

# International Longshore and Warehouse Union



**ILWU Local 13 • 630 Centre Street • San Pedro, CA 90731 • (310) 830-1130**

April 21, 2022

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Dear Sirs,

We write on behalf of the International Longshore and Warehouse Union (ILWU) Local 13, and it's over 8,000 members, to provide feedback on the 2021 Draft Update to the Feasibility Assessment for Cargo-Handling Equipment. The ILWU provides labor to Marine Terminal Operators (MTOs) in the San Pedro Bay Ports (Ports) and has done so for the past 85 years. We thank you for the opportunity to comment here and look forward to our continued collaboration toward achieving Environmental and Economic Justice for our local communities. Communities which we constitute, as 54% of our members live within 5 miles of the Ports, while 73% live within 10 miles of the Ports.

Since its inception in 2006, the Clean Air Action Plan (CAAP) has made tremendous improvements to ambient air quality in the neighborhoods surrounding the Ports and beyond. As you are aware, in the 2020 CAAP Air Emissions Inventory, the Ports achieved reductions of 90% in Diesel Particulate Matter, 62% in Nitrogen Oxides, 97% in Sulfur Oxides and 10% in Greenhouse Gases, when compared to 2005 levels.

A key component of the CAAP is the implementation of emerging technologies in zero-emission (ZE) and near-zero emission (NZE) Cargo Handling Equipment (CHE). We support the Port's efforts regarding demonstration projects that test the feasibility of these new technologies. As we have already mentioned, it is our members who operate, maintain, repair and support these thousands of individual pieces of equipment. Therefore, it is appropriate that the ILWU play an official role in the evaluation process.

In our review of Section 7 - Assessment of Operational Feasibility, we note several practices that occur with regularity while assessing a given Demonstration Project. More specifically, in Section 7.2, the draft update states that the following areas are explored: MTO Interviews and Data Collections, Typical Fuel Consumption and Equipment Life, Daily and Shift Endurance Requirements, as well as Parking and Fueling Logistics. Furthermore, in Section 7.3, the following is assessed: Basic Performance and Endurance, Speed and Frequency of Fueling / Charging, Operator Comfort, Safety and Fueling Procedures, Availability of Replacement Parts and Support for Maintenance / Training.

Clearly, the information being ascertained above is of great importance to the Original Equipment Manufacturers (OEMs) developing the new technologies, as well as the MTOs who will ultimately purchase the equipment, and the Ports who are invested in advancing these same technologies for a variety of reasons. Similarly, as the operators of the equipment being considered, the ILWU has a vested interest in the demonstration project process and would like to be involved in the coordination of these projects in a more official capacity.

Our vast experience in utilizing CHE makes us ideal partners to assist in the feasibility assessment process. While our MTO partners, OEMs, and even the Ports have valuable input to share, we can certainly contribute additional insights that would be unique to our members' experiences.

Therefore, we request that the ILWU be more formally involved concerning demonstration project evaluations on marine terminals, at the Ports. More specifically, we hope to be consulted in advance of interviews and/or surveys, site tours, equipment evaluations, etc. We look forward to the opportunity to discuss the matter further with representatives of both Ports, Tetra Tech and/or Gladstein, Neandross & Associates for the betterment of the industry.

Sincerely,



Ramon Ponce de Leon Jr.  
*President*  
ILWU Local 13



April 29, 2022

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CC: Mayor of Los Angeles; Mayor of Long Beach; Boards of Harbor Commissioners

**RE: Comments on 2021 Draft Cargo Handling Equipment Feasibility Assessment**

Dear Mr. Cannon and Ms. Tomley,

Thank you for the opportunity to comment on the 2021 Draft Cargo Handling Equipment Feasibility Assessment and for extending the public comment deadline to April 29. We submit these comments on behalf of the undersigned organizations who 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 emit harmful nitrogen oxides (NOx) and diesel pollution that worsen air quality and public health harms for port-adjacent residents, and contribute to the South Coast Air Basin's nonattainment of federal air quality standards. These pollutants contribute to respiratory and cardiovascular diseases, asthma attacks, cancer, and premature death. In 2006, the California Air Resources Board (CARB) identified cargo handling equipment as a significant contributor to health risks associated with port operations, in part because this equipment operates full time on port property,

rather than passing through like ships, trains, and trucks.<sup>1</sup> While progress has been made since 2006, the vast majority of cargo handling equipment at the ports still runs on diesel fuel and continues to emit significant levels of pollution, with emissions rising recently due to the surge in cargo volumes.<sup>2</sup>

To clean up this source of pollution, the Mayors of Los Angeles and Long Beach and the Boards of Harbor Commissioners committed in 2017 to transitioning all cargo handling equipment at the San Pedro Bay Ports to zero emissions by 2030. Governor Newsom also issued an executive order that would transition the state to 100% zero emission cargo handling equipment by 2035,<sup>3</sup> and CARB directed its staff to develop a cargo handling equipment regulation that would achieve zero emissions at the San Pedro Bay Ports by 2030.<sup>4</sup> The 2021 Draft Feasibility Assessment for Cargo Handling Equipment (Draft Assessment) is a key measure to set the path forward to achieve these goals.

With the 2030 deadline less than 8 years away, there is still much work to be done. As described in the first section of this letter, the Ports' progress has lagged over the last 5 years. The Ports have barely increased their inventory of zero emission equipment, and have not significantly improved zero emission infrastructure availability since the 2018 Cargo Handling Equipment Feasibility Assessment was released. The Ports have taken some steps in the right direction by investing in some promising zero emission demonstration projects, and the Port of Long Beach has begun zero emission infrastructure planning. However, the progress to date has not been sufficient. As discussed below, if progress continues at the current pace, only 21% of the Ports' cargo handling equipment will be zero emissions by 2030—missing the goal by nearly 80%. The Ports must take near-term actions and allocate significant investments to get back on track to meet the 2030 goal.

To accelerate progress to the 2030 zero emission goal, the second section of this letter recommends that the Ports put in place the following policies:

- Establish Interim Milestones that Chart a Path Towards 100% Zero Emission Cargo Handling Equipment by 2030
- Require Zero Emission Cargo Handling Equipment in New/Updated Leases
- Increase Budget Allocations for Zero Emission Cargo Handling Equipment & Infrastructure
- Assess Zero Emission Infrastructure Needs & Implement Plans to Install Infrastructure
- Zero Emissions Does Not Equate to Automation, and Transitioning to Zero Emissions Should be Paired with Good Jobs for Workers

The third section of this letter recommends that the Draft Assessment be significantly revised to serve its purpose under the CAAP and provide a roadmap for the measures needed to achieve zero

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<sup>1</sup> Cal. Air Res. Bd., *Diesel Particulate Matter Exposure Assessment Study for the Ports of Los Angeles and Long Beach* (Apr. 2006), at p. 3, available at

<https://ww2.arb.ca.gov/sites/default/files/barcu/regact/marine2005/portstudy0406.pdf>.

<sup>2</sup> Cal. Air Res. Bd., *Emissions Impact of Freight Movement Increases and Congestion near Ports of Los Angeles and Long Beach: Jan. 2022* (Jan. 27, 2022 Update), available at [https://ww2.arb.ca.gov/sites/default/files/2022-01/SPBP\\_Freight\\_Congestion\\_Emissions\\_Jan2022.pdf](https://ww2.arb.ca.gov/sites/default/files/2022-01/SPBP_Freight_Congestion_Emissions_Jan2022.pdf).

<sup>3</sup> Cal. Gov. Exec. Order N-79-20, available at <https://www.gov.ca.gov/wp-content/uploads/2020/09/9.23.20-EO-N-79-20-Climate.pdf>.

<sup>4</sup> Cal. Air Res. Bd., 2016 State Strategy for the State Implementation Plan, Addendum to Resolution No. 17-7, at p. 2, available at <https://ww3.arb.ca.gov/planning/sip/2016sip/res17-7.pdf>.

emissions. We recommend the following revisions to enhance the accuracy and usefulness of the Draft Assessment:

- Assess Progress & Provide Recommended Action Steps to Achieve Zero Emissions by 2030
- Clarify How Feasibility Determinations Affect Cargo Handling Equipment Purchases
- Assess Infrastructure on a Terminal-by-Terminal Basis
- Account for Incentive Funding
- Strengthen the Public Engagement Process
- Methane Gas Technologies Should No Longer Be Considered

Finally, ongoing demonstration projects and several studies released in 2021 and 2022 provide new evidence about the availability, technical and operational feasibility, and cost effectiveness of zero emission cargo handling equipment. The last section of this letter discusses this new information, and requests updates to the Draft Assessment to reflect the results.

#### **I. The Ports Have Made Minimal Progress Towards the 2030 Goal.**

Given the current pace of progress, the Ports are not on track to achieve 100% zero emission cargo handling equipment by 2030. The Draft Assessment shows that little action has been taken by the Ports to install electrification infrastructure or to procure new zero emission cargo handling equipment in the three years since the 2018 Feasibility Assessment.

In certain categories of cargo handling equipment, the Ports have in fact gone backwards. The Draft Assessment finds that some categories of zero emission equipment are technologically feasible and commercially available, such as yard tractors and RTG cranes. However, the Ports have not made meaningful progress in deploying this equipment. While we understand that certain terminals are retrofitting existing RTG cranes to grid-electric, the Port of Los Angeles currently does not have any electric RTG cranes in operation. For RTG cranes, the number of diesel ICE RTG cranes has in fact increased since the 2019 Feasibility Assessment.<sup>5</sup>

According to the Port of Los Angeles' 2020 Emissions Inventory, the Port is even further from reaching its goal of 100% zero emission equipment compared to 2017, as the percentage of diesel equipment has actually increased. In the 2017 Emissions Inventory, approximately 66% of equipment at the Port of Los Angeles was powered by diesel engines.<sup>6</sup> In 2020, diesel equipment represented approximately 72% of all equipment at the Port.<sup>7</sup> Moreover, of the 27 completed yard tractor demonstrations at the Port of Los Angeles, 22 of these projects were for natural gas equipment.<sup>8</sup>

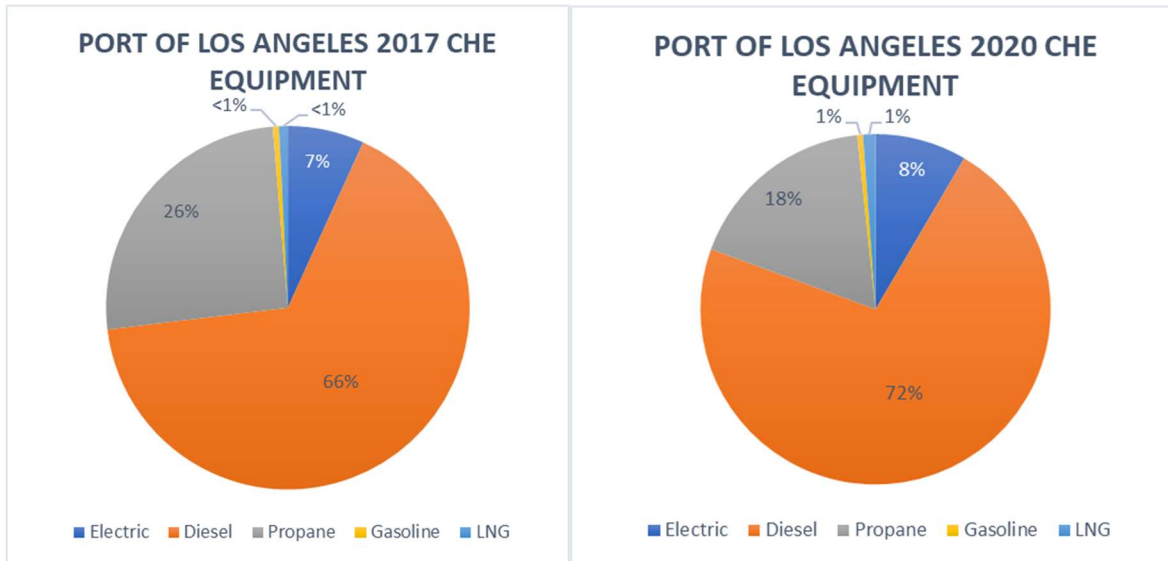
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<sup>5</sup> San Pedro Bay Ports, Clean Air Action Plan, 2021 Update: Feasibility Assessment for Cargo-Handling Equipment (Jan. 2022), DRAFT, at p. 12 [hereinafter "2021 Draft Assessment"].

