PACIFIC MERCHANT SHIPPING ASSOCIATION

December 9, 2019

Clerk of the Board
California Air Resources Board
1001 I Street
Sacramento, California 95812
cotb@arb.ca.gov
https://www.arb.ca.gov/lispub/comm/bcsubform.php?listname=ogvatberth2019&comm_period=A

RE: PROPOSED CONTROL MEASURE FOR OCEAN-GOING VESSELS AT BERTH

Comments of the Pacific Merchant Shipping Association on Initial Statement of Reasons, Environmental Assessment, Standardized Regulatory Impact Analysis, and Supporting Regulatory Documents

Thank you for the opportunity to comment on the proposed At Berth Regulation. The Pacific Merchant Shipping Association (PMSA) appreciates the opportunity to work with California Air Resources Board (CARB) staff during the course of this regulatory development on behalf of our ocean carrier, marine terminal operator, and other maritime industry member companies.

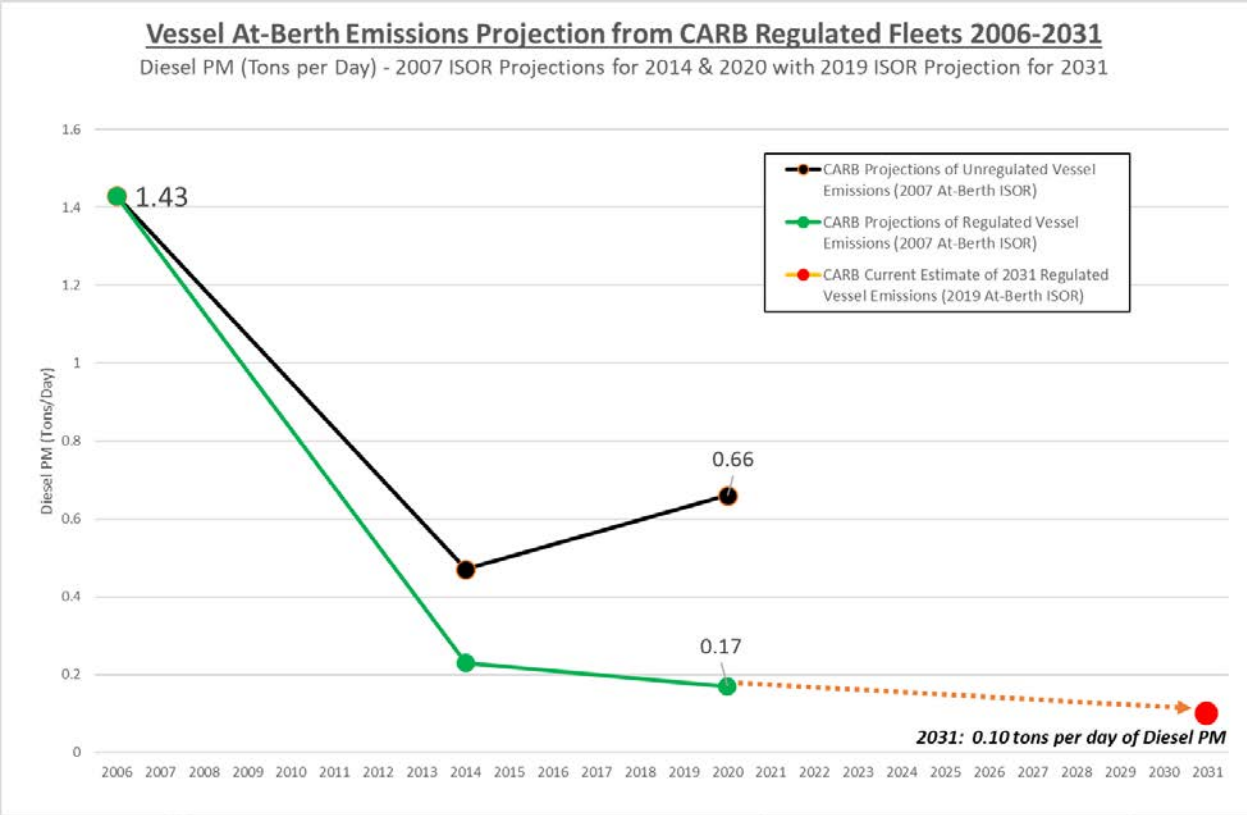
PMSA would like to thank the regulatory program, inventory, enforcement, and executive staff for their availability and professionalism in responding to questions and discussing various aspects of the proposed rule, inventory analysis, and enforcement issues. We look forward to continuing to work on these issues and hope to resolve them satisfactorily prior to the final consideration of the proposed At Berth regulation.

PMSA and its members have very strong reservations and concerns regarding the substance of the new Proposed Control Measure for Ocean-going Vessels At Berth, and believe it would create significant and unnecessary costs for the maritime industry and the state of California and in exchange achieve few air quality benefits. In addition, numerous issues that have been raised by ocean carriers, marine terminal operators, and other maritime stakeholders during the rulemaking process have not been adequately addressed in the Initial Statement of Reasons (ISOR) and supporting documents. As a result, PMSA respectfully submits this comment letter on the proposed regulation.

Existing Regulation Needs Amendment to Improve Administration and to Codify Current Guideline Outcomes, but It Is Successful at Outperforming and Producing Emissions Reductions Beyond CARB's Own Expectations, Which Does Not Warrant Elimination and Complete Rewrite

The current At Berth regulation adopted in 2007 is part of an exceptionally effective and successful suite of emissions regulations efforts adopted by CARB as part of the Goods Movement Emission Reduction Plan. Taken together with the other clean fuel rules, which apply to all vessels while at berth and

underway, CARB was targeting an overall emissions reduction from container, cruise, and refrigerated vessels of nearly 88% by 2020 (reduction from 1.43tpd to 0.17tpd DPM) through the full implementation of the current At Berth regulation. (see below chart)



The 2019 ISOR and background materials for the proposed rule projects that not only has the current regulated fleet well outperformed the targets of the current regulated rules, but that by 2031 cumulative container, cruise, and refrigerated vessel emissions are projected to be only 0.1tpd DPM under the current regulations. This is an overall 93% emissions reduction from original levels and an additional 40% DPM emissions reduction beyond the 2020 CARB target – even if NO ADDITIONAL action is taken to expand or change the current regulation.

PMSA and industry members are not however advocating for the CARB Board to take no action on this rule – to the contrary, we have been actively advocating for amendments to the existing regulation to address administrative and compliance management issues for many years. In chief, we are asking for a rule which codifies the operational results, if not the terms themselves, of the many Advisories and guidance documents which currently help assist both regulated companies and the CARB enforcement staff work together to avoid unintended violations of the existing rule for vessels that are equipped and plugging in to the full extent of real world practicalities. PMSA in that vein shares the Board's goal of

achieving 100% compliance for regulated vessel fleets at California's ports, and asks for consideration of amendments to the existing rule to make it work better, not to end it and throw it out.

Given the overall success of the current regulation at reducing emissions in excess of CARB's targeted 2020 goals and by an additional 40% through 2031 (and as noted below, that emissions outperformance number will grow even larger upon correction of the CARB emissions inventory methodology which predicts larger than reasonable growth in future vessel emission), we are perplexed by the CARB justifications for concluding that the current rule is a failure that needs to be replaced with more draconian measures for the existing regulated fleets.

The ISOR omits a specific comparison of the performance of the current regulation against 2007 projections. It also constructs a narrative of need which refuses to bifurcate currently regulated fleet emissions from fleet emissions not currently regulated, and which then makes sweeping generalizations about ocean-going vessel emissions which confuse the purpose and scope of both the existing regulation and the proposed regulation even further (ES-7 – ES-13). This narrative refuses to answer the unasked question in the ISOR: "Why is CARB proposing to eliminate the current successful regulation for container, cruise, and refrigerated vessels and to instead punish these fleets which are currently projected to outperform the 2020 regulatory baseline by 40% in 2031?"

Technical Analyses Regarding the Proposed Measure

After release of the ISOR and initiation of the formal public review period, PMSA commissioned two technical analyses of the proposed control measure: (1) a review of the ISOR and proposed control measure, generally; and, (2) an evaluation of the emissions benefit and cost-effectiveness of controlling Ro/Ro vessels under the proposed regulation.

PMSA has attached those two analyses here as part of our comment letter. *Technical Analysis: California Air Resources Board's Proposed Airborne Toxic Control Measure for Auxiliary Diesel Engines Operated on Ocean-Going Vessels At Berth in a California Port*, December 2019, is included as Attachment A. *CARB At-Berth Regulation Cost Effectiveness Analysis for Auto Carriers and RoRo Ships at Port of Long Beach & Port of Los Angeles*, December 2019, is included here as Attachment B. The analyses, in their entirety, are submitted as part of PMSA's comments on the ISOR and its supporting documentation and they are incorporated by reference herein. To the extent that the issues raised therein are not already otherwise addressed in this comment letter, PMSA requests that each of the issues raised in both Analyses be addressed and responded to formally.

Industry Coalition Comments on the Proposed Measure SRIA

After release of CARB's Standardized Regulatory Impact Assessment (SRIA) and prior to the initiation of the formal rulemaking process, PMSA along with the California Association of Port Authorities (CAPA), Cruise Lines International Association (CLIA), Western States Petroleum Association (WSPA), and World Shipping Council (WSC) submitted extensive comments to the Department of Finance regarding outstanding issues and questions regarding the SRIA and economic considerations regarding the development of the Proposed At Berth Control Measure.

PMSA has attached that letter, SRIA – Air Resources Board, Proposed Control Measure for Ocean-Going Vessels At Berth, August 26, 2019, with enclosures here as Attachment C. As part of our comment letter on the ISOR, we incorporate by reference here all of the observations made in our SRIA filing and, to the extent that the issues raised therein are not already otherwise addressed in this comment letter, PMSA requests that each of the issues raised in the SRIA comment letter be addressed and responded to formally in response to their inclusion here.

Industry Coalition Proposed Alternative

In response to CARB solicitations for proposed alternatives to the initial proposed versions of the amendments to the current At Berth regulation, as required by SRIA, an Industry Coalition of PMSA, CAPA, CLIA, WSPA, and WSC submitted a construct for a Proposed Alternative for consideration by CARB program staff. PMSA has attached that Alternative submission, Alternative Proposal for Amendments to At-Berth Regulations, February 15, 2019, with enclosures here as Attachment D (see also Attachment C). As part of this comment letter, PMSA incorporates by reference here the comments of the industry coalition proposed alternative.

CARB staff never responded to the Industry Coalition Proposed Alternative. CARB staff also failed to include the Industry Coalition Proposed Alternative in the SRIA – in fact, the SRIA history of the development of the rule does not even mention that any industry Alternative was even produced or shared with the CARB staff.

PMSA hereby requests that each of the issues raised in the Industry Coalition Proposed Alternative be addressed and responded to formally in response to their inclusion here.

Prior Unaddressed PMSA Comment Letters

PMSA has been engaged, and in fact pursued, amendments to the At-Berth rule for many years. During discussions with CARB staff and through workshops, PMSA has raised issues that have been formalized in a series of comment letters on the current At-Berth rule. Unfortunately, many of the issues raised by these letters have not been adequately addressed in the ISOR. Accordingly, that history of correspondence is attached to this comment letter as part of the supporting documentation of the industry coalition letter to the Department of Finance regarding the draft Standardized Regulatory Impact Assessment (see Attachment C).

To the extent that they have not already been otherwise addressed in this comment letter, PMSA requests that each of the issues raised in those letters, ranging from proposed alternatives to cost concerns and beyond, be addressed and responded to formally as part of CARB's regulatory process.

PMSA Alternatives Not Analyzed

As discussed in attached letters (see Attachment C), the ISOR fails to consider multiple additional alternatives submitted by PMSA. In 2017, PMSA submitted three possible alternatives at the request of CARB staff to consider. Those alternatives were never considered, analyzed, or discussed with

stakeholders by CARB staff. The alternatives include a fleet average approach that can achieve equivalent or even greater emission reductions than the proposed alternative. The alternatives also provide clearer lines of responsibility and eliminate the proposed byzantine VIE/TIE regulatory structure. CARB staff should evaluate the proposed alternatives and work with industry stakeholders to develop a structure that does not promote noncompliance.

Inconsistency with SIP Commitments and Plans

A key purpose for the Proposed Regulation is CARB's commitment under the State Implementation Plan (SIP) to amend the At-Berth regulation. The SIP strategy calls for a regulation that generates 2 tons per day (tpd) of NOx by 2031; however, the Proposed Regulation analyzed in the Environmental Assessment (EA) achieves 5.9 tpd, nearly triple what is necessary.

