economies.

Please be mindful of this as you make decisions that may alter more than just the air quality.

Thank you,  
Seth M. Halley

----- End Forwarded Message -----

Fwd: : CAAP - assessment of new cargo handling equipment technology (invite public comment  
From: CAAP <[caap@cleanairactionplan.org](mailto:caap@cleanairactionplan.org)>  
Time:  
2025-11-03 15:25 GMT-08:00  
To: [rose.szoke](mailto:rose.szoke@polb.com) <[rose.szoke@polb.com](mailto:rose.szoke@polb.com)>

Attachment List

----- Start Forwarded Message -----

Sent: Mon, 27 Oct 2025 20:00:07 -0700  
From: Calvin McDaniel <[calmcdaniel3@sbcglobal.net](mailto:calmcdaniel3@sbcglobal.net)>  
To: [caap@cleanairactionplan.org](mailto:caap@cleanairactionplan.org)  
Subject: : CAAP - assessment of new cargo handling equipment technology  
(invite public comment

To whom it may concern,

>> I feel that the zero-emissions goals can be reached by converting to manually operated zero-emissions equipment that would encourage the continued employment of the workforce that supports the local, state, and national economies.

>>

>> Please be mindful of this as you make decisions that may alter more than just the air quality.

>> Thank you,  
Calvin McDaniel  
310-345-8159 cell

----- End Forwarded Message -----

1.49 KB

msg-20604-2.html

Fwd: CAAP - Assessment of New Cargo Handling Equipment Technology (Invited Public Comment)  
From: CAAP <caap@cleanairactionplan.org>  
Time:  
2025-11-03 15:26 GMT-08:00  
To: [rose.szoke <rose.szoke@polb.com>](mailto:rose.szoke@polb.com)

Attachment List

----- Start Forwarded Message -----

Sent: Mon, 27 Oct 2025 18:32:57 -0400

From: Alecea Halley

To: [caap@cleanairactionplan.org](mailto:caap@cleanairactionplan.org)

Subject: CAAP - Assessment of New Cargo Handling Equipment Technology  
(Invited Public Comment)

To Whom It May Concern:

I feel the zero-emissions goals can be reached by converting to manually operated zero-emissions equipment that would encourage the continued employment of the workforce that supports the local, state, and national economies.

Please be mindful of this as you make decisions that may alter more than just the air quality.

Thank you,

Alecea Halley

----- End Forwarded Message -----

924 B

msg-20636-2.html

Fwd: CAAP Site Contact Form [#151]

Comment from Wiggins on CHE Feasibility. Will move this into the Runbox CHE comment folder.

Amber

-----  
Forwarded message:

From: "Wufoo" <[no-reply@wufoo.com](mailto:no-reply@wufoo.com)>

Time: 2025-10-10 11:40 -07:00 PDT

Subject: CAAP Site Contact Form [#151]

To: "" <[caap@cleanairactionplan.org](mailto:caap@cleanairactionplan.org)>

Name \* Bruce Farber Email \* [brucef@wigginslift.com](mailto:brucef@wigginslift.com) [brucef@wigginslift.com] Your message \*

Comment on 5.5 ZE CHE Feasibility Comparison. For the last year, Wiggins Lift has had a 36,000 lb capacity Hydrogen Fuel Cell powered Forklift on the CORE program. In addition, Wiggins has a Patent Pending for a control algorithm for an extended work cycle version to provide 2 shifts with only one H2 fuel refill between shifts. I would suggest you advance the Hydrogen Large Capacity Forklift Commercial Availability on Figure 5-9 to 3 (Early Commercial) and Technical Viability on Figure 5-10 of the Hydrogen Large Capacity Forklift to 8 Actual System Demonstrated. Please note that the same Patent Pending approach could be applied to HFC Top Handler. Similarly, the Operational Feasibility of the Large Capacity HFC Forklift can be demonstrated when needed.

[[https://click.outbound.surveymonkey.com/q/5CdQOMujug4se\\_d8NpXyOg~/AAAAARA~/qJaTnzX\\_7RXFbGFbDokFtal4AEunVcNSkjLfTXVKX-IzOj6cQuyLU2EwoPwyxbmj\\_BWMI2iVPDgFusVko\\_-gwwTzYLyScLIAUwkO5aNJgYE~](https://click.outbound.surveymonkey.com/q/5CdQOMujug4se_d8NpXyOg~/AAAAARA~/qJaTnzX_7RXFbGFbDokFtal4AEunVcNSkjLfTXVKX-IzOj6cQuyLU2EwoPwyxbmj_BWMI2iVPDgFusVko_-gwwTzYLyScLIAUwkO5aNJgYE~)]