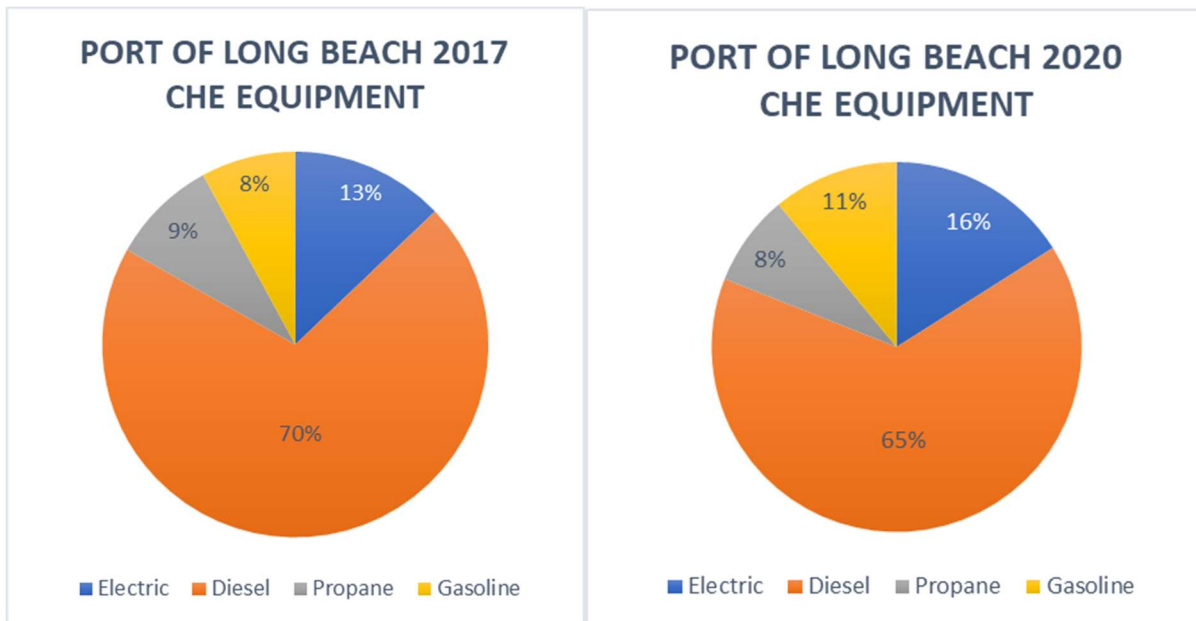
<sup>6</sup> Port of Los Angeles, Inventory of Air Emissions – 2017 (Jul. 2018), Table 5.3.

<sup>7</sup> Port of Los Angeles, Inventory of Air Emissions – 2020 (Oct. 2021), Table 5.3.

<sup>8</sup> 2021 Draft Assessment at p. 31.



Similarly, there has not been a meaningful change in the amount of zero emission equipment in operation at the Port of Long Beach. The slow rate of deployment has done little to reduce harmful emissions and alleviate the negative health impacts from port operations. From 2017 to 2020, the Port of Long Beach did not see any reductions in PM10 or PM2.5 emissions from cargo handling equipment.<sup>9</sup> In fact, there was a 4% increase in contributions to PM10 and PM2.5 pollution from cargo handling equipment at the Port of Long Beach, and a 2% increase for diesel particulate matter emissions, as compared to 2019.<sup>10</sup>



<sup>9</sup> Port of Long Beach, Air Emissions Inventory – 2017 (Jul. 2018), Table ES.1; Port of Long Beach, Air Emissions Inventory – 2020 (Oct. 2021), Table ES.3 [hereinafter POLB 2020 Emissions Inventory].

<sup>10</sup> POLB 2020 Emissions Inventory, Table ES.3.

Since 2017, both Ports have also failed to complete or even begin large-scale deployments or demonstration projects of zero emission cargo handling equipment, even for commercially available ZE equipment such as yard tractors or RTG cranes. The Draft Assessment also highlights significant infrastructure gaps. While the Draft Assessment finds that zero emission yard tractors are commercially available and technically feasible, infrastructure availability is rated as little to no achievement.<sup>11</sup> The Ports must take immediate action to build out zero emission infrastructure, or they will continue to fail to deploy even the zero emission technologies that are currently available.

The record-breaking levels of cargo throughput in the past year and a half make the Ports' lack of progress all the more troubling. Congestion at the Ports in the second half of 2021 resulted in an additional 0.4 tons per day of NOx emissions and 0.059 tons per day of PM emissions from CHE equipment alone.<sup>12</sup> The increase in pollution has erased the minimal progress the Ports have made in reducing emissions from cargo handling equipment, and highlights the need for the Ports to accelerate their progress.

The Ports must take this opportunity to draft a Feasibility Assessment that sets out a clear path towards achieving the 2030 goal, and meets the moment of our port pollution crisis.

## **II. Policies Needed to Achieve 2030 CAAP Goal**

### **A. The Ports Must Establish Interim Milestones to Reach 100% ZE CHE by 2030.**

We reiterate our previous recommendation that the Ports establish interim milestones to ensure that zero emission cargo handling equipment is phased in by 2030. The Port of San Diego, which has also committed to 100% zero emission cargo handling equipment by 2030, has set near-term goals of reducing emissions from cargo handling equipment by approximately 90% for NOx, 80% for DPM, and 50% for CO<sub>2</sub>e by January 1, 2025.<sup>13</sup> The Port of San Diego aims to achieve this by replacing the 20 highest emitting pieces of cargo handling equipment with zero emission alternatives,<sup>14</sup> and set a target to require at least three pieces of existing non-electric equipment to be replaced with electric equipment by January 1, 2020.<sup>15</sup> The Port of San Diego has also committed to replace at least 20 non-

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<sup>11</sup> 2021 Draft Assessment at p. 4.

<sup>12</sup> Cal. Air Res. Bd., *Emissions Impact of Freight Movement Increases and Congestion near Ports of Los Angeles and Long Beach: Jan. 2022* (Jan. 27, 2022 Update), available at [https://ww2.arb.ca.gov/sites/default/files/2022-01/SPBP\\_Freight\\_Congestion\\_Emissions\\_Jan2022.pdf](https://ww2.arb.ca.gov/sites/default/files/2022-01/SPBP_Freight_Congestion_Emissions_Jan2022.pdf).

<sup>13</sup> Port of San Diego Maritime Clean Air Strategy, C-7, <https://pantheonstorage.blob.core.windows.net/environment/20211214-Final-MCAS.pdf>.

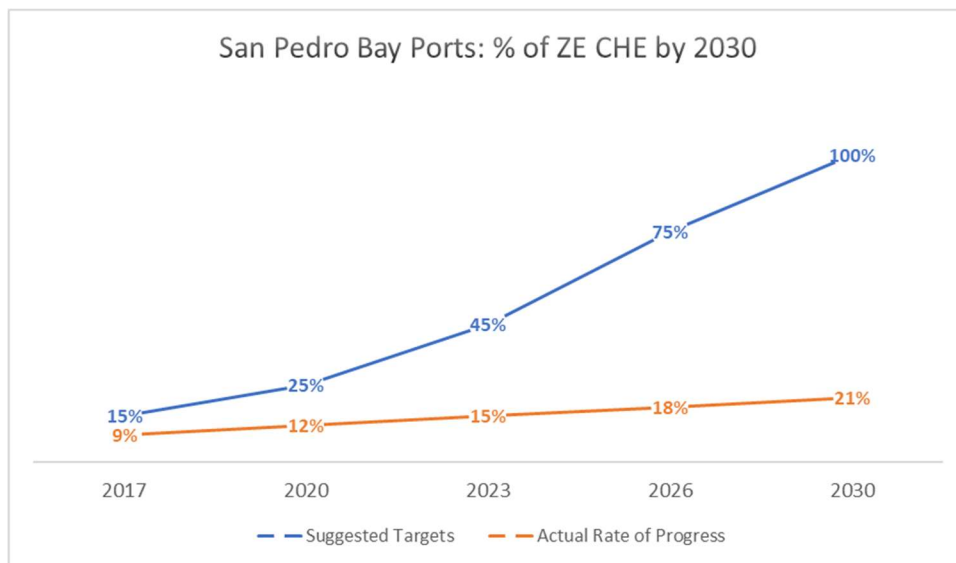
<sup>14</sup> *Id.* at S-12.

<sup>15</sup> Unified Port of San Diego, Final Environmental Impact Report: Tenth Avenue Marine Terminal Redevelopment Plan and Demolition and Initial Rail Component - Part 2 of 4 (Dec. 2016), at 1-9, available at <https://www.portofsandiego.org/sites/default/files/media/resources/2018/03/pgp-tamt-feir-part-2-final-eir-2016-12-1.pdf> [hereinafter Port of San Diego TAMT FEIR Part 2 of 4].

electric yard trucks with electric yard trucks by January 1, 2025,<sup>16</sup> and at least three existing non-electric reach stackers and 10 non-electric forklifts with electric equipment by January 1, 2030.<sup>17</sup>

The San Pedro Bay Ports must identify similar interim goals and tangible, actionable measures that will ensure deployment of ZE CHE in the near- and medium-term. Setting near-term targets will send an important market signal to industry that there is growing demand for ZE CHE. Developing this roadmap would also provide the Ports an opportunity to assess the infrastructure needs and establish benchmarks for the buildout of zero emission infrastructure.

We recommend that the Ports include an interim milestone of achieving 25% zero emission cargo handling equipment by 2023, and additional benchmarks that ensure the 2030 goal is within reach. As seen in the chart below, the Ports are likely to fall well short of this goal at the current pace.