However, when analyzing the alternatives, the EA compares air quality benefits to the Proposed Regulation (5.9 tpd) rather than the stated project purpose (2 tpd), dismissing alternatives that might have achieved lesser – but still adequate – reductions.

Such inconsistencies are significant in the context of the actual language of the Mobile Source Strategy as included in the adoption of the 2016 SIP in March 2017. The ISOR correctly identifies (at II-7) that the "proposed measure directs CARB staff to consider increasing reductions by including additional vessel fleets, types, and operations," however the ISOR's claim that there is SIP direction that this was to be accomplished by "redevelopment of the Existing Regulation" with respect to the existing regulated fleet is a complete fabrication. No such redevelopment or replacement or other evisceration of the current regulation is mentioned or contemplated in the SIP.

Contrary to the claim that a complete elimination and replacement of the existing rule was consistent with the SIP, the ISOR correctly identifies the policy context for these changes: with respect to the preliminary CARB-staff produced Sustainable Freight Pathways document these were measures which "included amending the Existing Regulation" (II-6); in the ultimately adopted Sustainable Freight Action Plan implementing Executive Order B-32-15, amendments are directed to the Board in order to consider "strengthening the Existing Regulation" (II-7); and, concurrently with the adoption of the SIP in March 2017, the direction given to CARB staff was not to create new rule, but instead "to consider changes to the Existing Regulation" (II-8).

PMSA implores CARB to act only in a manner which is consistent with the adopted SIP strategy emissions targets and its adopted SIP Mobile Source Strategy and related regulatory policies.

Inconsistency with GHG Goals and Plans

The proposed regulation is also inconsistent with California's greenhouse gas (GHG) goals. The proposed rule will increase GHG emissions in the Ro/Ro fleet by 50% (see Starcrest analysis attached). This is an enormous increase in emissions that is contradictory to the California goals. This increase would be achieved for only a 40% reduction in criteria and toxic pollutant emissions. The regulatory uncertainty associated with the rule also has the potential to significantly increase the use of barge-

based systems by the existing regulated fleet in order to ensure compliance can be met. Every additional use of the barge-based equipment will significantly increase GHG emissions.

Curiously, while the ISOR mentions the adoption of the AB 32 Scoping Plan and the general goals of the adoption of SB 32 (II-6), the ISOR completely omits any reference to the fact that consideration of the feasibility and expansion of the existing At Berth regulation is included as a provision of the SB 32 Scoping Plan. This omission is material because, just as with the SIP measures referenced above, the newly proposed measure is inconsistent with the SB 32 Scoping Plan's description of future consideration of amendments to the current regulation: it does not direct any additional emissions reductions from the existing fleet, does not direct a rewrite or elimination of the current rule or fleet averaging, and it supports the conclusion that the expansion of the current rule to new fleets should occur consistent with the completion of feasibility studies.

Inconsistency with AB 617 Goals and Plans

The ISOR also mischaracterizes the relationship between the At Berth regulation and AB 617 and omits the inconsistencies with respect to the application of the proposed regulation and port communities. While it is true that the concept of the expansion of the At Berth regulation to potential new vessel fleets is a component of the AB 617 Blueprint, like the SB 32 Scoping Plan and SIP Mobile Source Measures and Sustainable Freight Action Plan, the ISOR materially omits the actual direction included in the AB 617 Blueprint, and therefore misstates the relationship between the At Berth policy and AB 617.

More importantly, while the ISOR points out that the rule is intended to help reduce emissions in priority neighborhoods, in several of these communities such as Barrio Logan in San Diego and Oxnard in Ventura County, the proposed Rule would actually result in short-term increases in DPM emissions according to current CARB emissions inventory results. (see "DPM Inventory," https://ww3.arb.ca.gov/ports/shorepower/atberth_ogv_port_specific_emissions.xlsx)

Moreover, as a rule adopted in 2007 and as of January 1, 2020 fully phased-in well before any actual implementation of any of the actual community plans under AB 617 – indeed only one Plan, in West Oakland, has been approved by the Board – the ISOR's characterization of the At Berth regulation as "one of the new statewide regulatory measures that is included under the CAPP to help reduce air pollution in impacted communities" (II-8) is a vast overstatement. Certainly the expansion of the rule to new fleets could be considered a new regulatory measure, but as an existing rule and with respect to currently regulated fleets this is certainly not a new regulatory measure and as there are few additional at berth vessel emissions to capture there is very little additional pollution to reduce.

Regulatory Structure

PMSA is concerned that CARB is continuing to propose a single regulatory structure to control emissions from multiple disparate vessel types. When the original At-Berth Regulation was adopted in 2007, CARB acknowledged the differences in vessels types and consciously adopted a rule framework that segregates by vessel type. Given the disparities in vessel type, berthing time, emissions, frequency of visits, and technical hurdles, this was an appropriate and proper decision. The same disparities which

existed at the time of the current rule promulgation persist and continue at the present time. Moreover, the currently regulated fleets and their Port and marine terminal partners were estimated by CARB to have needed to invest approximately $1.8 billion in shore power infrastructure under the current rule on the basis of this bifurcation of ocean-going vessel fleets.

The new proposed regulatory framework proposes a single structure for the regulation of disparate vessel types despite the persistence of the same disparities which existed at the time of the initial rulemaking.

Under the existing rule, container, cruise, and refrigerated vessels have been able to successfully comply through a fleet average approach that encourages long-term planning and incentivizes overcompliance in order to manage trade uncertainty. Carriers voluntarily over comply in order to preserve flexibility to accommodate trade surges (as seen in last year's extra loaders – see prior comment letters attached), vessel redeployments, or unexpected equipment repair/maintenance. The proposed structure would eliminate any incentive to over comply and encourage carriers and terminals to exhaust available Vessel Incident Event (VIE)/Terminal Incent Event (TIE) allowances to reduce cost.

CARB should maintain a fleet average approach for the existing regulated fleet in order to ensure its continued success and consider the creation of a separate regulatory structure for any expansion fleets.

The preservation of the existing regulatory structure for currently regulated fleets and consideration of a new regulation for expansion to new fleets can be achieved in a manner which does not impact any projected emissions reductions. It is simply an acknowledgment of the original bifurcation by CARB of vessel fleets over a decade ago and the continued investments and emissions reductions progress made by the currently regulated fleets in expectation of the durability and continuation of the current regulatory program for the foreseeable future.

PMSA respectfully requests that the Proposed At Berth Control Measure be bifurcated into one set of amendments for the existing fleet regulations and another entirely new regulation which is exclusively applicable to expansion fleets.

Rule Requirements are Unachievable

CARB staff have designed a rule that can be quantitatively determined to be impossible to comply with. The attached two Starcrest Analyses demonstrate that the proposed structure including the use of VIEs and TIEs will leave ocean carriers and terminal operators without compliance mechanisms for known circumstances under the proposed regulation.

The evaluation does not include unknown but anticipated circumstances like maintenance, equipment failures, required equipment inspections, vessel redeployments, and extra loaders, nor possible unknown and unanticipated events. As a result, the anticipated degree of noncompliance is likely to be substantially higher. These issues would be substantially avoided by preservation of a fleet average compliance mechanism when paired with an effective vessel compliance checklist.

It is inappropriate that CARB design a regulatory program where noncompliance is a rule feature. At the very least, the number of VIEs/TIEs should be increased to cover all known circumstances with a margin to cover anticipated issues (e.g., equipment maintenance, extra loaders) and/or the significant expansion of circumstances associated with eligibility for participation in a (properly priced) remediation fee program. More appropriately, the proposed rule should be restructured on a vessel fleet average approach, which can achieve greater emissions reductions.

Regulatory Timeline

The timeline proposed in the regulation is unachievable, particularly for the existing regulated fleet. In many cases CARB identifies additional improvements that must be completed in order to meet compliance obligations. In other instances, CARB identifies infrastructure inadequacies but fails to include them in their analysis or consideration of improvements that are necessary to achieve compliance under the regulation.

These issues are addressed in more detail in the Technical Analysis conducted by Starcrest Consulting Group attached to this letter. However, in all circumstances, it is impossible to deploy the necessary infrastructure within the seven to nine months that would be available from the adoption of the regulation. As Starcrest documents, the lead time for this infrastructure is measured in years, not months.

The timeline is so compressed as to produce some absurd and unrealistic results. For example, the plans for how terminals will meet the infrastructure needs for providing shore power to container, cruise, and refrigerated vessels are due six months after terminals must comply with the regulatory requirements. CARB has another three months to review the plans. As a result, the plans for ensuring compliance may not be approved for nine months after compliance is required. If the regulatory paper exercise cannot be completed before the compliance deadline, how can all the necessary infrastructure and alternative control technology that CARB identifies (though underestimates – see Starcrest analysis) be deployed by the compliance deadline in 2021?

US EPA Waiver Requirements Also Render 2021 Implementation Impossible

One of the primary reasons to amend the current rule (as opposed to creating an entirely new regulation in its stead) is to maintain the effectiveness of the existing regulation which already has a waiver from the United States Environmental Protection Agency (USEPA) granted under §209(e)(2) of the Clean Air Act in 2011. CARB sought and was granted the waiver from US EPA as the existing At Berth regulations implement emissions standards applicable to the running of auxiliary engines while at berth in California's ports. (76 FR 77515) This waiver was granted after previous auxiliary engine emissions standards were determined to be unenforceable by ARB without the prior issuance of a US EPA §209(e)(2) waiver. See *Pacific Merchant Shipping Association v. Goldstene,* 517 F.3d 1108 (9th Cir., 2008).

While contesting the waiver at the time, PMSA now believes that given the tremendous investment in the existing emissions reductions infrastructure on vessels, and on shore by ocean carriers, marine terminals, and ports under the existing waiver, that the preservation of the current regulatory structure is in the best interests of both the currently regulated vessel fleets and ARB.

Preservation of the current rule and existing waiver maintains the clear and unambiguous legal status of the existing emissions standards under the current law, avoids any disputes over the authority of ARB to enforce emissions standards on vessels at berth upon the new effective date for new amendments, and takes advantage of the existing waiver in order to foster continued national standardization of shore power rules for vessels which have made a substantial investment in the retrofits necessary to comply.

By contrast, the proposed rulemaking abandons the current rule and the current waiver, and instead promulgates a new emissions standard rule for not just the newly proposed regulated vessel categories but also for existing regulated vessel categories, ports, and marine terminals. This potentially leaves California in a position where all of its regulations for vessels at berth, including specifically any newly promulgated emissions standards, are legally unenforceable without the provision of a new waiver. Such a waiver request from CARB might not even be properly before the US EPA for consideration by January 1, 2021, and it certainly is not reasonable to expect that one would be granted in that time period.

PMSA views the elimination of the current rule and existing waiver as an unnecessary complication that should be studiously avoided. We would instead ask that ARB keep the current rule for the currently regulated fleets and make amendments to this existing rule which are either consistent with the existing waiver or which could be addressed with US EPA within the context of the existing waiver via future amendment.

If for no other reason than to maintain legal clarity and consistency within the at berth program, CARB should take every step possible to ensure that the existing US EPA waiver remains in place and controls the lawful extent of CARB enforcement until a new waiver is granted.

Proposed Rule's Indirect Source Approach to Mobile Source Emissions is Misplaced and Unnecessary

CARB and PMSA have agreed in the past that state attempts to create indirect source rules for mobile sources can be legally problematic. An indirect source rule is a regulation which assigns a liability and responsibility to a facility to reduce indirect mobile source emissions which that facility does not control, when the mobile source can be directly regulated to reduce emissions through a traditional emissions standard, engine standard, or other in-use standard.

We are concerned that many of these hallmarks are present in the proposed control measure when they were successfully avoided in the current regulation. While we appreciate that this new measure's provisions are at least in part an attempt by CARB staff to be responsive to the concerns of several of PMSA's ocean carrier members regarding the need for shared responsibility with ports and marine terminals, we believe that such the provision of shared responsibility for the success of the current

regulated fleets can be best addressed through amendments that provide for both parties to be responsible for those situations exclusively under their own control. Ports and marine terminals at present are responsible for the provision of shoreside power infrastructure and operational support and manning under the current rule, and that will not change under the proposed rule. These entities can be held accountable for such responsibilities in a new set of amendments to the current rule, but they cannot be held liable for an emissions standard violation by an off-road engine on a vessel over which they have no control.