The recommended targets above provide a clear roadmap towards 100% ZE CHE and allow the public to monitor and track the Ports' progress towards the 2030 goal. By setting these targets, the Ports can better prioritize near-term actions, such as procurement and deployment of commercially available zero emission cargo handling equipment (yard tractors and RTG cranes), demonstration projects for zero emission cargo handling equipment that has not yet been tested at the Ports, and installation of zero emission infrastructure.

### **B. Require Zero Emission Cargo Handling Equipment in New/Updated Leases.**

To speed the transition away from fossil fuel-powered cargo handling equipment, the Ports should include terms in any new or updated lease agreements that require tenants to procure zero emission cargo handling equipment or replace existing equipment with zero-emission technologies.

<sup>16</sup> Unified Port of San Diego, Final Environmental Impact Report: Tenth Avenue Marine Terminal Redevelopment Plan and Demolition and Initial Rail Component - Part 1 of 4 (Dec. 2016), at 2-25—2-26, available at <https://www.portofsandiego.org/sites/default/files/media/resources/2018/03/pgp-tamt-feir-part-1-final-eir-2016-12-1.pdf>.

<sup>17</sup> Port of San Diego TAMT FEIR Part 2 of 4, at 1-9.



Importantly, considering the lifespan of terminal equipment, the Ports can ill afford to have any new equipment purchases not be zero-emissions.

The Draft Assessment finds that zero emission yard tractors and RTG cranes are commercially available and technically feasible, and that with incentive funding they cost less than diesel equivalent technologies.<sup>18</sup> The Ports should immediately implement a requirement that all new purchases of RTG cranes and yard tractors be zero emissions, and work with terminal operators to put infrastructure in place now to support this.

For zero emission forklifts and top handlers, the Ports should require terminal operators to undertake demonstration projects. The Draft Assessment identifies that high-capacity forklifts are offered by several manufacturers and being operated at the Port of Stockton, but have not yet been put to the test at large container ports. As such, the Ports should prioritize these forklifts for near-term large-scale demonstration projects.

As the Draft Assessment shows, the Ports are prioritizing methane gas-fueled equipment demonstration projects and deployment in categories of equipment that can be transitioned to zero emissions now. This wrongheaded approach will continue to derail the Ports' progress towards 100% zero emissions by 2030. In March 2022, both Boards of Harbor Commissioners voted to allocate 100% of future clean truck rate funding to zero emission trucks.<sup>19</sup> This vote marked a commitment to investing in the Ports' zero emission goals for trucks, rejecting industry efforts to take a detour to methane gas. Likewise, the Ports should make clear that they only support investments in zero emission cargo handling equipment in new and updated leases, and recommit to their zero emissions goal.

### **C. Increase Budget Allocations for Zero Emission Cargo Handling Equipment & Infrastructure.**

The Ports must also begin allocating more funds from their annual budgets towards zero emission cargo handling equipment. The Draft Assessment demonstrates that significant investment – far greater than what the Ports have provided to date – is needed to accelerate the transition towards zero emissions. While the Ports have funded certain pilot and demonstration projects, both Ports have failed to begin large-scale zero emission cargo handling equipment deployment or make progress towards installing the supporting infrastructure. The Ports must devote a substantial portion of their annual budgets towards zero emission equipment procurement and infrastructure. To accelerate deployment, the Ports can also provide incentive funds from their annual budgets to assist tenants in acquiring or purchasing zero emission equipment.

### **D. The Ports Must Conduct & Implement Zero Emission Infrastructure Studies.**

Supporting infrastructure for zero emission equipment is critical to reaching the 2030 goal, but the Ports have done little in the last three years to build out the necessary infrastructure. As a first step, the Ports must conduct studies assessing the infrastructure needs and timelines for installing such

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<sup>18</sup> 2021 Draft Assessment at pp. 87, 88.

<sup>19</sup> “Long Beach, Los Angeles Harbor Commissions Approve Clean Truck Fund Spending Plans” (Mar. 24, 2022), <https://cleanairactionplan.org/2022/03/24/long-beach-los-angeles-harbor-commissions-approve-clean-truck-fund-spending-plans/>.

infrastructure. The Port of Long Beach’s public truck charging and fueling assessment<sup>20</sup> provides a good model that could be replicated for zero emission cargo handling equipment infrastructure studies. The Ports should also build on the Port of Long Beach’s EV Blueprint, which identifies a number of ZE infrastructure needs and outlines the steps necessary to develop the infrastructure to support accelerating the transition to zero emissions. The Port of Long Beach is now beginning to undertake terminal-by-terminal master plans to assess infrastructure needs. The Port of Los Angeles should do the same. These plans should be expedited to ensure that every terminal is assessed as soon as possible to put in place a plan to transition to zero emissions.

Both Ports must assess the infrastructure necessary to support 100% zero emission equipment, and identify the current gaps and barriers to installing this infrastructure. These infrastructure studies should focus on the following:

- Assessing availability of infrastructure
- Projecting infrastructure need
- Identifying opportunities & potential challenges

According to the EV Blueprint, “[w]hen surveyed, most Port Community stakeholders ranked the lack of charging infrastructure as a primary concern, outweighing even the availability of electric equipment.”<sup>21</sup> The Ports need to send a signal to industry that infrastructure will be available to support installation of ZE equipment in advance of 2030. These assessments will provide much-needed information that will guide the Ports and industry in its planning towards the 2030 goal, including in establishing specific timelines for the buildout of infrastructure.

#### **E. Transitioning to Zero Emissions Should be Paired with Good Jobs for Workers.**

The transition to zero emission equipment cannot be conflated with automating technologies. We urge the Ports to invest in human-operated zero-emission equipment and prioritize good jobs for workers in moving towards the 2030 goal. The Ports should also build on the Port of Long Beach’s workforce assessment, which evaluates potential ZE technology impacts on port worker jobs and provides recommended workforce development programs.<sup>22</sup>

### **III. The Draft Assessment Must be Revised to Align with the CAAP.**

The Draft Assessment is a critical component of the 2017 CAAP and is intended to be the main driver in developing the Ports’ roadmap to achieve its 2030 zero emission cargo handling equipment goal. However, the Draft Assessment fails to assess numerous factors that are laid out in the CAAP. The truncated scope of this document effectively limits its usefulness, and will continue to stymie the Ports’ ability to progress forward.

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<sup>20</sup> Port of Long Beach, *Fueling the Future Fleet: Assessment of Public Truck Charging and Fueling Near the Port of Long Beach* (Sep. 2021), available at <https://polb.com/environment/our-zero-emissions-future/#program-details>.

<sup>21</sup> Port of Long Beach, *Charging Ahead: The Port Community Electric Vehicle Blueprint* (May 2019), at p. 31, available at <https://polb.com/environment/our-zero-emissions-future/#program-details>.

<sup>22</sup> Port of Long Beach, Long Beach City College, *Zero-Emission Port Equipment Workforce Assessment*, available at <https://polb.com/environment/our-zero-emissions-future/#program-details>.

As discussed below, the Draft Assessment should be updated to align with the purpose and scope of feasibility assessments as intended by the CAAP and accompanying Feasibility Assessment Framework.

#### **A. Assess Progress & Provide Recommended Action Steps to Achieve Zero Emissions by 2030.**

The CAAP Feasibility Assessment Framework clearly lays out the role that the feasibility assessments are to play under the CAAP – to evaluate the Ports’ progress to zero emissions and lay the groundwork for policy recommendations to reach the 2030 goal.<sup>23</sup> Several years ago, members of our coalition submitted comments on the 2018 Draft Feasibility Assessment pointing out that the Ports’ approach to the assessment failed to achieve these purposes. Unfortunately, the 2021 Draft Assessment suffers from the same flaws. According to the CAAP Feasibility Assessment Framework:

**Feasibility assessments are intended to consider whether the Ports are on track to meet CAAP goals.** These assessments will provide critical information on where challenges remain and where focused attention and support is needed. In addition, this information will also inform whether these timelines may need to be adjusted. As a result of these assessments, the Ports could:

- **Determine what actions need to be taken to reach the deadlines** specified for each strategy, for example, additional technology demonstrations, new funding programs, additional infrastructure installments
- **Issue advisories or further guidance to the industry** in order to provide additional flexibility as necessary to meet the CAAP deadlines.<sup>24</sup>

The Draft Assessment lacks a detailed evaluation of how the Ports have progressed since 2018, and where barriers lie. For example, electric RTG cranes are a mature technology that has been available for decades, and zero emission yard tractors have been available for several years, yet the Ports are lagging in deploying these technologies. The Draft Assessment should be geared to analyze and address the obstacles to putting these technologies in place, and to provide recommendations that will accelerate their deployment in the future.

The assessment should be significantly revised to outline the actions that will be needed to achieve the 2030 CAAP goal. There are a number of actions that the Ports can take now to begin this progress, as outlined in Section II above.

#### **B. Clarify How Feasibility Determinations Affect Cargo Handling Equipment Purchases.**

Under the 2017 CAAP, once a zero emission technology is deemed “feasible,” terminal operators are obligated to purchase those technologies.<sup>25</sup> The Draft Assessment fails to clarify how its findings will inform future purchasing decisions. Instead, the feasibility criteria and roll-up charts suggest that no

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<sup>23</sup> San Pedro Bay Ports, CAAP Framework for Developing Feasibility Assessments (Nov. 2017), at pp. 2, 4, 6, 7, available at <http://www.cleanairactionplan.org/documents/feasibility-assessment-framework.pdf> [hereinafter “CAAP Feasibility Assessment Framework”].

<sup>24</sup> *Id.* at p. 7 (emphasis added).

<sup>25</sup> San Pedro Bay Ports, Clean Air Action Plan Update (Nov. 2017), at p. 52, available at <https://cleanairactionplan.org/2017-clean-air-action-plan-update/> [hereinafter “2017 CAAP”] (“Beginning in 2020, marine terminal operators would be required to ensure that new equipment purchases are zero emissions, if feasible . . .”).

categories of equipment are fully feasible, nor will they be until they are fully feasible for every port application—a bar that is likely impossible to meet.

The Draft Assessment should clarify that once commercial availability and technical feasibility are met, zero emission equipment are presumed feasible for future purchasing decisions—which would require all future procurement of RTG cranes and yard tractors to be zero emissions beginning now. Factors such as infrastructure availability and economic workability are within the Ports’ ability to influence and should be addressed jointly by the ports and terminal operators, rather than as screening parameters for feasibility. Also, the Draft Assessment misleadingly argues that certain zero emission cargo handling equipment are not commercially available because they have not been CARB-certified<sup>26</sup>—however, this is not a valid argument because CARB does not have a certification process in place for some zero emission cargo handling equipment. The Ports should work with CARB to develop such a certification process.

Moreover, under the CAAP, terminal operators are required to submit procurement plans beginning in January 2019.<sup>27</sup> To date, the public has not been updated on the status or contents of these plans. The procurement plans should be included as part of the Draft Assessment to assess progress, provide transparency, and aid in planning for achieving the 2030 goal.

#### **C. Assess Infrastructure on a Terminal-by-Terminal Basis.**

The Draft Assessment should include a detailed assessment of zero emission infrastructure needs. Indeed, the Feasibility Assessment Framework states that feasibility assessments will provide a terminal-by-terminal evaluation of the status of available infrastructure “and projections of infrastructure needs to meet the CAAP deadlines.”<sup>28</sup> The Draft Assessment currently lacks this evaluation. As discussed above, infrastructure planning is critical to setting the Ports up to reach the CAAP goals. An evaluation of port-wide infrastructure needs, terminal-specific infrastructure plans, and action steps needed to achieve these goals should be included within the Draft Assessment.

#### **D. Account for Incentive Funding.**

The CAAP Feasibility Assessment Framework specifically provides that assessments will consider “anticipated availability of funding assistance (e.g. grants, loans, etc.)”<sup>29</sup> However, the Draft Assessment disregards incentive funding in its economic workability analysis. This approach skews the assessment to disadvantage zero emission technologies, artificially inflating their price.

In reality, a significant volume of incentive funding is available to offset the initial costs of zero emission technologies. Last year, California approved a historic budget including more than \$3.5 billion to support zero emission charging infrastructure and vehicles.<sup>30</sup> Several programs exist to provide funding for zero emission cargo handling equipment. For example, the Clean Off-Road Equipment

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<sup>26</sup> 2021 Draft Assessment at pp. 17-18, 22.

<sup>27</sup> 2017 CAAP at p. 52 (“Starting January 1, 2019, terminals must submit to the Ports an equipment inventory and 10-year procurement schedule for new cargo handling equipment. Procurement plans will be updated annually”).

<sup>28</sup> CAAP Feasibility Assessment Framework at p. 6.

<sup>29</sup> *Id.* at p. 2; *see also id.* at p. 7 (feasibility assessments will consider “Incentive funding provided to date and available in the future, particularly as these incentives are necessary to promote cost-effective technologies”).

<sup>30</sup> Miles Muller, NRDC, “CA Budget Approves Historic Clean Transportation Investments,” (July 13, 2021), <https://www.nrdc.org/experts/miles-muller/ca-budget-approves-historic-clean-transportation-investments>.

Voucher Incentive Project (CORE) program, launched in 2020, provided \$100 million for freight equipment in its first year, and \$195 million in FY 2021-22. Currently eligible technologies include zero emission terminal trucks and tractors<sup>31</sup> and heavy duty forklifts.<sup>32</sup> The Draft Assessment also should take into account funding opportunities at the federal level, such as the Diesel Emissions Reduction Act (DERA) Funding and the Port Infrastructure Development Program (PIDP). PIDP, for example, is providing a total of \$2,250,000,000 in grants to ports for modernization projects including the purchase of cargo handling equipment and related infrastructure.<sup>33</sup>

The Draft Assessment’s “snapshot in time” should reflect funding that is available today and slated for availability in the next 3 years. Given the key role that incentive funding is playing in advancing technology in this sector, it is simply inaccurate to ignore the reality that funding can significantly lower the costs of zero emissions technologies.

#### **E. Strengthen the Public Engagement Process.**

The CAAP Feasibility Assessment Framework identifies public involvement as a key component of the technology assessments.<sup>34</sup> However, to date, the feasibility assessments have failed to adequately engage the public.

First, the Ports should respond to comments submitted by the public on the Draft Assessment. Our coalition did not receive a response to the comments we submitted in 2019. Second, the 2021 Draft Assessment indicates that community stakeholder input would likely be considered “unacceptable” data for consideration in the analysis – signaling that public comments will not be taken into account.<sup>35</sup> This is contrary to the Feasibility Assessment Framework and must be revised. Third, the Ports should convene a community advisory group to provide input into the scope of the feasibility assessments and in developing policies that will advance the 2030 goal. Fourth, the Ports should conduct a public process to develop a roadmap and action plan to achieve the 2030 goal.

#### **F. Methane Gas Technologies Should No Longer Be Considered.**

The Draft Assessment includes a significant focus on methane gas technologies, despite the fact that zero emission technologies are available, and the 2030 deadline is less than 8 years away. This sends a confusing signal to industry. The Draft Assessment should remedy this by removing near zero cargo handling equipment from the Draft Assessment, or otherwise signaling that these technologies are no longer a viable compliance option under the CAAP.

Under the CAAP Feasibility Assessment Framework, near-zero emission technologies are to be evaluated only where “near-term emission benefits can be achieved . . . during the period of transition to the ultimate goal of zero emissions.”<sup>36</sup> This period has lapsed. Given the useful life of cargo handling

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<sup>31</sup> California CORE, “Terminal Tractors,” <https://californiacore.org/equipment-category/terminal-tractors/> (last visited Apr. 28, 2022).

<sup>32</sup> California CORE, “Forklifts,” <https://californiacore.org/equipment-category/forklifts/> (last visited Apr. 28, 2022).

<sup>33</sup> Building a Better America: Guidebook to Bipartisan Infrastructure Law, [https://www.whitehouse.gov/wp-content/uploads/2022/01/BUILDING-A-BETTER-AMERICA\\_FINAL.pdf#page=100](https://www.whitehouse.gov/wp-content/uploads/2022/01/BUILDING-A-BETTER-AMERICA_FINAL.pdf#page=100).

<sup>34</sup> CAAP Feasibility Assessment Framework at pp. 4, 7.

<sup>35</sup> 2021 Draft Assessment at p. 102.

<sup>36</sup> CAAP Feasibility Assessment Framework at p. 2.

equipment,<sup>37</sup> and the Draft Assessment’s findings that zero emissions are equal to or in some cases more advanced than near-zero equipment, it no longer makes sense to pour limited funding into a next-best option. Implementing natural gas fueled technologies today would only stymie progress toward the 2030 goal, and sink the Ports into stranded assets. Moreover, the South Coast Air Quality Management District has noted that air planning in the region must shift from a combustion-centric one to a zero-emissions centered approach based on a recognition that there is no pathway to meet the 2015 ozone standard with a combustion-centric strategy.<sup>38</sup> Thus, this continued focus on combustion technologies is inconsistent with air quality needs of the region.

The Draft Assessment’s discussion of methane gas technologies also suffers from several major flaws. First, the Draft Assessment’s definition of “near-zero” is unsupported and contrary to existing law.<sup>39</sup> It should be updated to align with CARB’s definition in the Advanced Clean Trucks rule, which specifically excludes methane gas technologies, and defines near-zero technologies to include only hybrid electric vehicles.<sup>40</sup> As such, methane gas technologies should not be considered under the Draft Assessment.

Second, the Ports’ cost assumptions for methane gas equipment do not take into account the costs of stranded assets. Investments in methane fueled equipment and infrastructure would lock in long-term fossil fuel use, and involve substantial costs of gas storage, pipeline, processing, and production infrastructure. Moreover, the equipment would quickly become obsolete and need to be replaced with zero emissions before the end of its useful life in order to achieve the 2030 goal.

Third, the Draft Assessment assumes that methane fueled equipment will not degrade over time,<sup>41</sup> ignoring a recent CARB study that demonstrates that methane gas truck engines degrade rapidly in real-world operations.<sup>42</sup> This study showed that on average, methane gas vehicles emitted pollution at twice to three times their certification rate in the real world.<sup>43</sup> The study also reported that as methane gas vehicles age, they pollute more than their diesel counterparts.<sup>44</sup>

Fourth, at every stage in its lifecycle—from extraction to production, transport, and combustion—natural gas imposes harms to communities and the climate.<sup>45</sup> New information reveals

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<sup>37</sup> See 2017 CAAP at p. 54 (average lifespan for cargo handling equipment is 8 years for yard hostlers, 15 years for RTG cranes and top handlers).

<sup>38</sup> The South Coast AQMD staff have made this statement for the 2015 ozone standard, but commenters believe there is no combustion-centric pathway to meeting the 1997 and 2008 ozone standards, in addition to state ozone standards.

<sup>39</sup> 2021 Draft Assessment at p. 7.

<sup>40</sup> Cal. Air Res. Bd., Final Regulation Order, Advanced Clean Trucks Regulation, Sec. 1963(c)(16), *available at* <https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2019/act2019/fro2.pdf>.

<sup>41</sup> 2021 Draft Assessment at p. 60.

<sup>42</sup> Cal. Air Res. Bd., *In-Use Emission Performance of Heavy Duty Natural Gas Vehicles Lessons Learned from 200 Vehicle Project* (July 2021), *available at* [https://ww2.arb.ca.gov/sites/default/files/2021-04/Natural\\_Gas\\_HD\\_Engines\\_Fact\\_Sheet.pdf](https://ww2.arb.ca.gov/sites/default/files/2021-04/Natural_Gas_HD_Engines_Fact_Sheet.pdf).

<sup>43</sup> *Id.* at p. 1.

<sup>44</sup> *Id.* at p. 2.

<sup>45</sup> Univ. S. Cal., Env. Health Ctrs., Infographic: The Impacts of Natural Gas on Public Health and the Environment, <https://envhealthcenters.usc.edu/infographics/infographic-natural-gas>; see also Jill Johnston & Lara Cushing, *Chemical Exposures, Health, and Environmental Justice in Communities Living on the Fenceline of Industry*, Current

that natural gas infrastructure leaks at a higher rate than previously understood, contributing to large releases of methane.<sup>46</sup> Methane is a potent greenhouse gas “tens of times more powerful than carbon dioxide at warming the atmosphere.”<sup>47</sup> In the Los Angeles area specifically, events in recent years have revealed shockingly high rates of leakage from natural gas compressors and storage facilities.<sup>48</sup> The Draft Assessment should be updated to reflect these harms.

Fifth, the Draft Assessment fails to accurately portray the potential role for “renewable natural gas” in fueling equipment. There are no mechanisms in place that would ensure the Ports’ methane supply would come from “renewable natural gas.” Moreover, the Draft Assessment ignores that numerous studies have demonstrated that there is a short supply of biogas.<sup>49</sup> Increasing demand for biogas could also incentivize the expansion of factory farms that pollute air and water quality in the surrounding environmental justice communities.

#### **IV. The Draft Assessment Should Be Updated with the Most Current Information about Zero Emission Technologies.**

The Draft Assessment should be updated to reflect the current deployments and most recent results from demonstration projects for zero emission cargo handling equipment.

First, the Draft Assessment ranks zero emission yard tractors, top handlers, and large-capacity forklifts at a lower technology readiness level (TRL) than CARB determined in its 2021 assessment.<sup>50</sup> The Draft Assessment does not explain how CARB’s TRL levels are incorrect, or provide a compelling rationale for the discrepancy.<sup>51</sup> The Draft Assessment should be updated to at least match CARB’s feasibility determinations.

Second, the Draft Assessment should be updated to reflect a new study published in March 2022 that includes new information about the Port of Long Beach’s zero emission top handler and yard

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Env’t Health Reports 48, 49-50 (2020), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7035204/>; see generally Philip J. Landrigan, M.D. et al., *The False Promise of Natural Gas*, New Eng. J. Med. 104 (2020), <https://www.nejm.org/doi/full/10.1056/NEJMp1913663>.