Assigning a vessel's emissions standard liability to a port or marine terminal must be avoided. The creation of third party liability for vessel emissions for a terminal is just as misplaced as trying to hold a vessel operator responsible for the quality of the workmanship performed by a port in installing a power substation or a marine terminal operator not timely ordering the labor to plug-in a vessel once at berth. These should all be treated as independent bases of responsibility and given independent measures of reporting and review.

In many respects this highlights further the fact that ports are really not a good fit with a traditional view of how indirect sources should be regulated. The main purpose of a port and marine terminal is to provide a location where various parts of the intermodal supply chain can come and transact business and interchange equipment, but that interchange is the business activity which is the purpose of the marine terminal, not the operations of the truck, train, or vessel used to get the equipment to the terminal. Once that container is interchanged and on the premises at the terminal, the cargo handling equipment there is the responsibility of the marine terminal – and subject to direct regulation by CARB, rendering any need for an indirect source regulation unnecessary.

Application of Remediation Pathways Must Be Applicable to Numerous Conditions and Consistent With Actual Costs of Remediation

PMSA supports the application of a concept of a remediation fund compliance pathway and the flexibility that such alternative forms of compliance may represent in this and other rulemakings, generally. However, we are concerned that the application of the remediation fund alternative as proposed presents a fee of an arbitrary amount well in excess of the actual value of the remediation sought, is punitive in nature, and represents an excessive duplication of compliance costs for those already in compliance with the rule.

In addition, we believe that if a proposed rule is going to be based solely on a per vessel per visit basis, as opposed to a fleet based average, that such pathways should be provided to vessels on a much broader scale, with increased certainty as to award, and given a prospective value based on a rationalized approximation of marginal costs to avoid duplication of costs of compliance.

The ISOR provides in Table ES-3 (reference to §93130.15 (f), "Table 4") that various vessel types pay various remediation payment amounts in the circumstance of Terminal Equipment repairs, Vessel Equipment repairs, operational delays of a control strategy, or in the case of a terminal construction project. Please identify both the basis for a cost of equivalent emissions reductions claim with respect

to the rate of dollars per gram of emissions, and which emissions, per hour per vessel type, the nature of the equivalency with which these rates are set, and the relative values when applied to vessel engine sizes for various classes of vessels.

We note with some irony that by grouping these values by vessel type that CARB staff is proposing a method of compliance based on some presumptive average emissions rate per vessel type and then applying it fleet wide, thereby basing compliance for this section on a fleet averaging basis. If this is the correct methodology, please confirm.

In addition, we are concerned with the punitive nature of these remediation pathways as proposed. If one presumes, for example, that the average rate of auxiliary engine emissions (DPM) is 0.18 g/kWh and the average power of a vessel's auxiliary engines running at berth is 1,100kW, then the total amount of emissions per hour are approximately 198g DPM. There are 907,185 grams per ton, so 198g DPM is 0.0002 tons DPM. At the present Remediation Fund rate of $1,900 per hour, ***the effective rate of Remediation Fund compliance is $8,705,310 per ton DPM***.

While the ISOR explains that these amounts are "based on the cost of securing equivalent emissions reductions" (ES-34) there is no obvious justification or supporting data for this conclusion.

If these amounts were based on the actual cost of securing equivalent emissions reductions, and one was to use the general cost-effectiveness limits set at $30,000 per weighted ton of emissions reduction from the Carl Moyer program, ***the Remediation Fund rate should be approximately $120 per hour***. A Remediation Fund rate of $120 is 6.3% of the proposed rate of $1,900 per hour, therefore the current Remediation Fund rate is 93.7% higher than the accepted standard cost of securing equivalent emissions reductions. We can only conclude that the proposed remediation rate is not only wholly arbitrary but it is also punitive.

In addition, one additional consideration for a remediation rate that we believe is necessary to make the rate fair and reasonable is to subtract the existing and already incurred costs of compliance from any additional remediation fund rate so as to avoid the imposition of a duplicative compliance methodology on any one vessel. We agree with the ISOR's description of this provision as providing "another pathway for compliance that addresses circumstances where vessels or terminal operators who have already made an investment in a control technology and may not be able to reduce emissions from a vessel's visit for a limited period of time, such as construction projects, terminal and/or vessel equipment repairs, or delays in connecting to an emissions control strategy." (ISOR, IV-91- IV-92)

The Remediation Fund rate should reflect this justification as well, such that the cost of participating in the Remediation Fund as an Alternative Pathway is appropriately limited to the marginal costs of the vessel or terminal over-and-above both the baseline investment made in its regular control technology and the incremental cost of the limited event, such as the equipment repair or cost of hiring an alternative control provider, per call. By discounting the Remediation rate against an established baseline of costs per call for both the original investment in compliance and for the additional costs

invested in the additional compliance required by equipment repair or infrastructure construction, the Remediation Fund will ultimately be fair to the vessel or terminal attempting to comply in good faith by limiting the amount charged only to the marginal additional cost of compliance necessary.

Request for CARB to Clarify and Confirm Application of Proposed Fine Structure Consistent With Health & Safety Code Limitations on Penalties for Violations of Air Toxics Control Regulations

§93130.18(b) of the proposed regulation regarding Violations states that "any failure" shall constitute a single violation "for each day that a vessel operates without using a CARB approved emission control strategy" and (c) provides the same for violations of the "recordkeeping or reporting requirements" as a "separate violation of this section for each day." Given the various descriptions of potential violations are in various other time-blocks, for example the one-hour connection window, or other various potential violations may constitute a violation of checklist reporting and a substantive non-compliance, please clarify the application of this violation provision.

Is the fine or penalty based on the provision of one checklist per call or would a checklist with multiple missed criteria result in multiple fines for the same one day of non-compliance activity such that each checklist item is considered a separate violation?

Please confirm that the language of a separate violation "for each day" means that the amount of a fine is limited in a manner consistent with the penalties sections of the Health and Safety Code which are codified as "not to exceed" a certain amount "for each day in which the violation occurs." If so, please conform the language of the proposed rule such that violations per vessel per call are not cumulative for the same call in the same day. For example, if a vessel is out of compliance with a checklist item for a call in port that lasts for 10 hours between 9 am and 7 pm on one calendar day, that shall be considered only one event and the fine would be less than or equal to the statutory maximum for that entire call.

We also note that there seems to be a typo in §93130.18 (a) which should be corrected or clarified. PMSA presumes that the reference to Health and Safety Code §39764 is intended to be a reference to Health and Safety Code §39674.

Inclusion of Ro/Ro Vessels Not Supported

The proposal to include Ro/Ro vessels is not supported by the evidence. PMSA has commissioned a review of Ro/Ros by Starcrest Consulting Group (see report, Attachment B) that reveals the deep and fundamental flaws in the analysis supporting the inclusion of Ro/Ros within the expanded regulation. Broadly, the issues lie in two broad areas: the presumed emissions benefit and cost analysis.

The emissions benefit presented in the ISOR are overstated. It is expected that Ro/Ro vessels will use alternative control technologies that will result in excess emissions due to tug and bunkering activity. Every use of a barge-based system will require up to six tugboat moves. Those moves would occur only because of the Proposed Regulation resulting in significant emissions when compared to emissions the regulation seeks to control. The analysis presented by Starcrest conclusively shows that once these factors are taken into account, the emissions benefit is reduced to a net benefit of only 40%. Potentially

worse, GHG emissions increase by 50%. If properly accounted for, these emissions would reduce the cost-effectiveness of such systems.

These emissions have not been included in the assessment or accounted for in either the emissions benefit analysis, cost-effectiveness analysis, SRIA, health risk analysis, or incidences per ton analysis. These additional emissions cause cost-effectiveness values to rise, reduce mass emissions benefits, and reduce health benefits. These emissions are significant compared to the source and directly undercut the analyses presented in the ISOR.

The second area of concern is cost. The ISOR presents a cost of $900 per hour for alternative control strategies based on an anonymous conversation. The analysis presented by Starcrest includes actual redacted invoices that show the cost is substantially more. Because every $100 per hour change in the cost of alternative control technologies can swing the cost-effectiveness analysis by more than $12,000 per weighted ton, it is critical that the proper value be used.

Actual invoices show multiple different rates, but also show minimum charges and mobilization/demobilization costs. When considering all costs, the effective rate presented in the available invoices range from $1,100 to $1,522 per hour. This results in a substantially higher cost-effectiveness approaching $200,000 per weighted ton. For comparison, the acceptable Carl Moyer cost-effectiveness threshold for non-zero-emission technologies is $30,000 per weighted ton making Ro/Ros some of the most expensive emission reductions possible.

Finally, CARB staff have never supported their decision to include Ro/Ro vessels and exclude general cargo vessels. While we agree that like Ro/Ro vessels, it is exceptionally likely that general cargo vessels would not be cost-effective to control or would result in excess emissions from other sources, CARB staff has not disclosed their calculations or specific logic with respect to the potential cost-effectiveness of general cargo vessels. Much of the same logic for exemption would apply to Ro/Ro vessels. The disparate handling of these vessel cases could shift some cargo for construction and agricultural machinery to move from Ro/Ro vessels to general cargo vessels since both vessel types can provide the necessary service.

For all these reasons, CARB should remove Ro/Ro vessels from the proposed regulation until emission reductions can be cost-effectively achieved in a manner that does not result in increased GHG emissions and limited criteria and toxic pollutant benefit.

Emissions Inventory

The emissions inventory for At-Berth emissions raises serious issues with the way it presents the emissions projected under the existing rule and the benefits of the proposed rule. As can be seen in the Starcrest Analysis, the emissions inventory does not accurately estimate the future emission reductions under the proposed rule. Under publicly available data from the ports, approximately 95% of vessel visits are subject to the existing rule. The emissions inventory assumed that only 77% of vessel hours are subject to the existing rule in the Port of Los Angeles and only 74% in the Port of Oakland. The result

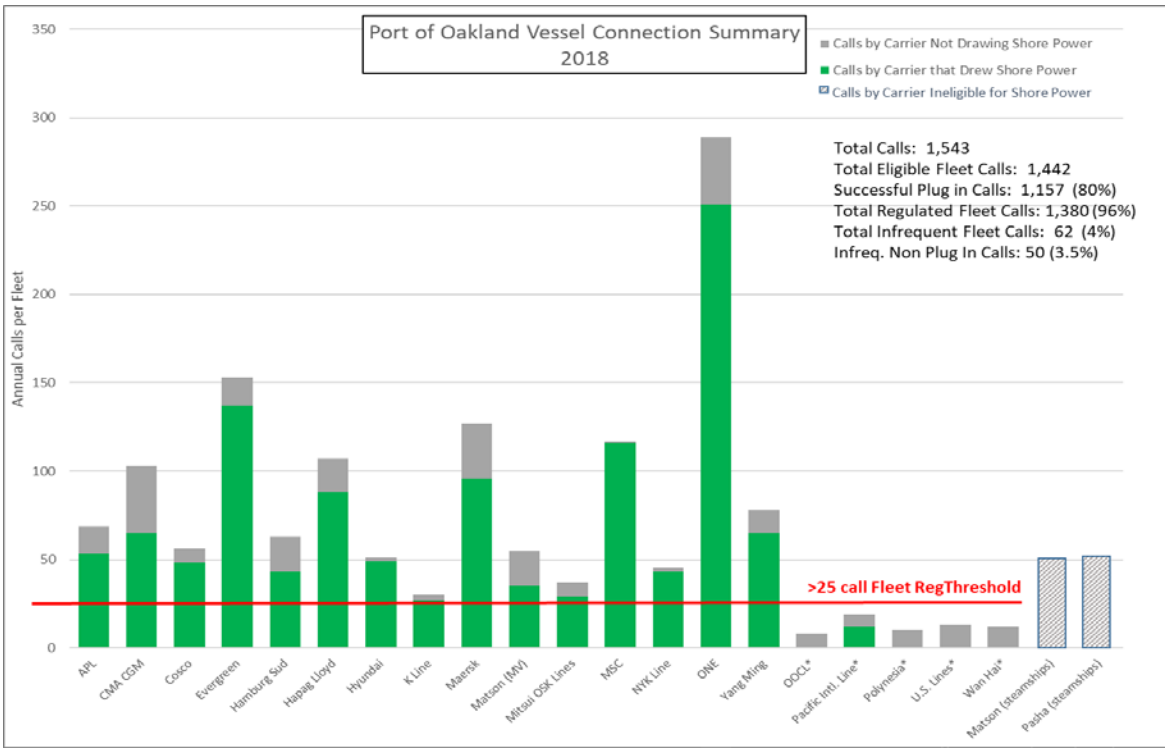
of this underestimation is twofold. First, the emissions benefit under the current rule is significantly underestimated. Second, the emissions benefit of the proposed rule is grossly overestimated.