<sup>46</sup> Mason Inman, *The Gas Index* 4, 7, 9-12 (2020), <https://thegasindex.org/wp-content/uploads/2020/12/Gas-Index-report-2020-final.pdf?hsCtaTracking=17ccb21f-c72b-42fe-a465-fccbcc037407%7C0537ae90-a261-4dd1-a4bf-cfc78d6c4c69>.

<sup>47</sup> Climate & Clean Air Coal. and United Nations Env’t Programme, *Global Methane Assessment: Summary for Decision Makers* 8 (2021), <https://www.ccacoalition.org/en/resources/global-methane-assessment-summary-decision-makers>.

<sup>48</sup> See, e.g., *Los Angeles Utility Says Gas Plant Leaks Methane*, Associated Press (Aug. 26, 2020), <https://apnews.com/article/ca-state-wire-5851c8b4898b34091ede28182d27ae7a>.

<sup>49</sup> See Emily Grubert, *At scale, renewable natural gas systems could be climate intensive: the influence of methane feedstock and leakage rates*, Env. Res. Letters 15, No. 8, at pp. 5, 8 (Aug. 2020), available at <https://iopscience.iop.org/article/10.1088/1748-9326/ab9335> (estimating that the availability of capturable waste methane is less than 1% relative to current US natural gas demand, and RNG may be even more climate intensive than fossil gas depending on leakage rates and whether demand induces more production of RNG).

<sup>50</sup> Compare 2021 Draft Assessment at pp. 48-49 with Cal. Air Res. Bd., Proposed Fiscal Year 2021-22 Funding Plan for Clean Transportation Incentives, Appendix D: Long-Term Heavy-Duty Investment Strategy, at p. D-44, available at [https://ww2.arb.ca.gov/sites/default/files/2021-10/fy21-22\\_fundingplan\\_appendix\\_d.pdf](https://ww2.arb.ca.gov/sites/default/files/2021-10/fy21-22_fundingplan_appendix_d.pdf).

<sup>51</sup> The 2021 Draft Assessment states that the CARB assessment appears to cover cargo equipment generally, not just equipment deployed in the port context. However, it does not explain how CARB’s findings would not be applicable to the port context.

tractor demonstrations.<sup>52</sup> This study evaluated three battery-electric top handlers and one battery-electric yard tractor at the Port of Long Beach, compared to diesel equipment. According to the study, zero emission top handlers and yard tractors performed well, and offered fuel savings benefits for users. The study found the following:

- “battery-electric equipment was able to provide comparable hours of operation to the diesel equipment over a typical 8-hour shift”
- “battery-electric equipment provided considerable benefits in total energy consumption”
- “deployment of battery-electric equipment in port cargo handling operations could provide considerable benefits in terms of emissions reductions and energy consumption”

The Draft Assessment should be updated to reflect these findings, and specifically, to indicate a higher technical feasibility rating for zero emission top handlers and to demonstrate their operational feasibility and cost savings.

Third, the Draft Assessment should be revised to include results from a recent report by the North American Council for Freight Efficiency on electric yard tractors.<sup>53</sup> The study found numerous benefits to utilizing zero emission yard tractors compared to diesel alternatives, including saving fuel, saving on maintenance costs, and reducing noise.<sup>54</sup> The study identifies yard tractors as the best pathway for fleets to learn about implementing battery electric vehicles, given that yard tractors operate within a small area reducing range anxiety, that they can take advantage of centralized charging infrastructure, and that they can replace diesel yard tractors with very few operational adjustments.<sup>55</sup> Investing in mass deployments of zero emission yard tractors in the near-term can also help to demonstrate and advance zero emission technologies for other pieces of equipment, and for trucks. The Draft Assessment should be updated to reflect the technical, operational, and cost findings included in this recent study.

With respect to large-capacity forklifts, the Draft Assessment acknowledges that there are multiple battery-electric high capacity forklifts available on the market, that they are eligible for CARB’s CORE funding program, and that the Port of Stockton has deployed 18 high capacity forklifts.<sup>56</sup> Because high-capacity forklifts are commercially available and a number of large-capacity forklifts are currently being utilized in California, the Draft Assessment should bump these technologies past the screening parameters and include a detailed discussion of their commercial availability and technical readiness. The Draft Assessment’s roll-up for ZE forklift availability does not appear to reflect the availability of forklifts on the market, and those already in use at other ports.<sup>57</sup>

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<sup>52</sup> Chas Frederickson, Tom Durbin, Chengguo Li, Tianyi Ma, George Scora, Heejung Jung, and Kent Johnson, *Performance and Activity Characteristics of Zero Emission Battery-Electric Cargo Handling Equipment at a Port Terminal*, SAE International, 2022-01-0576 (Mar. 29, 2022), available at <https://saemobilus.sae.org/content/2022-01-0576/>.

<sup>53</sup> North American Council for Freight Efficiency (NACFE), *Run on Less Electric Report, Electric Trucks Have Arrived: The Use Case for Terminal Tractors* (Mar. 6, 2022).

<sup>54</sup> *Id.* at pp. 27-29.

<sup>55</sup> *Id.* at p. 7.

<sup>56</sup> 2021 Draft Assessment at p. 28.

<sup>57</sup> *Id.* at p. 40.



## **V. Conclusion**

In conclusion, we ask the Ports to revise the Draft Assessment to reflect the most accurate and updated information about the availability, performance, and cost of zero emission technologies. In addition, we request that the Ports undertake a public process to formulate the policies and plans needed to achieve the 2030 zero emissions goal. With less than 8 years to go, it is critical that the Ports take action today to accelerate their planning and deployment of zero emission technology.

Sincerely,

Heather Kryczka  
Natural Resources Defense Council

Regina Hsu  
Earthjustice

Yassi Kavezade  
Sierra Club

Peter M. Warren  
San Pedro & Peninsula Homeowners Coalition

Andrea Vidaurre  
People's Collective for Environmental Justice

Taylor Thomas  
East Yard Communities for Environmental Justice

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April 29, 2022

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Comments electronically submitted to [caap@cleanairactionplan.org](mailto:caap@cleanairactionplan.org)

Dear Mario Cordero and Eugene Seroka:

The California Air Resources Board (CARB) is pleased to submit comments on the Draft 2021 Feasibility Assessment of Cargo-Handling Equipment (2021 CHE Assessment). CARB would like to commend the San Pedro Bay Ports (SPBP) for providing this update to its 2018 Feasibility Assessment of Cargo-Handling Equipment (2018 CHE Assessment). Both the 2018 and 2021 CHE Assessments help inform regulatory agencies on the development and issues regarding zero-emission (ZE) cargo handling equipment (CHE) at the ports as California transitions to ZE technologies.

California is a global gateway for the United States by virtue of its strategic location on the Pacific Rim, its border with Mexico, and its major ports and railways. SPBPs are North America's busiest seaport complex, and experienced record-breaking cargo throughput to begin 2022. As the SPBPs continue to grow in the years ahead, they must ensure that future operations don't further disproportionately impact neighboring communities, many of which are disadvantaged, and enable the region to meet federal ambient air quality standards.

The South Coast Air Quality Management District (AQMD) has determined that the region must transition to ZE technologies to attain the federal eight-hour ozone standard by 2037. CARB commends the SPBP Clean Air Action Plan - 2017 (CAAP 2017) goal of zero-emissions for CHE by 2030,<sup>1</sup> which dovetails with the AQMD's ZE technology transformation needs.<sup>2</sup> However, we are concerned that the 2021 CHE Assessment's inclusion of near-zero emission (NZE) CHE may signal to stakeholders that combustion equipment will continue to play a significant role in the CHE sector in the years ahead. The 2021 CHE Assessment's continued focus on NZE suggests a false equivalency with ZE CHE and may signal a less than full commitment to the ZE transition, which is critical for California to meet its air quality and community health mandates.

In 2017, the California Legislature adopted Assembly Bill (AB) 617 (Garcia, Chapter 136, Statutes of 2017) which appropriated funding to support early actions to address localized air pollution through targeted incentive funding to deploy cleaner technologies in these

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<sup>1</sup> [2017 Clean Air Action Plan Update](#), October 23, 2017.

<sup>2</sup> South Coast Air Quality Management District; 2022 AQMP Control Measures Workshop; [Agenda Item 3 – Zero Emission Technologies for Stationary and Mobile Sources](#); November 10, 2021.

communities. In response to AB 617, CARB created the Community Air Protection Program (CAPP) to address the environmental and health inequities from air pollution experienced by certain disadvantaged communities (DAC) in the State. The CAPP Blueprint contains a list of statewide actions that should be undertaken to achieve reductions in these disproportionately burdened communities. Many CHE operate in or adjacent to DACs, and emission reductions from this equipment will directly benefit these communities experiencing cumulative exposure burden. In that same year that AB 617 was adopted, CARB also directed staff to develop regulatory requirements for ZE CHE at ports and intermodal rail yards. Additionally, Governor Gavin Newsom's Executive Order N-79-20 directed CARB and other State agencies to transition off-road vehicles and equipment to 100 percent zero-emission by 2035 where feasible. The transition to ZE equipment will be critical for California to fulfill State Implementation Plan commitments to attain federal air quality standards, meet its greenhouse gas reduction targets, and reduce community health risks at and around freight facilities.

CARB is committed to transitioning to ZE CHE equipment to reduce the harmful effects that the communities surrounding the ports and intermodal rail yards experience daily. In the 2022 State Strategy for the State Implementation Plan: Draft Measures Public Workshop (October 2021),<sup>3</sup> CARB staff outlined the preliminary proposed regulatory concepts for the upcoming ZE CHE Regulation. The transition to ZE operations could begin in 2026 through a tiered implementation schedule according to the equipment type and would be completed by 2030 through 2036, depending on the category. The first phase would begin with those CHE types that are furthest along in their technological development. CARB staff anticipates further evaluating and refining these potential concepts, in consultation with SPBP, affected community groups, and other interested public stakeholders, as the formal rulemaking process gets underway later this year. CARB staff expects to present proposed CHE regulatory amendments to the Board for its consideration in 2025.

CARB believes that the 2021 CHE Assessment should reflect the SPBP's, CARB's, and South Coast AQMD's common goal for transitioning from combustion to ZE CHE, particularly in those equipment categories where it is already technically feasible. The 2021 CHE Assessment indicates that, while some challenges remain, ZE yard trucks and rubber-tired gantry cranes are now technically viable and commercially available from multiple manufacturers. However, the inclusion of a similar discussion regarding natural gas or propane NZE CHE viability may signal that this combustion equipment is an equally legitimate long-term solution. The 2021 CHE Assessment would better serve potential CHE purchasers and other stakeholders by acknowledging that NZE CHE may not be a tenable long-term solution, particularly for CHE categories where ZE technology is most promising. Additional investment in combustion equipment also represents a lost opportunity for more proactive deployment of ZE equipment and supporting infrastructure. CARB looks forward to its continued partnership with SPBP to accelerate the transition to ZE CHE, which will be critical for California to meet its air quality, climate, and public health goals.