In fact, the net benefit of the proposed rule for the existing regulated fleet is largely illusory. The rule moves from 80% fleet emission reduction to an 80 % individual vessel approach. The rule largely sacrifices flexibility for the existing regulated fleet in return for no meaningful emissions benefit.

The presentation also understates the benefits of the existing rule and overstates the benefit of the proposed rule for the existing regulated fleet by not including the benefits associated with Proposition 1B for shore power infrastructure. Proposition 1B provided funding to Ports and marine terminals for shore power infrastructure in return for contractual commitments that the emissions reductions from vessels calling on those facilities would exceed the requirements of the existing At-Berth Regulation. As a result, many of the emissions benefits attributable to the existing rule under the emissions inventory are largely attributable to vessels already captured under the existing rule but not accounted for, as described previously, and the Proposition 1B contractual commitments. Without properly accounting for these two major elements, the CARB staff analysis provides an inaccurate presentation of emissions benefits of the proposed rule from the existing regulated fleet.

The inventory analysis also does not model the existing rule's requirement that a vessel capable of connecting to shore power must do so. Again, if the at-berth inventory model did so, it would attribute more emission reductions to the existing regulation and fewer emissions benefits to the proposed rule impacting the results of subsequent supporting analyses, such as health risk, cost-effectiveness, and overall levels of emissions reductions.

To illustrate the limited availability of additional emissions to seek to control from existing regulated fleets as well as from emissions from current vessels connecting to shore power which are under the current fleet threshold, consider the 2018 vessel visits at the Port of Oakland – the Port which plugged in the most vessels in California (and in the entire world) that year – below:



In 2018, the scope of non-regulated vessel calls represented only 4% of total calls of non-steamship container vessels. And, after accounting for those vessels which also plugged in, the remaining potential scope of additional capturable vessel emissions left to address through potential rule expansion is further reduced to only 39 vessel calls out of 1,442 total calls, or 3.5%. Control of these emissions at an 80% control factor and application of some percentage of TIEs/VIEs (as these are the smaller, non-equipped vessels) are exceptionally small. PMSA has estimated that these calls represent a grand total of additional emissions to capture of only about 340 lbs/year DPM, or approximately 0.0005 tpd.

With regard to the expansion fleet, the inventory analysis overstates the benefits of the proposed rule by ignoring offsetting emissions from tug and bunkering activity as described in the Starcrest Analysis. The attached Ro/Ro analysis demonstrates that effectiveness of the rule is reduced to a 40% emissions reduction for pollutants while increasing GHG emissions by 50%. These emissions impacts are attributable to known, unavoidable consequences of the proposed regulation: increased tug activity and at-anchorage fuel bunkering. Whether you consider the net impact to be an increase in excess emissions or a decrease in the net benefit, the impact is the same to reduce cost effectiveness, reduce risk reduction, reduce benefits described in the Incidences per Ton analysis, and reduce the cost to benefit ratio. The ISOR does not properly account for any of these foreseeable outcomes in these analyses.

Cost/Health Benefit Analysis Deeply Flawed

Taken together, the flawed cost analysis with regard to alternative control technologies and flawed emissions analysis results in a flawed cost analysis. As the Starcrest analysis lays out, CARB has calculated the total cost of this regulation as $2.164 billion with $2.245 billion in health care benefits, which amounts to a thin margin of only $81 million. A more realistic hourly rate for barge-based control systems, based on actual invoices rather than anonymous conversations, alone would add $231 million to the costs of the Proposed Regulation for a total cost of $2.4 billion, exceeding the health benefits. If the emissions analysis properly accounted for excess emissions in its calculation of health benefits the cost/benefit analysis would swing even more negative.

In fact, the Starcrest Analysis reveals that CARB is using two inconsistent data sets, particularly in regard to the existing regulated fleet. One set for analyzing the cost of the rule appears to minimize the additional infrastructure and vessel retrofits necessary to comply with the proposed regulation. The other set appears to maximize the number vessels not subject to the rule, increasing the emissions benefit of the proposed regulation. Both of these circumstances cannot be true. Even worse, when the two sets are brought together to compare the total regulatory costs to the value of the health benefits, the discrepancy is magnified. A consistent data set should be used throughout the ISOR and its supporting documents. Please confirm if the data set used to determine costs is the same data set used to evaluate emissions.

Methodology for the Introduction of Marine Terminal and Port Responsibility Is Counterproductive, Costly, and Unnecessary

The universal experience at all of California's seaports under the current rule is that the berths with the highest levels of compliance are operating with existing shared responsibility by contract between ports and terminals with ocean carriers, not by regulatory requirement assigning specific costs or liability amongst the parties. The current regulation and complementary incentive programs provide that the marketplace shall drive Ports and marine terminals to provide an effective set of infrastructure facilities and safe, competent, reliable labor shoreside in order to allow oceangoing vessels to be compliant with the current regulation. The current numbers demonstrate that this model is not only effective at delivering compliance, but it effectively generates over-compliance.

While there are gaps in the provision of shoreside power at certain berths, and some recurring crowding or repositioning issues exist, the number of vessel calls which are impacted by these issues has proven to be very small. For example, year to date in 2019 at the Port of Oakland, "timing and crowding" issues only impacted 1.6% of all vessel calls. In some instances, the best remedy for these types of issues may be an investment in additional new substations and vaults or cable-reel systems when safe and available for use. To that end, CARB holds the purse for any number of funds for which at berth investments are eligible, but it remains to be seen if CARB would want to prioritize these types of multi-million dollar investments to try and capture emissions from an additional 19 vessel calls out of 1,175.

PMSA believes that there is a role for enhanced marine terminal and port responsibility on a check-list basis, but that such responsibility should be limited only to circumstances within the control of the port

or marine terminal, and should avoid the hallmarks of an Indirect Source Regulation. The parallel corollary to this is, of course, that a vessel should also only be held liable for the circumstances under the control of the vessel. The proposal is set up in a manner which creates unnecessary and counterproductive conflict and competing interests between marine terminals and vessels, will result in enforcement conflicts, disputes over the proper uses of TIEs and VIEs, and yield unnecessary and costly divergences in interests between customer and service provider. None of these changes improves emissions or air quality outcomes – all of them create new commercial complications, costs, and uncertainty that should be studiously avoided.

Specific Regulatory Language Issues

The proposed regulation also contains a number of problematic elements that make implementation difficult and will subject entities to non-compliance risks even when taking all reasonable steps possible to comply.

Distributed Generation

The proposed regulation includes restrictions on "Distributed Generation" that are problematic starting with the definition. Distributed generation is defined as power produced near the place of use. In industrial areas like ports that could refer to power plants sharing a fence line. The definition also does not include any element of control. If a terminal ends up using distributed generation, even if better defined, because their port authority or utility distributes the power to the terminal facility, the terminal operator likely has no ability to modify that. Additionally, if CARB envisions distributed energy as an alternative control technology, there should be no difference between the emission limits set for distribution generation over other alternative control technologies, apart from already existing CARB and local air district rules for permitting such distributed power. There is no logical basis to prefer similar emission profiles from alternative control technologies over distributed generation systems.

Approved Emission Control Strategies

The requirements identified under Section 93130.5 are potentially self-defeating in allowing additional control technologies to supplement shore power for rule compliance. The proposal envisions emission control systems operating interchangeably across different vessels, hopefully lowering capital costs. However, the rule establishes different allowable emission rates depending on vessel type ensuring that such systems cannot be used interchangeably. This requirement alone would drive up the number of units necessary and therefore costs and was not analyzed by CARB staff.

Potentially worse, CARB grants an effective five-year monopoly to the two existing alternative control strategies allowing them to continue to operate under existing Executive Orders (EO), while subjecting any competitor for the first five years to more stringent and costly requirements. It is also unclear whether existing alternative control technology suppliers would be allowed to build additional, identical equipment and be subject to the same five-year advantage or that advantage is only limited to extant equipment. In other situations, CARB provides the EO to the equipment type, not to individual pieces of equipment.

One of the requirements that CARB demands for alternative control technologies is a warranty. Similar to other air quality programs, warranties ensure long-term emission reductions. However, a warranty is only as good as the financial assets behind the company offering the warranty. CARB should require a demonstration of the financial wherewithal to provide a 10-year warranty or require a performance bond to ensure that warranty obligations can be made.

The provisions for emissions testing upon selling or leasing an approved emission control system are unnecessarily burdensome. The proposed regulation already includes a requirement for annual source testing. It is unclear why additional testing is necessary if the equipment changes ownership or leaseholder. Such a requirement would also discourage short-term leasing options as it would add costs every time the system is leased to a new user.

Regarding the annual emissions testing, the proposed regulation is unclear as to which entity is responsible for conducting the emissions testing: the manufacturer, warranty provider, owner, lessee, or operator.

Opacity Requirement

The proposed rule establishes an opacity limit for vessels at anchorage. Such a requirement conflicts with established International Maritime Organization (IMO) and USEPA emissions standards for vessels. USEPA rules preempt state and local emissions standards for oceangoing vessels. While not quantified as a typical numerical standard but a limit based on Ringelmann values, an opacity limit is clearly an engine emissions standard for an operating vessel – even if that operation is at anchorage. Such standards should be promulgated for new engines and done so through existing IMO/USEPA framework. Accordingly, CARB should eliminate the proposed emissions standard from the regulation.

One-Hour Connection Requirement

CARB staff proposes a one-hour limit on the connect and disconnect times for shore power. Such a requirement is arbitrary and capricious and not based on any evidence that it is safe or feasible. As we have said in previous letters, the existing rule permits multiple connection strategies, some of which will require more than one hour. More importantly, the shore power connection process requires individual people to manhandle heavy, high-voltage equipment and energize that equipment – sometimes in adverse weather conditions. Under no circumstances should that work be performed under a stopwatch. In addition, there is no need for the stopwatch. The labor crew on the scene will make the best determination, keeping in mind safety, of how to handle the connection process. The labor crew is there for the purpose of making the shore power connection and there would be no interest on their part to delay it. Finally, the one-hour requirement would likely be ineffective because any exceedance of the one-hour requirement would likely result in a safety exemption being sought, as having labor move faster handling high voltage equipment would be fundamentally unsafe.

One PMSA member, Maersk, had the ability to analyze shore power connection data using the parameters of the proposed connection requirement on 135 vessel calls back to May 7, 2019. Maersk determined that 38% of the calls would not have met the proposed 1-hour rule on arrival (27% in LA,

34% in Long Beach, and 54% in Oakland). CARB staff has provided no basis on which it can be assumed that connection times can be consistently and safely accelerated. In fact, no data is available from CARB justifying the one-hour connection window.

PMSA recommends that one-hour limit be replaced with a checklist approach. CARB has never identified an instance when labor was available that a vessel was not connected to shore power in a timely manner. All discussions regarding the connection process have not been about how fast people work, but verifiable steps were taken by responsible parties: did the terminal order labor? is the vessel-shore power capable? did the port authority send staff to energize the connection? As we have argued in past comment letters, these items can be successfully determined through a checklist approach without putting labor at risk with a stopwatch for handling heavy, high-voltage equipment.

VIEs/TIEs

The VIE/TIE structure proposed in the draft regulation is extraordinarily problematic and compounds problems in the existing regulation. One of the primary shortcomings of the existing regulation is that it unintentionally holds regulated parties responsible for outcomes outside their control. So far, industry and CARB staff have successfully managed this shortcoming. The proposed regulation does not solve this issue; instead it formalizes it.

One example of this is impacted schedules. For example, the Port of Oakland is very busy, with more vessel calls than either the Port of Los Angeles or Port of Long Beach. A vessel's time at berth is, however, much shorter in Oakland with a typical duration of less than 24 hours. It can be reasonably expected that a terminal in Oakland will plan to berth a vessel in a way that it will be able to connect to shore power. However, if a vessel is delayed by 24 or 48 hours, another vessel is likely to be at that same berth during its scheduled time. The terminal operator has two choices, move the vessel to anchorage to wait for that berth to become available or serve the vessel at an available berth where it may or may not be able to connect to shore power. If it is unable to connect to shore power directly, there are no alternatives. CARB has determined that alternative control strategies are not viable in Oakland and the proposed cable reel management systems has not been deemed safe for use (see prior attached comment letters). The proposed regulation holds the terminal responsible for the vessel's late arrival if the vessel is unable to connect, thus incentivizing the terminal to put the vessel to anchorage and resulting in a net increase in emissions. This is an absurd outcome if a terminal has taken the necessary steps to schedule and plan for vessels to connect to shore power.

The proposed rule even holds the terminal operator responsible for selecting alternative control technologies for vessels. A terminal operator cannot reasonably exercise proper engineering judgement to determine the suitability and compatibility of an emissions control system for a vessel. What would happen if a terminal operator selects a CARB-certified emissions control system, but a vessel operator does not allow it to be connected due to concerns of compatibility with the vessel? Even the regulation acknowledges that the terminal may not be compatible with the vessel's needed emission control strategy. Only the vessel operator can determine the suitability of alternative control technologies for vessels they control.

The proposed regulation even engenders disputes between ocean carriers and terminal operators. When no one is at fault, how will CARB resolve the dispute? Because the proposed regulation still attempts to hold a terminal or ocean carrier responsible for actions outside their control, disputes will invariably arise. What dispute resolution process will CARB put in place? How will it adjudicate the use of VIEs/TIEs when ocean carriers and terminals do not agree on fault? What will be the timeline for such a process?

A greater flaw in the VIE/TIE scheme is the fact, as demonstrated in the Starcrest analysis, that there are insufficient VIEs/TIEs available to ensure compliance for known issues identified by CARB. As discussed earlier, VIEs/TIEs will be needed to for unknown and unexpected changes in trade, vessel deployments or equipment failures and maintenance. This can only be corrected by greatly increasing the number of VIEs/TIEs, at the cost of reduced emissions reduction. A fleet average approach would avoid all of this.

Rather than holding parties responsible for issues outside their control, a checklist approach that establishes clear lines of responsibility should be used to manage compliance. Such an approach was detailed in an alternative submitted (and attached) by PMSA in 2017. Any approach that holds a party responsible for actions the party cannot reasonably control is likely to be unenforceable.

Other limitations of the VIEs/TIEs scheme are that is creates market problems. New entrants to the California market would have no VIEs/TIEs under the proposed scheme creating a significant barrier to entry. There have been several new entrants to the transpacific container market in the past few years. Under the proposed regulation, it would be almost impossible for them to enter the California market and grow their business due to the uncertainty new markets bring. Other issues include companies going bankrupt (which, again, has recently happened) that results in competitors attempting to claim that business, but would be virtually impossible without an increase in VIEs/TIEs to match that unexpected growth opportunity.

<u>Commissioning</u>

The proposed regulation imposes requirements on the vessel operator to seek approval, presumably ahead of time, for a vessel commissioning that requires more than one visit or instances where the terminal requires the vessel to be recommissioned. First, the language should recognize that it is often the port authority that imposes commissioning requirements and not the terminal. Second, an ocean carrier should not be held liable or required to seek CARB approval for imposed commissioning requirements. The ocean carrier has no ability to determine the extent of commissioning or the frequency imposed by a port authority. If CARB wishes to regulate commissioning, it should do so on the responsible party, which is not the ocean carrier. At most, the requirement should be revised to provide a notification to CARB within a specified period, but the ocean carrier's compliance should not be at stake as a result of another party's safety protocols.

The proposed regulation also places unnecessary burdens on terminal operators. The proposed rule requires that if a vessel is commissioned at a terminal in a given orientation (i.e., starboard or port) that

the terminal may never change operations in a way that would require vessels to berth in a different manner. Terminals must have the ability to modify operations, which can include changing berthing requirements. It is unnecessary for the rule to preclude this. These are commercial and safety decisions that should be left between the terminal operator and ocean carrier. Terminal operators have incentives not to alienate their customers and ocean carriers have multiple terminal options to serve their needs. CARB should not restrict the ability to modify their operations, possibly to the needs of a different ocean carrier.

Reporting Requirements

Reporting requirements should not be duplicative and data collection should only be sought from the responsible party that produces the data. The proposed regulation has requirements for both terminal operators and ocean carriers to provide the exact same information. In other instances, CARB does not seek information from the responsible party. In some instances, port authorities will have control over power consumption data, and in other instances terminals will have control over power consumption data, yet CARB assigns specific reporting requirements for this to only one party, thereby imposing a burden that some terminal operators may not be capable of fulfilling. CARB should simplify the reporting requirements to reduce redundancy and ensure that the party that actually generates the data is the party responsible for reporting.

Other reporting requirements include items that are irrelevant to the monitoring of rule compliance. CARB already has an OGV Fuel Rule in place to control and monitor fuel usage in oceangoing vessels within California waters. The proposed regulation needlessly adds reporting requirements that can be obtained through that rule's requirements without adding a permanent, redundant regulatory burden within this rule structure. The fuel reporting aspects of this rule should be eliminated.

Terminal plan reporting includes a requirement to list each berth with geographic boundary coordinates. Berths are not so precisely defined. As discussed in the Starcrest analysis, what constitutes a berth is dependent on the vessels that call a terminal. As the Starcrest analysis points out, the CARB assessment assumes a static world where vessel sizes do not change, and this reporting requirement reflects that. This reporting requirement should be eliminated and CARB should update the ISOR consistent with the attached analysis.

In completing all this reporting, the rule provides only seven days for reports to be submitted to CARB. This is too short a timeframe to consistently prepare reporting. CARB should increase the reporting period to 45 days. CARB staff should also work with industry in its development of the proposed online reporting tool. In order to ensure success, the functionality of the online reporting tool should be consistent with industry standard reporting practices.

Alternative Control Technology Provider Responsibilities

CARB staff have proposed a complex rule that imposes both certification and warranty requirements with multiple emissions standards for alternative control technologies that could be used in place of shore power. Yet the rule places the burden of equipment failure on the vessel and/or terminal

operator. The rule does not establish any VIE/TIE restrictions on alternative control technology operators. CARB-certified and -warrantied technology operators should be held to the same punitive standards as terminal operators and ocean carriers.

Reporting Requirements for General Cargo and Bulk Vessels

The reporting requirements for general cargo and bulk vessels add a real, quantifiable burden to bulk and general cargo vessel operators, but do not advance any emissions reduction program in California. The State should not impose costly reporting requirements for the sole sake of collecting more information, particularly when there is no planned use for that data. If CARB identifies a future need for such data, it is readily available through alternative sources such as marine exchanges or port authorities. There are even existing regulatory tools in place like the OGV fuel rule that CARB can use to obtain vessel information and ensure significant emission reductions. There is no reasonable basis to place a permanent, costly reporting burden for no measurable or identified benefit.

CARB staff should also be aware that aspects of the rule do not make sense for bulk vessels. For example, while the ready-to-work definition may be appropriate for container vessels, the definition is not appropriate for bulk and general cargo vessels. This is a further reason why the reporting requirements for bulk vessels are burdensome, even if such vessels are exempt from the emission reduction portions of the rule.

Ultimately, increased liability and uncertainty for bulk vessels will only harm California exports, particularly California agriculture that is dependent on bulk vessels to cost-effectively move their products to foreign markets.

Vessel Diversion Is Not Analyzed for Either Its Economic or Environmental Impacts

The ISOR and SRIA do not properly analyze the possibility of vessel diversions and their economic and environmental impacts. The costs of the rule are not limited to on site infrastructure and labor, ship retrofits or electricity rates, but they also include the value of lost business to local port communities and increased GHGs which occur when vessels are diverted away from the US West Coast.

Already the proposed rule has resulted in cancelled cruise calls to California ports based on prior proposals and the current proposal is only likely to continue that trend. The rule creates a level of uncertainty that vessel operators will find difficult to manage. For cruise and container vessels already frequently calling on California ports, compliance has and will continue to be a success story. But not all vessels call California regularly, much less frequently, which is exactly why CARB built the fleet-size thresholds into the current at berth regulation. The first effects of the elimination of the fleet rule and the fleet-size thresholds are being seen in the cruise industry, where passage is booked much earlier than for freight. As a result, cruise vessels are the “canary in the coal mine” of what can be expected across the maritime industry. Cruise calls that are part of world voyages or transitioning /repositioning voyages (i.e., extremely infrequent California port callers) have already been cancelled for 2020 and 2021. Based on current activity this is expected to impact 19 calls annually (12 in San Francisco, 6 in Los

Angeles and 1 in San Diego), resulting in tens of millions of dollars of economic impact to local communities.

The ISOR and SRIA should evaluate these impacts that have now occurred – they are not speculative – as a result of the proposed regulation and can be expected to broaden to other parts of the maritime industry as ocean carriers avoid California ports due to an inability to plan for rule compliance because of a lack of alternative control strategies and a demonstrated insufficiency of VIEs/TIEs. The simplest approach to address this issue of vessel diversion to return the proposed rule to a fleet average approach with an exception for fleets that have few California calls.

Likewise, with respect to diversion in the container industry, the ISOR should evaluate the global GHG increases and impacts which will occur with diversion of vessels away from the US West Coast. With the substitution of an every-vessel, every-call standard rather than a fleet average. CARB is well aware of and helped to affirm the methodology for the study commissioned by PMSA in 2017 which evaluated GHG impacts associated with container vessel diversions away from California's ports. (http://www.pmsaship.com/pdfs/PMSA%20carbon%20comparison%20context%20piece.pdf)

Relative Cost-Effectiveness Comparisons Between Existing Regulation and Proposed Regulation Are Missing from the ISOR to Help Assess the Need for Elimination and Replacement of Current Rules

The ISOR completely omits cost-effectiveness comparisons between the current regulation as applied to container, cruise and refrigerated vessels with the additional costs of the newly proposed regulation. We believe that this is a significant omission given the $400+ million price tag for the currently regulated fleets when compared to the relatively minuscule scale of remaining at berth emissions subject to control.

Further frustrating efforts at potential comparison, the ISOR for the current rule did not use in 2007 a weighted cost-effectiveness methodology, but the 2019 proposed rule ISOR does use a weighted cost-effectiveness. So a casual comparison of the two ISORs for these rules do not yield an apples-to-apples or oranges-to-oranges basis for evaluation. If one were to look at these two ISORs on their face, as apples-to-oranges, the public might conclude that the current regulation is much less cost-effective than the proposed regulation at reducing emissions from container and cruise vessels, even though the proposed regulations reduce only a very small amount of emissions in comparison to the existing rules.

PMSA has attempted to do an apples-to-apples cost-effectiveness comparison of the two rules. Utilizing the 2007 methodology, which is unweighted and instead assigns half costs to NOx control and half costs to DPM control to acknowledge the dual purposes of and effects of the rule. By our estimation the cost-effectiveness of the current regulation for container vessels calling at the Port of Oakland is roughly 10x more costly under the proposed rule than under the existing regulation. See Attachment E.

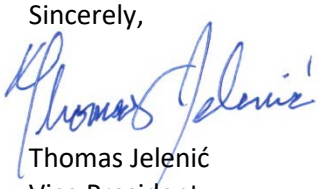
PMSA respectfully requests that CARB perform new cost-effectiveness calculations for all Ports, fleets, and sources utilizing the same methodology as the 2007 ISOR, to yield an apples-to-apples comparison, or reperform all 2007 cost-effectiveness data to the 2019 ISOR methodology, to yield an oranges-to-

oranges comparison, in order to effectively allow the public and Board to see the actual cost-effectiveness levels of the proposed regulation.

Conclusion

PMSA looks forward to continuing to work with CARB staff to improve the current proposal and to work on making discrete, effective, and surgical amendments to the existing at berth regulations through amendment, rather than deleting them off the books and starting entirely fresh with a brand new rule. As an industry which has invested billions of dollars in cleaning the air in California with tremendous success, we want to continue to partner with CARB to protect our investment in clean air, to improve existing compliance methodologies under the current regulation, and to continue to make progress towards the most cost-effective emissions reductions possible which achieve the best public health outcomes. The current proposal does not represent these goals, but we hope to have a regulation before the Board for its consideration which has our support which does result in the achievement of these common goals that we share.