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<sup>3</sup> [CARB's 2022 State Strategy for the State Implementation Plan \(2022 State SIP Strategy\)](#).

Mario Cordero, Executive Director (POLB), and Eugene Seroka, Executive Director (POLA)

April 29, 2022

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Again, CARB appreciates the opportunity to provide input on this valuable update on the ZE CHE feasibility assessment. If you have questions or comments, please email Dinh Quach, Air Pollution Specialist, Freight Approvals Section at [dinh.quach@arb.ca.gov](mailto:dinh.quach@arb.ca.gov).

Sincerely,

A handwritten signature in blue ink, appearing to read "Heather Arias".

Heather Arias, Chief, Transportation and Toxics Division

cc: Erik Neandross, Chief Executive Officer, Gladstein, Neandross, and Associates, [erik@gladstein.org](mailto:erik@gladstein.org)

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April 29, 2022

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Matthew Arms  
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Long Beach, California 90802

Submitted electronically to: [caap@cleanairactionplan.org](mailto:caap@cleanairactionplan.org)

Subject: Comments on Draft 2021 Update: Feasibility Assessment for Cargo-Handling Equipment

Dear Messrs. Cannon and Arms:

Thank you for the opportunity to provide comments on the draft 2021 Update: Feasibility Assessment for Cargo-Handling Equipment (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 technology available.

PMSA appreciates the work that went into producing the draft Feasibility Assessment. While PMSA acknowledges 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.

**No Support Provided for Change in Assessment Ratings**

A critical concern of this Feasibility Assessment is the lack of supporting facts or data in assessing changes in ratings over the 2018 Feasibility Assessment (e.g., the “blue pie wedge”). In every instance where a change in rating is indicated, it is indicated by a conclusory statement that progress has been made. No discussion of what specific changes warranted the change and why those changes are substantive rather than immaterial.

Every reviewer of this document should have the opportunity to assess what specific facts led to a change in ratings. Without that information, it is impossible for the public to comment, support, or rebut conclusions drawn in the Feasibility Assessment. Because the Feasibility Assessment relies on judgement and professional experience and is not based solely on quantitative measurements, the basis for decision-making must be disclosed. For that reason, the document should be significantly revised to provide a basis for each change and recirculated for public comment.

As an example of this issue, the Feasibility Assessment states on page 66, “While several OEMs are currently developing and demonstrating battery-electric yard tractors, currently available OEM models

do not have sufficient endurance to reliably complete two shifts between charging events. Both battery-electric platforms reviewed in this Assessment support sufficient charging speeds to allow the yard tractor to complete two shifts if the MTO incorporates charging between the two shifts.” This statement cites no evidence and provides no rationale for increasing the “Operational Feasibility” rating. Worse, it implies that the equipment can always successfully complete one full shift. In fact, it is known that in some applications some terminals have been unable to complete a single shift. This is an example of why the Feasibility Assessment must be substantially revised to support its conclusions. Otherwise, the Assessment is a series of conclusory statements in order to justify improved ratings that have not been demonstrated.

### **The Application of Technology Readiness Levels Are Consistently Misapplied**

Technology Readiness Levels (TRLs) are supposed to indicate the level of progress a given technology has achieved, not the next level they are striving to succeed. Yet, the Feasibility Assessment repeatedly assigns a TRL level to technology based on what it prospectively hopes to achieve. TRL 7 is defined as “Full-scale, similar prototype system **demonstrated** in relevant environments” (emphasis added). While TRL 8 is defined as “Actual system completed and qualified through test and demonstration. The technology has been proven to work in its final form and under expected conditions.” The Feasibility Assessment goes on to say that “TRL 8 does require a **successful** demonstration” (emphasis added).

In fact, no zero-emissions yard tractor has been successfully demonstrated in a marine port terminal setting. In many settings, existing zero-emissions equipment cannot complete a single shift, much less the two shifts identified in the report as a bare minimum necessary for successful operation. When the 2018 Feasibility Assessment was completed, PMSA objected to assignment of TRL 7 to yard tractors due to the fact most demonstration projects were just getting underway and there was no data that demonstrated that zero-emission yard tractors had been “demonstrated in relevant environments”. Today, based on the amount of demonstration work underway, while still considering the technology’s shortcomings, battery-electric yard tractors could be considered TRL 7. However, there is no basis in fact for assigning TRL 8 to zero-emissions yard tractors. As the Feasibility Assessment states TRL 8 requires successful demonstration. But the report fails to identify any successful demonstration, which points to PMSA’s prior comment that conclusions on changes in assessments are not supported by facts or evidence. Additionally, the Feasibility Assessment should clearly define what is meant by “successful demonstration” because no conventional understanding of that phrase would support a TRL 8 designation.

As with the last Feasibility Assessment, TRL assessments appear to be more aspirational than fact-based. If the Feasibility Assessment cannot provide data to support its conclusion of TRL 8, the rating should be revised to TRL 7. By jumping the gun, the Feasibility Assessment is misinforming industry, the public, and decision makers about the state of the technology.

### **Endurance Estimates Should Be Based On Real World Evaluation**

It is extraordinarily frustrating that the Feasibility Assessment can apparently conclude that battery-electric yard tractors have met the TRL 8 threshold of “successful demonstration”, and yet have insufficient data to estimate endurance from real world usage. Both of these conditions cannot be simultaneously true. Instead, the Feasibility Assessment relies on estimates calculated from OEM

specifications. Conversations with PMSA members indicate that the estimates provided in the Feasibility Assessment overstate the technology's capabilities, in some applications significantly. The Feasibility Assessment must rely on real-world data rather than the likely favorable conditions reported in a sales brochure.

#### **Feasibility Assessment Makes Speculative Statements About Endurance**

The Feasibility Assessment provides estimated endurance for battery electric cargo-handling equipment. One of the primary purposes of the current demonstrations is to determine their range in a marine container terminal environment. By offering an estimated range, the Feasibility Assessment is drawing a conclusion about the feasibility of technologies for industry, the public, and decision makers that has not been proven. As an example, the Feasibility Assessment states that "BYD and Kalmar yard tractors meet the ten-hour shift endurance requirement" and later that "the Kalmar unit's ability to meet a 20-hour endurance with an inter shift charging event is marginal." These statements are speculative. The Feasibility Assessment also states that "it is important to note that calculations ... have been based on OEM specifications" and does not document any in-use testing. Again, the Feasibility Assessment should refrain from making speculative statements for any equipment not based on multiple completed port demonstrations.

What is worse is that the statements quoted above occur verbatim in the 2018 Feasibility Assessment. The only change in endurance that between the 2018 and 2021 versions of the Feasibility Assessment is that in Table 24 of the 2021 Assessment, BYD's Extended 2-shift Endurance for inter-shift charge has been downgraded from "Yes" to "Marginal". This represents a downgrade over the previous study. Yet with the only change being a diminution of capabilities, which was not discussed in the text of the report, the Feasibility Assessment saw fit to award an improvement in the endurance rating under Operational Feasibility. What was the basis of this decision? Again, this issue raises questions about how the Feasibility Assessment is drawing its conclusions, the lack of supporting evidence, and the reliance on manufacturer specifications rather than real world demonstrations.

#### **The Feasibility Assessment Should Not Speculate on Future Developments**

The Feasibility Assessment continually makes speculative assertions about the future. In doing so, the Feasibility Assessment is pre-judging the outcome of numerous demonstrations being conducted throughout San Pedro Bay. Advanced technology like battery electric CHE have been undergoing demonstration projects in San Pedro Bay for **over a decade**. All of those demonstrations have advanced the state of technology, but none can be described as successful in the sense that none of the demonstrations have achieved the basic operational characteristics required.

No one could have guessed the outcome of those numerous previous demonstrations and this Feasibility Assessment should not attempt to guess the outcome of ongoing or planned demonstrations. The Feasibility Assessment's tendency even colors its application of Technology Readiness Levels, as previously described. The Feasibility Assessment should limit itself to demonstrable facts. To do otherwise, would be to give industry, the public, and decision makers flawed speculative information on which to base their judgement and decision.

There are real challenges to advancing zero-emissions technology to meet the operational needs identified in the Feasibility Assessment. Advancements in technology and performance may be running up against physical limitations in the amount and placement of batteries on cargo-handling equipment. While it is unknown yet, such limitations may necessitate a pivot from battery technology to fuel cell technology. Alternatively, they may require a delay until higher density solid state batteries become commercially available. In either case, limitations of current technology should limit the prognostication of future advancements. At the very least, these issues should be raised and discussed within the Feasibility Assessment. As written, the Feasibility Assessment gives the reader that uninterrupted progress can be expected between now and 2024, especially when using terms like “by or before”. Uninterrupted progress has not been the history of technology advancement, nor it should be expected in the future.

### **Safety**

In a situation eerily reminiscent of a hydrogen fuel cell tractor described on page 64 of the Feasibility Assessment, a demonstration battery-electric yard hostler at a San Pedro Bay marine terminal punctured a battery cell during a jack-knife maneuver. The incident resulted in both noxious gases spewing from the battery cell and a fire. Reports at the time of the incident indicate that upon arrival, first responders did not know how to address the situation. More recent reports indicate that upon further review additional battery-electric yard hostlers as well as fork-lifts may have the same or similar vulnerabilities and that union labor will not operate the equipment until the safety issues have been resolved.

This recent situation and along with incident described in the Feasibility Assessment raises three key issues that must be addressed before any battery-electric, fuel-cell, or other non-traditional fuel-type equipment is used. First, the ports must lead an effort with first responders to develop and put in place a plan for how to respond to an incident. First responders, including police, fire, paramedics, coast guard, and others, must know how to respond in the inevitable occurrence of an accident. Second, design of all existing demonstration equipment must be reviewed for similar vulnerabilities to ensure that such design issues are addressed so labor and terminal operators can have confidence that their equipment will fail safe. Finally, drawing on PMSA’s comment, any redesign of equipment that modifies battery storage must also consider impacts on operational capability. As current designs approach the limit of what CHE units can hold, any redesign may limit capabilities. That should be acknowledged in the Feasibility Assessment as a significant uncertainty on the path toward commercialization.

### **Uncertainty in Ongoing Demonstrations**

Issues like the safety concern raised above also point to another concern that runs through the Feasibility Assessment. A major goal of the Feasibility Assessment is to inform the public of technological advancement for clean port equipment identified through the multiple ongoing demonstration projects that are evaluating battery electric, fuel cell, hybrid, and near-zero technologies throughout the port complex. But none of those efforts are relied upon to support a single conclusion, assessment, or rating in the entire document. To a large extent, that is reasonable. The demonstrations, while extremely valuable, have been more complex and challenging to implement than anyone expected. They have been beset by delays, redesigns, equipment failures, and other issues, with



each issue advancing and improving the technology. As evidence, note the following statements from the 2018 Feasibility Assessment:

- It is important to note that calculations in this table have been based on OEM specifications pending real-world data, which are expected to be generated in 2019 and 2020 during revenue service demonstrations by MTOs.