Sincerely,



Thomas Jelenić
Vice President

Attachments

Attachment A: Technical Analysis: California Air Resources Board's Proposed Airborne Toxic Control Measure for Auxiliary Diesel Engines Operated on Ocean-Going Vessels At Berth in a California Port, December 2019
Attachment B: CARB At-Berth Regulation Cost Effectiveness Analysis for Auto Carriers and RoRo Ships at Port of Long Beach & Port of Los Angeles, December 2019
Attachment C: SRIA – Air Resources Board, Proposed Control Measure for Ocean-Going Vessels At Berth, August 26, 2019
Attachment D: Alternative Proposal for Amendments to At-Berth Regulations, February 15, 2019
Attachment E: Port of Oakland Cost-Effectiveness Comparison

Attachment A:
Starcrest Consulting Group
Technical Analysis: California Air Resources Board's Proposed Airborne Toxic Control Measure for Auxiliary Diesel Engines Operated on Ocean-Going Vessels At Berth in a California Port
December 2019

Technical Analysis: California Air Resources Board's Proposed Airborne Toxic Control Measure for Auxiliary Diesel Engines Operated on Ocean-Going Vessels At Berth in a California Port

Prepared for Pacific Merchant Shipping Association
December 2019

PMSA
PACIFIC MERCHANT SHIPPING ASSOCIATION

Prepared by:
STARCREST CONSULTING GROUP, LLC

TABLE OF CONTENTS

LIST OF TABLES

1.0 INTRODUCTION

The California Air Resources Board (CARB) has proposed amending its regulation, "Airborne Toxic Control Measures for Auxiliary Diesel Engines Operated on Ocean-Going Vessels At Berth in a California Port," otherwise known as the "At-Berth Rule." In October 2019, CARB released several documents to support the proposed regulation, including the proposed regulatory language, emissions calculations, the Initial Statement of Reasons (ISOR) and the Statewide Regulatory Impact Assessment (SRIA), among others.

The proposed regulation is intended, according to CARB, to address implementation issues with the existing at-berth regulation and to secure additional emission reductions from new vessel types. Vessels and terminals must use a CARB-approved control strategy to comply, which includes shore power or CARB-certified barge- and land-based control systems. CARB states the total cost of this regulation is $2.164 billion with $2.245 billion in health care benefits.

The proposed regulation includes the following elements:

- 100% control requirement beginning in 2021 for all container, reefer and cruise fleets with no exceptions for small fleets (previously unregulated fleets have until 2023 to comply);
- 100% control requirement beginning in 2025 for Ro-Ro and 2027 for tanker vessels in San Pedro Bay, 2029 for all other tankers
- 1 hour to begin emissions control from the time the vessel is "Ready to Work."
- Exceptions for safety events and commissioning as well as Terminal Incident Events (TIEs) and Vessel Incident Events (VIEs); TIEs are limited to 15% of a terminal's calls until 2024, then 5% of calls, and VIEs are limited to 5% of a vessel fleet's calls indefinitely.
- Payments into a remediation fund

1.1 Project Goals

PMSA retained Starcrest Consulting Group to conduct a technical analysis to validate CARB's technical assumptions; and, where assumptions cannot be validated, identify alternative assumptions supported by publicly available data and industry sources; and to analyze the impact of these revised assumptions on the regulation's outcomes. This analysis examines CARB's assumptions in the following areas:

- Technology
- Operations (Including Timeline)
- Infrastructure
- Cost
- Emissions
- Environmental Impacts

This report presents conclusions that may differ from those presented in the October documents released by CARB; our conclusions could change if CARB subsequently provides further clarification or new information.

1.2 About Starcrest Consulting Group, LLC

This technical analysis was prepared by Starcrest Consulting Group, LLC. Starcrest is dedicated to providing high quality technical, policy, and programmatic services in the field of air quality specifically as it relates to seaports and the maritime industry. Formed in 1997, Starcrest offers its unique perspective in resolving port- and maritime-related air quality and carbon emission issues by applying our extensive project experience and diverse professional backgrounds. Starcrest has conducted 50 port-related emissions inventories nationwide since 1997. It is widely considered an international expert in calculating, assessing, and identifying emissions associated with shipping.

2.0 DATA INCONSISTENCIES

This report relies primarily on data from CARB's own documents: ISOR, SRIA, Berth Analysis, Draft Environmental Assessment (Draft EA), Cost Analysis Workbook, and Emissions Inventory Spreadsheet. In some cases, this report uses information from publicly available documents, such as the emissions inventories from Port of Los Angeles and Port of Long Beach, and information provided by industry sources to Pacific Merchant Shipping Association.

Of note, we found several inconsistencies within CARB's documents, as noted below:

Vessel Visits and Newly Regulated Visits: In the cost analysis, CARB presents one set of numbers for total container/reefer vessel visits and newly regulated container/reefer visits; in the ISOR Table III-6, another set of numbers is used, as seen in Table 1. Additionally, CARB uses still another set of numbers to estimate emissions, assuming that roughly 25% of container/reefer at-berth hours are currently unregulated and will become newly regulated under the proposed regulation. The issues associated with these numbers, namely the inconsistency of these data with other publicly accessible datasets, is described in Section 0. All of these numbers vary significantly and using one set of numbers over the others will change the impacts. If the dataset used for the emissions analysis is correct, a large percentage of the fleet is currently unregulated and the proposed regulation will significantly increase emission reductions; however, this also means that a large number of vessels will need to control emissions at berth, driving up costs. If the dataset used for the cost analysis is correct, and most of the fleet is already regulated, the costs will be lower, but the emissions benefit also will decrease. CARB needs to clarify which numbers it used and remain consistent throughout all analyses.

Table 1: Data Inconsistencies in Annual Container/Reefer Vessel Visits and Newly Regulated Visits

	Cost Analysis		Table III-6	
Port	All Annual Vessel Visits	B. Newly Regulated Annual Vessel Visits - Unadjusted	All Annual Vessel Visits Proposed Regulation	New Visits with Control Requirements
Los Angeles	1029	123	1039	80
Long Beach	909	89	854	45
Oakland	1597	191	1481	127
San Diego	52	0	51	0
Hueneme	155	0	108	0
Total	**3742**	**403**	**3533**	**252**

Unique Vessels Needing Shore Power Retrofits: In the ISOR, CARB states that roughly 36 container/reefer/cruise vessels are in fleets not subject to the existing at-berth regulation and would require shore-power equipment retrofits (ISOR, III-11); however, in the Cost Analysis Workbook, CARB assumes that 57 additional unique container/reefer vessels and 26 additional cruise vessels would install shore-power equipment due to the new regulation (tab: "Berths, Terminals, Vessels"). It is possible the delta between these two numbers (47) represents the number of vessels in currently regulated fleets that would require retrofit, but it is not clear. CARB should clarify its estimates.

Harbor Craft Emissions: Barge-based control systems require tugboats to move them into position. CARB analyzes these emissions in the Draft EA but does not appear to have included these emissions in the ISOR regulatory analysis.

Vessel Growth: CARB acknowledges the increase in vessel size and activity when calculating emissions, at least for POLA and POLB, but does not factor this assumption into the berth analysis.

Wharf Improvements at RoRo Terminals: In the Draft EA, CARB assumes wharf improvements and electrical infrastructure upgrades when evaluating the construction emissions associated with land-side control systems at RoRo terminals; however, CARB does not assume these improvements for the cost analysis.

Where possible, we tried to reconcile these inconsistencies with other datasets or to parse out the numbers used in CARB's analyses; however, CARB's use of various datasets and numbers across multiple documents made it difficult to determine the exact metric used for a particular outcome, which in turn made it difficult to assess the real impact of the proposed regulation.

Should CARB clarify these inconsistencies, our conclusions may change.

3.0 TECHNOLOGY ASSUMPTIONS

Implementation of the proposed regulation is highly dependent on the development of new technologies to control at-berth emissions, particularly for RoRo and tanker vessels. By necessity, CARB makes a number of assumptions about these as-yet-developed technologies; several assumptions could benefit from additional justification, as described below.

- **Certified land-based capture and control systems do not exist today.** Compliance for RoRo terminals is predicated on the development of certified land-based capture and control systems, which do not exist today. CARB references a single "prototype" unit at the Port of Los Angeles (ISOR, I-33). Although CARB states the various component parts already exist, these components have not been integrated or marinized for use in the harsh port environment. Additionally, these control systems must be able to reach RoRo vessels of various sizes and configurations, which has not been evaluated, nor have such systems been tested in different terminal operating configurations; some RoRo terminals use the entire wharf for staging, maneuvering, and parking cargo, leaving little room for control systems. Technology developers will need to design, construct, test, and certify these new systems in a 5-year window; today's barge-based systems took nearly 10 years to complete this path.

- **Grid-neutral barge-based control systems may require batteries or fuel cells, which will make these systems larger and heavier than today's generation.** No new control system will be approved unless it is grid-neutral, and even the existing grandfathered systems will need to be grid-neutral by 2025. Technology developers may design for this requirement using batteries or fuel cells (ISOR, ES-26). These power systems may result in larger barges that pose a more significant navigational hazard, forcing some terminals to shift toward land-based systems, which is not contemplated in the regulatory analysis.

    - **Charging Infrastructure:** CARB has not accounted for the potential need to recharge battery-powered systems when not in use. The barge-based systems will need wharf space with electrical outlets, and these costs are not reflected in the analysis.
    - **Renewable Fuels:** Should CARB assume that renewable fuels will sufficiently meet the grid-neutral requirement, CARB should provide an assessment of the availability of renewable diesel or renewable natural gas with the technical specifications required for marine engines and include renewable fuel infrastructure in the cost analysis and implementation timeline.

- **CARB assumes control systems at RoRo terminals will be similar in size and scope to the existing land-based and barge-based control systems.** CARB should further evaluate the significant technological and infrastructure modifications that will be necessary to make today's systems grid-neutral by 2025. CARB projects these technologies will shift to grid-tied electric, battery- or fuel-cell powered to meet this requirement (ISOR, I-33), or transition to renewable fuels, but neither the cost analysis nor timeline reflects this assumption.

- **CARB cites cable-reel management systems as a potential solution with limited evidence.** Although CARB references cable-reel systems to potentially enhance shore-power access (ISOR, III-12), the Berth Analysis identifies that nearly every existing cable-reel system has not or cannot be used due to design flaws, wharf restrictions, or other operational constraints. Additionally, these systems have not been certified to longshore labor requirements or international shore-power standards. Absent additional technology development and wharf improvements, cable-reel systems may not provide additional compliance options.

4.0 OPERATIONAL AND TIMELINE ASSUMPTIONS

The proposed regulation includes elements that may not reflect operational realities or feasible implementation timelines. Where possible, CARB may want to clarify the rationale behind the elements noted below, particularly where other data conflict.

- **Access to shared barge-based systems assumes on-time vessel arrivals and departures and harbor craft availability, which may not always occur.** Vessels are often delayed due to weather or other scheduling conflicts. Additionally, tugs may not be available to deploy a barge-based system when needed, especially if a vessel is delayed. If a vessel is planning to use a barge-based control system for compliance and is then delayed, that control system may not be available for use. The unpredictable nature of vessel schedules could force operators to use VIEs or pay into the remediation fund despite full efforts to comply, or it may force terminal operators and ports to invest in back-up systems, which are not accounted for in the cost analysis.

- **CARB imposes a 1-hour connection timeframe for shore power, which could pose safety issues.** CARB has not provided justification for the selection of a one-hour timeframe to connect and disconnect shore power. For San Pedro Bay Ports, in 2017 and 2018, the average connect and disconnect time for container vessels was between 5 and 5.5 hours with a median time of roughly 3 hours. Table 2 shows the general statistics of auxiliary engine "on" time in 2018. It should be noted that the engine "on" time included in the table is from the time the vessel arrived at berth including the time it took for events such as positioning, first time commissioning or Customs clearance.

Table 2: Port of Los Angeles and Port of Long Beach Auxiliary Engine "On" Time – 2018

Port	Average Time hours	Median Time hours
POLA	5.55	3.27
POLB	5.04	2.6

Note: These data are informational from the Ports emissions inventories and should not be used to assess shore power compliance.

- **Shore power is the only compliance option for Port of Oakland.** Due to navigational constraints, CARB assumes any vessel visiting Oakland must use shore power, even if the vessel visits only once a year (SRIA, 73). This situation seems to conflict with CARB's stated goal of allowing flexibility for ports and operators to devise tailored compliance solutions. Additionally, CARB should evaluate the cost-effectiveness of shore power for this port, given the unique constraints.