And from 2021:

- It is important to note that calculations in this table have been based on OEM specifications, pending actual operational data generated and evaluated by MTOs during revenue-service demonstrations (expected to be concluded before 2024).

The Feasibility Assessment should address why demonstration projects are not used to inform the conclusions of the report or, if the authors are relying on demonstration outcomes, make explicit their analyses.

#### **Battery Electric CHE Cost Is Underestimated**

Battery-electric yard tractor cost is underestimated for several reasons. The Feasibility Assessment acknowledges that the battery is not likely to survive through the equipment's useful life. Yet, no cost (even amortized) for battery replacement or early equipment retirement is included in the cost estimate. The Feasibility Assessment estimates that the battery life will be 1-3 years shorter than useful life of the equipment. That is substantial and would represent an additional 8%-30% increase in capital cost if early battery degradation results in early equipment retirement (a likely outcome given the high cost of battery replacement and low residual value of the frame near the end of the useful life). These costs can and should be estimated and included in the assumptions.

The total cost of ownership analysis also does not include the full cost of charging infrastructure. Battery-electric equipment is fundamentally different from traditional diesel equipment. As a result, charging infrastructure is part of the capital cost of equipment purchase. It is unlikely that charging infrastructure can be discounted for use with subsequent generations of equipment as the charging technology is likely to change over the useful life of a yard tractor and even longer useful life for other CHE. While costs associated with trenching, conduit, and switch gear represent long-lived improvements, there is no reason to believe that the actual chargers will survive the equipment's useful life. Whether it is change in technology that necessitates changed chargers or eventual equipment failure, charger replacement should be assumed. As such, the 50% discount is too high for the estimate of infrastructure and should be revised downward. The analysis should only discount the associated infrastructure costs by 50% and carry through the full cost of the actual charger.

The analysis also does not include the lease cost of land required for charging infrastructure. This is a permanent and ongoing cost of transitioning to battery electric technologies. While fuel-cell technologies are expected to fueling parameters to diesel equipment, the Feasibility Assessment points out the additional land necessary for battery electric charging infrastructure. While the Feasibility

Assessment estimates additional land required, lease rates, but the Feasibility Assessment does not monetize this real cost. It should.

### **Rising Electricity Rates and Power Availability Not Evaluated**

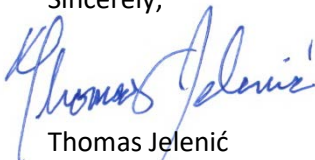
The Feasibility Assessment is silent on future California electricity costs, while assuming that no substantial system-wide upgrade would be necessary. PMSA is concerned about the approach on both of these issues. California has some of the fastest accelerating electricity rates in the nation. For the period 2011-2017 California industrial electricity rates increased nearly 30%. In addition, it was reported last year that California Public Utilities Commission is estimating that by 2030 Southern California Edison's utility rate will outstrip inflation by 20%<sup>1</sup>. This is a significant increase that should be evaluated.

In addition, the assumption that system-wide improvements are not necessary is unfounded. Today, we have system limitations. For two-year's running, the State of California has asked the maritime industry to disconnect ships from shore power to preserve power for other uses during power emergencies. With increased electrification, shuttering of several local natural gas power stations, the shutdown of Diablo Canyon Power Plant, and ongoing risks to power generation at Lake Oroville and Lake Mead, system-wide changes will be necessary to support port electrification. Those changes must be in place before the ports undertake full-scale transition to zero-emissions. Failure to do so will damage the reliability of the San Pedro Bay ports and damage our global supply chain. The assumption that system-wide improvements are not necessary is wrong and the report must be revised to reflect the very real power challenges that the ports face during this transition.

### **Conclusions**

PMSA would like to thank port staff for allowing us the opportunity to provide comments regarding the draft Feasibility Assessment. PMSA hopes that it will be able to continue to work collaboratively on the implementation of the Clean Air Action Plan. In that spirit, PMSA requests a meeting with the two ports to discuss our comments and concerns as the ports look to finalize this analysis. We look forward to continuing our discussion.

Sincerely,



Thomas Jelenić  
Vice President

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<sup>1</sup> <https://www.utilitydive.com/news/californias-dilemma-how-to-control-skyrocketing-electric-rates-while-buil/597767/>

Sent: Fri, 29 Apr 2022 17:40:32 -0700

From: David Alba

To: caap@cleanairactionplan.org

Subject: PUBLIC COMMENT - Cargo Handling Assessment

PART 1. Public Comment – TO: CAAP Assessors, Southern California Leaders Stakeholders and Citizens

PART 2, Public Comment – TO: C40 Cities Members, Global Trade Stakeholders and World Citizens

Introduction & Public Comment

To: CAAP Assessors, Southern California Leaders Stakeholders and Citizens:

This public comment is focused on demonstrating long standing Los Angeles, California homegrown solutions to obsolescence and inefficiencies specific to container cargo handling equipment.

The basis of this public comment is to share an opportunity to empower by way of this assessment, a prospect for next-generation cargo handling equipment that will require new transportation infrastructure throughout Southern California. This can be made possible through inclusion by way of a new Port of Los Angeles implementation plan announced in late January of this year.

This public comment was written in consideration and for benefit to the 2017 Clean-air Action Plan (CAAP), Southern California's public and private leaders, adding value to stakeholder interests and in hopes to improve quality of life to 10 million+ citizens of Los Angeles, Riverside and San Bernardino Counties.

My name is David Alba and I am a Los Angeles native. My experience in commercial logistics along with 7 years as a manager at Port of Long Beach's largest container terminal from 2002-2009 helped lead me to design the multi-nationally patented SuperDock™ container terminal systems-technology and design.

With respect to this cargo handling equipment assessment, this public comment is specific to intermodal container cargo handling equipment primarily performing container hand-offs between storage, surface, water-road-and-railed vehicle platforms. Such container cargo handling equipment is concentrated, but not limited to the Ports of Los Angeles and Long Beach.

The GRID Project infrastructure initiative has long existed to help contribute in addressing today's global container shipping supply-chain challenges involving container handling equipment specific to loading ships, trains and trucks travelling on Southern California freeway corridors delivering container cargo.

This daily activity impacts millions of commuters and residences living and working along these corridors.

Short-term and long-term strategies to this assessment for consideration is a must. And like many industries, developing next generation container cargo handling equipment should include the idea of reconfiguring this equipment to smartly operate along supply chain nodes and corridors.

But for the long-term, to house and support the next generation of container handling equipment, it is only logical that a new infrastructure also be built to connect ports to inland delivery container distribution centers (DCs) for optimal container supply-chain performance.

To work, this new infrastructure must be positioned to smoothly and seamlessly operate as a safe, secure, clean and efficient holistic transport system connecting Southern California's ports and inland regions.

Container cargo handling equipment is key to passing \$14T worth of goods per year connecting ports along inland supply-chains worldwide. This public comment approaches the cargo handling assessment through proposing a transparent and logical long-term infrastructure-building opportunity by way of a recently announced port-cities implementation plan from Ports of Los Angeles and Shanghai called the 'Green Shipping Corridor Partnership.'

In assessing cargo handling equipment combined with new container supply-chain transportation infrastructure, a window had opened to explore

an infrastructure initiative that could be granted designation through legislation as a large-scale environmental mitigation (as opposed to negative impact) and project of national significance.

We propose to avoid waste, duplication and redundancy by exploring the potential in forming an initiative to design-build next generation high-performance cargo handling equipment that in addition, has potential for realizing a global port-cities container-hub network built by 2030 as targeted by the CAAP.

This will require public and private leaders involved in global trade teaming with wartime urgency, vigor and pace to research and develop a universally standardized and patented logistics system-design that includes reconfiguring container cargo handling equipment to benefit all stakeholders in free-global trading.

Global trade shipping's supply-chains universally feature the 4-corner twist-lock-beams called container-spreader-hoists. These spreaders serve as the hands that lift containers from one surface or vehicle to the next on nearly all models specific to container cargo handling equipment.

The new designs we propose began with focus on how thousands of container-spreader-hoists are fastened onto booms supported by giant gantry cranes. These ship-to-shore cranes, iconic throughout the world, serve as land-bridges and are called 'A-frame cranes.' This A-frame crane design has not changed in over 60 years.

And it is the giant pair of crane-legs positioned against ships supporting each boom & spreader that limit the speed with which up to 24 rows of bays, lengthwise on containerships are loaded.

In 2009, APM Terminals attempted to improve on this ship-to-shore design limitation for loading ships unveiling Fastnet, an invention putting more crane booms to ships significantly cutting the time needed to service container ships. In 2007, two years before Fastnet was unveiled, APM's sister company, Maersk Shipping introduced a new generation of Triple-E giant-containerships standing for efficiency, environment and economies of scale.

Ultimately, Fastnet cranes designed to service ships of all sizes were never developed. But back in 2007, this new containership model doubled in size literally overnight. And as of today, they are now triple in size.

Today, this giant containership global fleet carrying between 10,000-22,000 container units (TEUs) has exploded over the last 15 years from 1 to over 500 ships with hundreds of more builds on order.

In July 2014, the GRID Logistics Story was produced introducing the GRID Project and how SuperDock™ infrastructure recognized the impact these giant ships were going to inflict on ports worldwide. And how SuperDock™ as a solution might benefit port-cities and container shipping related industries at local and global scale.

SuperDock™ ultimate vision is to concurrently design-build a port-cities network infrastructure with universal ISO or ISO-like specifications for global application.

Also in July 2014, the same month the GRID Logistics Story was released, Port of Long Beach Deputy Executive Director, Dr. Noel Hacegaba published a white-paper, 'Big Ships, Big Challenges' (attached). Dr. Hacegaba's foresight of how ports would be impacted was extremely prophetic and where he concluded:

'Ports must be built to handle larger ships and be prepared when shipping alliances do not go in their favor.

As the maritime industry and how goods are moved change, so must ports if they are to be ready to handle the next generation of larger ships.'

Logic should dictate that exploring triple-bottom line goals with focus on cargo handling combined with our race to a 2030 carbon-neutral port-complex will require TEAMING the world's most capable firms and people. Any new solutions at this scale first need thorough and robust research and development (R&D).

As the urgency of our times dictate that we must race to design new container-ports that can best support, connect and transport containers from port complexes to pass, relay, roll and hoist them to and from inland

freight distribution centers.

New configurations in this fashion could transform supply-chains into supply-flows worldwide.

In late January this year, the C40 Climate Cities Leadership Group reported convening to help create the Green Shipping Partnership between the Port of Los Angeles and world's largest container Port of Shanghai along with public and private leaders to include container shipping giants Maersk, CMA CGM and COSCO liners.

\*This partnership implementation plan to-be established by the end of this year produces THE ideal platform to explore developing SuperDock™ technology/designs; a new cargo equipment and port-cities infrastructure inspired and invented here in Southern California.\*

For over a decade, GRID Logistics Inc., a Los Angeles Cleantech Incubator (LACI) portfolio company between 2013 to 2018 promoted and cultivated the GRID Project anchored by SuperDock™ technology-designs for the Southern California region.