- **At the outset, there may be a shortage of TIEs/VIEs owing to known infrastructure deficiencies and infrequent vessel visits not likely to retrofit for shore power.** Although CARB allows fleets and terminals to use TIEs/VIEs or potentially pay into the remediation fund if a vessel cannot connect to shore power, there are some terminals and container/reefer fleets projected to exhaust these exceptions at the outset, as shown in Table 3. These exceptions owe to the known infrastructure deficiencies at some terminals, which could limit shore power access, and to the infrequent callers unlikely to install shore-power equipment. Of note, the following information was taken from CARB's Berth Analysis, which represents CARB staff's research; Starcrest has not independently validated this information, and terminal operators may have different information not reflected in CARB's Berth Analysis and thus not known to Starcrest.

    - **Known Infrastructure Deficiencies:** In the Berth Analysis, CARB notes that several terminals do not have sufficient shore-power infrastructure at the berth. In Long Beach, G235 has a shore-power installation built for a very specific vessel type, which is not compatible with all vessels, and Pier G may need to use TIEs for these 25 calls. At Pier T, the berth can only provide shore power to 3 ships at once, resulting in the potential for TIE usage. In Los Angeles and Oakland, CARB has identified the need for 5 new vaults total; until these vaults are constructed, it is likely these terminals will need to use TIEs. In total, 412 visits are at risk of using TIEs early on due to limited shore-power infrastructure, yet these terminals only have 253 TIEs to use.

    - **Infrequent Callers.** CARB has calculated the number of infrequent callers unlikely to install vessel-side shore power equipment (less than 3 calls annually in Long Beach and Los Angeles and less than 4 calls annually for all other ports; all vessels calling Oakland are assumed to install shore power).[1] These calls will need to use VIEs, or a barge-based control system, which as discussed in Comment 0.□, may not be available right away. As shown in Table 3, at many terminals, there is projected to be a shortage of VIEs.[2]

Of note, for the terminals and fleets projected to face a shortage of TIEs/VIEs, this analysis assumes perfect compliance on all other calls, which is unlikely to occur. Thus, this analysis may understate the shortages. Indeed, some fleets, such as those calling Pier E in Long Beach, are already close to the VIE limit (4 allowable VIEs, 3 visits unlikely to install equipment), and other exception events could quickly force these fleets over the threshold.

[1] Standardized Regulatory Impact Assessment, page 73.
[2] We are calculating TIEs and VIEs in the same manner as CARB – as a straight percentage of number of calls. We recognize the actual number of VIEs may vary depending on how the fleets organize themselves at each port.

Table 3: Projected TIE and VIE Usage at the Start of the Regulation

Port	Container/ Reefer Visits	No. of Berths	No. of Vessels Able to Use Shore Power Concurrently	Known Deficiencies	Vessel Visits At Risk of Not Being Able to Access Shore Power	Allowable TIEs	Shortage of TIEs	Visits from Infrequent Vessels Not Likely to Install Shore Power	Allowable VIEs	Shortage of VIEs
Hueneme	155	3	3	None	0	23	No	0	8	N/A
Long Beach - Pier A	225	3	3	None	0	34	No	14	11	**Yes**
Long Beach - Pier C	82	2	2	None	0	12	No	0	4	No
Long Beach - Pier E	83	3	3	None	0	12	No	3	4	**No**
Long Beach - Pier G	146	3	2	G235 has limited shore power for a specific vessel type.	25	22	**Yes**	2	7	No
Long Beach - Pier J	138	4	4	None	0	21	No	11	7	**Yes**
Long Beach - Pier T	235	4	3	Can only plug in 3 ships at a time.	58	35	Yes	4	12	No
Los Angeles - APM	202	5	5	None	0	30	No	3	10	**No**
Los Angeles - Everport	142	2	2	None	0	21	No	2	7	No
Los Angeles - Fenix	132	4	4	None	0	20	No	10	7	**Yes**
Los Angeles - TraPac	99	3	3	None	0	15	**No**	1	5	No
Los Angeles - WBCT	233	4	4	2 additional vaults needed.	115	35	**Yes**	3	12	No
Los Angeles - Yusen	221	3	3	None	0	33	No	2	11	No
Oakland - Everport	153	2	2	None	0	23	No	N/A	8	**N/A**
Oakland - Matson	107	3	3	None	0	16	No	N/A	5	N/A
Oakland - OICT	1072	5	5	3 additional vaults needed	214.4	161	Yes	N/A	54	**N/A**
Oakland - TraPac	265	2	2	None	0	40	**No**	N/A	13	N/A
San Diego	52	3	1	Can only plug in 1 ship at a time. No overlap days in 2017.	0	8	No	0	3	No
TOTAL	**3742**	**58**	**54**		**412**	**561**	**4 terminals**	**55**	**187**	**3 fleets**

*CARB notes it needs to confirm how many vessels can plug in at same time at POLA Yusen and Fenix; for this analysis, assumed all berths have shore power.

Information Sources:
Container/Reefer Visits = CARB Berth Analysis
No. of Berths = CARB Berth Analysis
No. of Vessels Able to Use Power Concurrently = CARB Berth Analysis
Known Deficiencies = CARB Berth Analysis
Vessel Visits at Risk of Not Being Able to Access Shore Power = Calculated; number of visits to the berth that has a deficiency, or where number of visits to the deficient berth is not specified, total terminal visits/number of active berths
Allowable TIEs = Calculation; 15% of terminal visits
Shortage of TIEs = Calculation; Yes = number of vessel visits at risk of not being able to access shore power > allowable TIEs
Visits from Infrequent Vessels Not Likely to Install Shore Power = CARB Berth Analysis
Allowable VIEs = Calculation; 5% of total terminal visits
Shortage of VIEs = Calculation; Yes = number of visits from infrequent vessels not likely to install shore power > allowable VIEs

Assumptions and Notes
Scenarios represent 2021-2024 timeframe. Assume infrastructure deficiencies are remedied by 2024, and there would be no change in VIE percentages.
Assumes failure to provide shore power infrastructure is terminal responsibility (TIE).
Assumes failure to retrofit for shore power is vessel responsibility (VIE).
Vessels at risk of not using shore power could also use a barge-based control system.

- **The January 1, 2021, implementation timeline for container/reefer vessels in fleets currently subject to the regulation will not provide sufficient time for infrastructure buildout, control-system development and vessel retrofits.** For fleets subject to the current regulation, new requirements for 100% shore power begin January 1, 2021. Assuming passage of the regulation in May 2020, this timeline leaves roughly 8 months to meet the additional requirements. CARB has identified a number of infrastructure, control system, and vessel equipment improvements that would need to occur for 100% compliance, or else these vessels/terminals would need to use TIEs/VIEs or pay into the remediation fund. As shown in Table 4, these various improvements are likely to run past the January 1, 2021, deadline.

    - **New Shore Power Vaults:** CARB identified the need for 5 new shore-power vaults statewide to improve the connection rate. CARB assumes 4 months to construct a new vault (Draft EA); however, this estimate omits design, permitting, and procurement and understates construction time. Vault installation projects take closer to 31 months, including design, procurement, and construction, according to publicly available documents describing actual projects of this scope.[3]
    - **New Shore Power Berth:** The Port of San Francisco requires a new shore power berth to accommodate cruise vessels. These projects take roughly 4 years based on publicly available data for projects of similar scope.[4]
    - **New Barge-Based Control System:** CARB identified the need for 1 additional barge-based control system in Long Beach/Los Angeles for infrequent container/reefer callers. CARB estimates it takes at least 2 years for construction of these systems (ISOR).
    - **Vessel Retrofits:** CARB identified that 57 container vessels and 26 cruise vessels (total of 83) would need to be retrofitted for shore power (Cost Analysis Workbook). It is unclear how many of these vessels are in fleets currently subject to the regulation; however, in the ISOR, CARB states that 36 unique vessels without shore power are in fleets not subject to the existing rule (III-11), suggesting that 47 vessels (83-36=47) are in currently regulated fleets and would need to be retrofitted for shore power by January 1, 2021. This conclusion could change should CARB clarify its numbers. CARB allots an extra 2 years for unregulated fleets to install shore power on their vessels, indicating a 2-year retrofit timeframe.

[3] Port of Long Beach Harbor Commission Agenda, November 26, 2018: Modification of Existing Shore Power Vault at Pier T. Indicates that design takes 13-15 months, procurement and contracting takes 10 months, construction takes 10 months.

[4] Port of Long Beach Harbor Commission Agenda, April 12, 2010: Award of Design Contract for New Shore Power Berth at Pier A; Port of Long Beach Harbor Commission Agenda, May 14, 2012: Award of Construction Contract for New Shore Power Berths, demonstrating construction completion by December 31, 2013 for a total of 4 years, including design, procurement, construction, and testing.

These timelines suggest there could be a significant delay in the ability of currently regulated fleets to meet 100% compliance by January 1, 2021. During this delay, fleets and terminals can use TIEs, VIEs, or pay into the remediation fund. Alternative control systems will not be an option, as these systems also must be developed and are not feasible in all ports. Additionally, for some terminals and fleets, TIEs or VIEs may be quickly exhausted, as discussed in Comment 0.□ .

Table 4: Projected Completion Dates to Meet 100% Compliance, Currently Regulated Fleet

Activity	Quantity Needed	Completion Date
Shore Power Infrastructure - Vaults	5	December 2023
Shore Power Infrastructure - Berths	1	May 2024
Barge-Based Control System Construction	1	May 2022
Vessel Retrofits	47	May 2022
At-Berth Regulation Effective for Current Fleets		**January 1, 2021**

Parameters:
The time to construct a shore power vault is roughly 31 months.
The time to construct a shore power berth is 4 years, including design and procurement.
The time to retrofit a vessel is 2 years.
The time to construct a barge-based system is 2 years.
Start date is May 1, 2020.

- **The berth analysis reveals that a number of RoRo visits will remain uncontrolled and not accounted for with TIEs/VIEs due to overlapping vessel berthing.** CARB does not assume one control system for each RoRo berth but rather a mix of dedicated and shared control systems as well as some berths with no control system at all. As a result, some vessel visits will not be controlled because, as noted in the Berth Analysis, many visits occur at the same time and thus will not have access to a control system. Additionally, there will not be enough TIEs or VIEs to cover all of these exceptions (see Table 5). Note, terminals and vessels will need to use their TIEs/VIEs for other unforeseen events, such as routine equipment maintenance or inspections. As a result, this table understates the shortages.
-
  - To ensure 100% coverage, the state needs at least 17 control systems, not 9, as shown in Table 5, which significantly increases costs and the implementation timeline.
  - Or, CARB could assume that some visits, particularly at Port of Hueneme, will be out of compliance at the start of the regulation; such visits should be deducted from the emissions benefits and/or included in the remediation fund costs.

Table 5: Uncontrolled RoRo Vessel Visits and Control System Quantities for 100% Coverage

Port	Ro-Ro Visits	CARB Assumption: Number of Control Systems Needed	1 Berth In Use (# of days)	2 Berths in Use (# of days)	3 Berths in Use (# of days)	Uncontrolled Visits	Allowable TIEs or VIEs (2021-2024)	Allowable TIEs or VIEs (2025+)	Shortage of TIEs/VIEs	Number of Control Systems Needed for Full Coverage
Carquinez	122	1 (barge)	105	3	0	3	6	6	No	2
Hueneme - Wharf 1	19	none[1]	19	0	0	19	1	1	**Yes**	1
Hueneme - Wharf 2	212	1 (land)	213	31	2	33	32	11	**Yes**	3
Hueneme - Wharf 3	9	none[2]	9	0	0	9	0	0	**Yes**	1
Long Beach - Cooper T.	47	1 (barge)	98	15	0	15	5	5	**Yes**	2
Long Beach - Crescent	60									
Long Beach - Toyota	104	1 (land)	104	0	0	0	16	5	No	1
Los Angeles	94	1 (barge)	128	2	0	2	5	5	No	2
Richmond	71	1 (barge)	71	0	0	0	4	4	No	1
San Diego - Berths 2, 4, 5	201	1 (barge)	177	73	7	80	38	13	**Yes**	3
San Diego - Berths 10,11	52	1 (land)								
San Francisco	26	1 (barge)	26	0	0	0	1	1	No	1
Total	**1017**	**9**	**950**	**124**	**9**	**161**	**108**	**51**		**17**

[1] CARB states this berth is outfitted with shore power; unclear if ro-ros would use shore power.

[2] CARB proposes operational changes to avoid berthing vessels here.

[3] It is not clear which berths have overlapping visits; the uncontrolled visits could range from as little as 7 to as high as 80.