First introduced and filing for patents in 2010, SuperDock™ technology/designs began gaining international attention from container shipping industry related trades in the fall of 2014. Today, these patents have been published with the World Intellectual Property Organization (WIPO).

\*WIPO's mission is\*\* '\*\*\*to lead the development of a balanced and effective international IP system that enables innovation and creativity for the benefit of ALL.' \*For your review, the following link opens SuperDock™ technology/designs and multinational patent portfolio published under WIPO.

Dredging, forging, paving and digging new rights of way (ROW) building infrastructure produces secure point-to-point chains of custody avoiding theft, destruction of property or worse. And to achieve this value-add, global trade stakeholders must resolve to reinvent how shipping's giant container ships connecting cargo between ports, rail, road and inland distribution centers can flow in a zero-emissions environment.

And to achieve all this at global scale would be unprecedented. In addition, to access the required talent and intellectual property (IP), public and private leaders must include and empower American contributors from all backgrounds and those from other nations having skill sets to help explore tomorrow's solutions together.

The first step has long been for a robust R&D initiative to evaluate such systems as ours to start.

The purpose of this public comment is to again shed light on SuperDock™ IP and patents cultivated over 12 years to be considered for 3rd party evaluation by public and private leaders.

As to my responsibility as co-founder of SUPERDOCK LLC, we offer SuperDock™ IP to leverage forming a new environmental and social governed (ESG) enterprise missioned to help assemble this R&D proposed initiative by way of inclusion to the 2022 Green Shipping Corridor Partnership's implementation plan.

This yet to exist ESG's first goals will be to secure seed capital, form its board, charter and mission to introduce a commercial catalyst that brings together a public-private consortium to help R&D our large-scale container-supply-chain infrastructure vision.

\*Our ASK via this assessment is that we combine the C40 Green Shipping Implementation Plan due by end of 2022 with the 2017 CAAP and its goals by assembling a task force to explore SuperDock™ reconfigured cargo handling equipment. In addition, these infrastructure technology/designs can help achieve a carbon-neutral port complex by 2030. \*

Kickstarting this initiative can be achieved with political leadership, will and private equity.

Exploring these solutions could lead to years of building, 10s of thousands of local jobs and most important, public and private leaders collaborating, coordinating, including and EMPOWERING a diverse domestic and multinational range of people-talent.

Public and private leaders can start helping society by assessing,



selecting and empowering people to modernize our infrastructure and cargo handling equipment, both vital to global trade's future.

And while assembling and empowering the public-private taskforce we propose to explore this initiative's potential, we must cross community borders of socio-economic, color and cultural diversity here at home.

This is not too different from crossing oceans to recruit talented people of diverse backgrounds and firms also seeking to solve the many big problems our world has in common.

It may seem a stretch, but it's not. This port-cities cargo handling equipment assessment has potential to serve by bridging leaders to citizens. Because together, we are all standing at a crossroads; all fully aware of today's crises and threats on both domestic and geopolitical fronts that make issues like equipment assessments meaningless if people continue to practice the many kinds of traditional forms of social distancing, discrimination and exclusion practiced long before the COVID-19 pandemic arrived in 2020.

Obviously, these are inconvenient realities Southern California's stakeholders and citizens alike must face as we go about this world's "new-normal" life while completing various tasks like this assessment.

By unfolding this assessment with this unique approach, I hope readers agree, both domestic and geopolitical problems now surround everyone's daily work and life. These problems have potential for genuine catastrophes and are in extremely urgent need of problem solving and can no longer be ignored.

Winding down on a personal note, my best childhood friend at Breed St. Elementary School in East L.A. is a retired Systems Director who managed a department for the City of Los Angeles. Recently, he wrote an article on LinkedIn about 'Diversity and Inclusion Compliance'.

And I became inspired as he wrote; 'diversity without empowerment is just variety' and then took it a step further writing; 'an invitation without empowerment is an act of aggression.'

I think I speak for millions of Americans lacking privilege and access to political and financial capital in saying these statements resonate strongly with me. But in spite of this and dire state of affairs American society faces today on both domestic and geopolitical fronts mentioned, my old friend followed up by looking forward, writing this:

'The crazy thing is, when humans face catastrophic events together, people naturally band together. Do as your conscience dictates and you'll realize that we're meant to be diverse and inclusive by nature'. And then concluded with; 'Conscience. That's worth something to your business, right?'

To conclude, the goal of this public comment is to convince ALL stakeholders to think of assessing cargo handling equipment as one small step on a path to addressing problems having cascading impact as pieces to a larger puzzle (problem). And that's because the cargo-handling-equipment we are assessing can be pursued in this extraordinary manner being proposed, could be vital to global trade's future direction to modernize and green container supply-chain logistics worldwide.

Thank You.

David Alba  
SuperDock™ Co-inventor  
SUPERDOCK LLC Co-founder

PART II - Address TO: C40 Climate Cities Members, Global Trade Stakeholders and World Citizens

As one example and product of American democracy and free speech, average citizens are allowed and, in some cases, encouraged to be heard through the public comment process furnished by our leaders.

In my view, this public comment presents an extraordinary moment in time, where the international community can review this transparent process, that in this case, has great mutual benefit potential.

In addition to my experience in container shipping and commercial logistics, I earned my undergraduate degree at the University of Southern California's School of International Relations.

This education gave me a heightened perspective, sensitivity and openness to world views from people outside my home in the U.S. I've also traveled Asia and have been to Taiwan, mainland China and Singapore among others.

It is our hope that leaders from around the world can be emboldened to signal a willingness and eagerness to support American leaders starting here in California to help organize exploring a concerted global effort to reduce our world's air pollution through modernizing container supply chain infrastructure at global scale.

First filed in 2010 and taking over 12 years to complete, SuperDock™ technology/designs has been awarded patent certificates in the U.S., China, Singapore, India, Japan, Korea, Malaysia, Indonesia, Hong Kong, Netherlands, Belgium, Germany, Mexico and Costa Rica.

In addressing professionals associated with container shipping logistics and terminal operations, my ask is that you reserve your professional views as to whether or not this initiative is possible. And instead, advocate for the solutions being proposed to be vigorously explored and evaluated.

This is because public and private leaders must make that determination first; but only after qualified independent 3rd party professional and academic evaluators conduct robust and thorough engineering, technical, academic and business analyses of these solutions serving as a potential public-private project catalyst.

Equally important, this very exercise gathering the international community teaming to tackle such planetary challenges together can double in value through global standing power U.S. and rising power China creating an oasis from several years of rising tensions to cooperate, research and develop helping reduce urban air pollution on global scale and supply chain crises causing containership-port traffic jams.

International leaders reviewing this assessment comment, beginning with C40 member cities helping facilitate the Ports of Los Angeles and Shanghai Green Shipping Partnership are urged to support exploring SuperDock™ technology/design as part of, and among its long-term strategies via its implementation plan.

7 weeks following the C40 Ports of Los Angeles and Shanghai Green Shipping Partnership announcement, Beijing celebrated the 50-year anniversary of Détente (relaxing strained relations) between the U.S. and China. A headline receiving little American media attention from this event was China inviting the U.S. to joining the Belt Road Initiative (BRI). China also expressed an openness to cooperating with America's Build Back Better World Initiative.

Naturally, citizens from every nation around the world would much prefer the U.S. and China work together solving global problems over continued rising tensions creating demand for global weapons sales and arms racing across Asia and Europe.

On its website, the World Trade Organization (WTO) cites that stability and peace are under-reported benefits global trade contributes to our world. And I think many readers of this public comment agree.

In 2014, Port Technology International (PTI) reported on SuperDock™ technology 'Is this the Container Terminal Revolution?' and became the most viewed stories since the trade publication began.

In 2015, a U.S. Naval War College Professor Dr. Lyle Goldstein wrote 'Meeting China Halfway: How to defuse the emerging U.S.- China rivalry. The book introduces 'de-escalation spirals.' These are the opposite of escalation spirals.

A five-minute video summarizes this solution referring to the 'golden spaces' whereas both sides could best cooperate. The author also 'puts the climate change issues out front' as among those golden spaces both could work together to reduce tensions.

Also in 2015, I was invited to present SuperDock™ technology at the NAVIS-WORLD tech conference in San Francisco. Navis is the container shipping industries' leading technology service provider. I also paneled and presented at the Terminal Operators Conference (TOC) in Singapore as well as the Singapore Maritime Technology Symposium and National University of Singapore.

In recent years, with U.S.- China tension rising, Singapore Prime Minister Lee Hsien Loong has been among the most vocal leaders calling for the U.S. and China to find ways to work together. Loong has long emphasized to both the U.S. and China that the Indo-Pacific Economic Framework should be built "on a win-win basis," and "as a way to engage the region and not just on strategic or security and potentially hostile basis." Lee has expressed similar views many times before, including describing China and the US as "conjoined twins," and warning that a clash between the two powers would be a disaster for the world. In addition, Lee, like other Asia leaders, has expressed the attitude that Singapore cannot take sides.

Singapore is a C40 Cities member and home to the second largest container port complex in the world, 2nd only to Shanghai. I am expressing hopes this public comment will reach Singapore C40 participants in order to urge supporting this potential R&D effort.

To apply history for perspective, in 1939, one month before WW-II broke out in Europe, a 2-page letter drafted by a Hungarian scientist and signed by Albert Einstein was delivered to President Franklin Roosevelt that initiated the Manhattan Project. The project was among the greatest 20th Century initiatives assembling over 120,000 skilled Americans spread across the nation committing to 5-year top-secret program to build the first atomic bomb.

The Hungarian Scientist, Leo Szilard was of Jewish heritage and fled his home in Berlin to New York City via London. In 1937, Szilard patented the detonator and supported the theory that an A-bomb was feasible.

Imagine today, a 21st Century alternative created in Los Angeles for a multi-year global infrastructure project that rebuilds port-cities, creates jobs and cleans air at global scale, expands access to global trade and cleans air. And this opposed to the Manhattan project first described in

that 1939 letter where a weapon of immeasurable destruction and as the letter to President Roosevelt described, 'could be put on a ship, sailed into its harbor to destroy the entire port and surrounding areas.'

In the event these last sentences reach people positioned to help us explore this opportunity, I leave you with thanking you for your consideration and attention to this matter. And close with reverence and wise words from a 20th Century American spiritual leader Martin Luther King once wrote... 'If I were ever called upon to select the greatest preacher of the Century, it would be you.' The man MLK had written this to was the Founder of the Riverside Church in Manhattan, Rev. Harry Fosdick, who once said; "Democracy is based upon the conviction that there are extraordinary possibilities in ordinary people."

When our leaders broaden their benches to include 'ordinary people' striving to contribute to solve problems affecting all people through applying their unique talents, perspectives and experiences on both domestic and international fronts, crises and challenges, the tides on both these fronts will turn.

Thank You,

David Alba  
SuperDock™ Co-inventor  
SUPERDOCK LLC Co-founder