Assumptions

One day of overlapping berth usage equates to one uncontrolled visit. It may be only a portion of the visit is uncontrolled, but there is no way to know.
Where the assumed control system is land-based, assume TIE. Where barge-based, assume VIE. Where no control system proposed, assume VIE.
TIEs allowable 2021-2024 = 15% of visits; TIEs allowable 2025+= 5%.
A control system can service only one vessel at a time.
Where CARB has not identified a control strategy, all of those visits are uncontrolled.

5.0 INFRASTRUCTURE

In order to estimate the costs and implementation timeline of the proposed regulation, CARB made assumptions about the likely compliance path for each regulated port. These scenarios are found in the Berth Analysis, which is the basis of the cost analysis; as a result, erroneous assumptions or omissions in the Berth Analysis can have significant impacts on the projected costs and timeline of this proposed regulation. The following assumptions could benefit from additional justification, particularly where contrary data exist.

- **The berth analysis assumes no change in vessel size or operating conditions over the next 12 years.** The berth analysis assumes that shore power infrastructure suitable for today's fleet will be suitable for the 2032 fleet. As the ISOR indicates, since 2014, Ports have had to make significant investments in new shore power vaults and in some cases have lost berths entirely due to the rapid increase in vessel size between the adoption of the original at-berth regulation and implementation. This trend is expected to continue. CARB's berth analysis is based on an average container vessel size of 4,000 to 13,000 TEU in Los Angeles/Long Beach. By 2030, the Mercator report projects an average size of 10,000 to 16,000 TEU ships. Ports will need to modify and potentially add new shore power infrastructure to account for these changes, which should be reflected in CARB's analysis.

- **Information contained in the berth analysis does not always support CARB's conclusions.** In the following instances, CARB does not account for information that pointed to the need for additional or different infrastructure; thus, it is unclear how CARB arrived at its projected compliance scenarios:

    - **Long Beach:** CARB staff noted that Berth G235 has limited shore-power infrastructure designed for a specific vessel type and berthing position. Still, CARB concludes this berth requires no additional infrastructure.
    - **San Diego**: Only one cruise vessel can plug in at any given time. Although CARB notes that two vessels are berthed concurrently 13 days of the year, CARB does not assume additional shore-power infrastructure here.
    - **Carquinez**: The terminal operator notes that land-side and barge-based control systems may not be feasible due to cargo movement constraints and strong currents; however, CARB cites information from harbor pilots, who did not have concerns about a barge-based system if properly designed. Amid these conflicting accounts, CARB agreed with the harbor pilots to conclude that a barge-based system would be feasible rather than taking a more conservative approach.
    - **Hueneme:** CARB assumes the RoRo terminal will use existing shore power installations at Wharf 1, even though CARB acknowledges the inherent challenges of shore power for RoRo vessels (ISOR, III-15).
    - **Hueneme:** CARB assumes no infrastructure at Wharf 3 to control the RoRo vessels, instead proposing "operational changes" to berth these vessels elsewhere.

- **Visual assessments of a wharf are not an accurate measure of what is feasible at a given terminal.** At several ports, CARB relies on Google Maps and its own staff's visual assessments to determine the likely compliance scenario. For example, in Long Beach, CARB assumes a land-based control system at Toyota based on looking at maps of the wharf, and in San Diego, CARB concludes that barge-based systems "look to fit…with no navigational concerns" at many berths. The accuracy of this approach has not been verified. Additionally, this approach does not consider the contractual constraints that may exist at a given terminal; for example, at some terminals, the operator may not have preferential berth access or must vacate the berth at the request of the lease holder, which may prevent development of a land-side control system.

- **Due to the inexperience with barge-based control systems, it may be inappropriate to rely on the opinions of harbor pilots.** Only two barge-based control systems exist, both operating in the same port complex. Harbor pilots in other ports are largely unfamiliar with the existing systems and have no familiarity with the systems yet to be developed. Without more data, it is difficult for pilots to know the true impact on navigational access.

- **CARB has not accounted for supportive infrastructure, including berth space, for barge-based control systems.** Barge-based control systems must be safely berthed while not in use and will require wharf space for repairs, testing, and exchange of personnel. Many ports do not have vacant wharf space for the significant projected increase in barges, as many as 7 barge-based systems in Los Angeles/Long Beach (2 existing units, 1 new system for container ships, and 4 new systems projected for full coverage of RoRo visits).

6.0 COST ASSUMPTIONS

CARB has calculated a total cost of the proposed regulation as $2.164 billion, as articulated in the Standard Regulatory Impact Assessment (SRIA) with data inputs provided in the Cost Analysis Spreadsheet.

- **CARB has underestimated the hourly costs for barge-based capture and control systems.** CARB assumes $900 an hour for barge-based capture and control systems. This cost is based on an anonymous quote from one technology vendor to CARB; however, actual invoices provided by shipping lines indicate much higher rates (Attachment A). In addition to straight hourly rates as high as $1,100, these invoices point to additional charges and vendor-imposed 24-hour minimums, which effectively raises the hourly rate on short calls. At these higher rates, using CARB's assumption of a 20-hour average RoRo call statewide, the cost for a visit is as much as $28,440, far higher than the $18,000 CARB would assume (see **Error! Reference source not found.**). Additionally, at the highest effective rate, the total cost of the proposed regulation for RoRos (not assuming growth) is $231 million compared to CARB's assumption of $128 million, assuming a 20-hour at-berth average.[5] Further, in a separate study of barge-based control system costs at the Port of Long Beach and Port of Los Angeles, Starcrest found even higher hourly rates based on a 17-hour at-berth time, which is the average in San Pedro Bay.[6] This study suggests that per-hour costs will be even higher for some fleets and ports with shorter calls.

Table 6: RoRo Control Costs With Varied Hourly Rates

Statewide Average - 20-Hr Call		
Hourly Rate	**Total Cost – RoRo Visit**	**Rate Source (assumes/indicated all inclusive)**
$900	$18,000	CARB SRIA Excel - "Cost Input Tab"
$1,080	$21,600	$900/hr for 20 hr call (avg.), includes 24-hr min. charge (Receipt #4)
$1,100	$22,000	Receipt #2, Attachment A
$1,208	$24,160	Receipt #1, Attachment A
$1,320	$26,400	$1,100/hr for 20 hr call (avg.), includes 24-hr min. charge
$1,422	$28,440	Receipt #3
San Pedro Bay Ports Average - 17-Hr Call		
Hourly Rate	**Total Cost - RoRo Visit**	**Rate Source (assumes/indicated all inclusive)**
$900	$15,300	CARB SRIA Excel - "Cost Input Tab"
$1,100	$18,700	Receipt #2, Attachment A
$1,208	$20,536	Receipt #1, Attachment A
$1,270	$21,600	$900/hr for 17 hr call (avg.), includes 24-hr min. charge (Receipt #4)
$1,422	$24,174	Receipt #3
$1,552	$26,400	$1,100/hr for 17 hr call (avg.), includes 24-hr min. charge

[5] Assumes 100% control of the 1,017 annual RoRo visits at $28,440 a visit for 8 years.
[6] "CARB At -Berth Regulation Cost Effectiveness Analysis for Auto Carriers and RoRo Ships at Port of Long Beach & Port of Los Angeles," December 2019.

- **The CARB cost analysis assumes no wharf upgrades for land-based capture and control systems at RoRo terminals.** Across documents, CARB presents various assumptions for whether RoRo terminals would require wharf upgrades to support land-based control systems. CARB should clarify its assumptions.

    - **Contrary Data:** CARB assumes RoRo terminals will not require wharf improvements for land-based capture and control systems (ISOR, IX-11); however, in Attachment B of the Draft Environmental Assessment (Air Quality Calculations), CARB calculates construction-related emissions from land-based control systems assuming these systems will tie into the grid and require wharf improvements and electrical infrastructure.
    - **Need for Electric Infrastructure:** Land-based capture and control systems are going to be built for the 2025 standard of grid-neutrality, which means they are likely to be powered by electricity to take advantage of fuel cost savings.
    - **Lack of Electrical Infrastructure:** Of note, RoRo terminals do not have a large amount of existing electrical equipment at the wharf, as noted by CARB (ISOR, page III-14). As a result, there are likely to be substantial electrical improvements needed to support land-based capture and control systems at RoRo terminals, including bringing additional power down to the terminals, which has been proven to be extremely expensive and time consuming to date, totaling tens of millions of dollars in San Pedro Bay alone.
    - **Structural Improvements:** Additionally, wharves are likely to need additional structural support to carry the weight of such systems, as CARB notes here for RoRo terminals: "Land-side systems may require some wharf infrastructure improvements due to the weight of the system (around 120,000 pounds) if existing wharf infrastructure is not adequate" (ISOR, III-16). The CARB-funded demonstration of a land-based control system at the Pasha Terminal points to the need for wharf strengthening at RoRo terminals. Land-based control systems will require large cranes to reach the ship stacks, and even at the Pasha terminal, which was designed for heavy on- and off-loading cranes, the Port of Los Angeles required a special permit to ensure the ShoreKat system did not damage the dock. Most RoRo terminals do not use cranes and are thus unlikely to have sufficient wharf support for this additional weight. Despite this evidence, CARB does not account for wharf improvements in the cost analysis or timeline. CARB assumes more than $50 million in wharf upgrades per berth for tanker-terminal land-based systems; RoRo terminals will likely incur similar costs.

- **CARB assumes no labor costs for operating land-based capture and control systems.** Similar to shore power, terminals are likely to use longshore labor to connect land-based capture and control systems. That has been the case at the Pasha terminal in Los Angeles, which is demonstrating the state's only land-based control system for non-container vessels and has seen a net labor increase as a result of its operation. For land-based systems at tanker terminals, CARB assumes $1 million annually per berth (Cost Analysis Workbook). There is no reason to believe RoRo terminals would be any different. Thus, at minimum, CARB should assume $1 million per berth annually for the 3 RoRo land-based control systems included in the Berth Analysis, which equates to an additional $24 million over the 8-year regulatory analysis period.

- **The non-annualized costs of this regulation point to a significant, concentrated expense in three 1-year periods, which may not be feasible for the industry.** In 2020, the industry will incur nearly $170 million in costs; in 2024, the industry will incur nearly $580 million in costs; and in 2026, the industry will incur $1.1 billion in costs. Contrary to CARB's methodology, previous at-berth projects, including shore power, were not financed over time but rather were incurred as one-time expenses partially offset with public subsidies (e.g., Proposition 1B, Carl Moyer Program, grants for barge-based systems).

  - As the Department of Finance notes, considering the costs as one-time expenses in a given year rather than annualized costs dramatically changes the impacts. CARB cites two example ports – Port of Long Beach and Port of Hueneme. Using annualized costs, CARB asserts the proposed regulation would amount to 5% of Long Beach's annual operating revenues and 2% of Hueneme's annual operating revenues. But when considering the years in which most costs would incur (2026 for Long Beach and 2024 for Hueneme), the proposed regulation would amount to 23% of Long Beach's operating revenue and 15% of Hueneme's operating revenues in that year.

- **CARB does not account for the capital costs of barge-based capture and control systems.** For purposes of the cost analysis, CARB assumes a $900 per hour rate for vessel operators to use these systems; however, in the direct cost analysis, CARB omits the capital costs of developing these systems ($4.9 million according to CARB's estimates), which are borne by some entity – either the technology developers, terminals, or ports. These costs should be factored into the direct cost analysis.

  - To date, no at-berth capture and control system has been privately funded; all of the existing systems have received significant public subsidy. CARB should evaluate the lack of private investment for these systems, which could be a major impediment to implementation.
  - Additionally, CARB should analyze the capital costs of 14 barge-based units (not 6), which represents the number of barge-based systems needed for full coverage.

- **CARB assumes cargo growth factors can address uncertainty.** CARB acknowledges a significant amount of uncertainty in implementing this proposed regulation. Rather than refining the assumptions to minimize uncertainty, CARB applies the growth factors for vessel activity to all costs in an attempt to account for potential changes in vessel size, technology platforms, vessel at-berth duration, and terminal operations. This approach assumes a 1-to-1 relationship between costs and vessel activity, which has not been established, and overlooks the fact that costs are unlikely to increase gradually over time but rather accrue as large, one-time expenses.

- **CARB assumes no vessels will pay into the remediation fund as a result of vessel control equipment repair for container/reefer, cruise, or RoRo vessel types.** CARB did not provide a basis for why vessels would not undergo equipment repair necessitating remediation payments (SRIA, costanalysisworkbook.xlsx). In fact, as seen in Comment 0.□, some fleets will exhaust their VIEs at the outset of the regulation and need to pay into the remediation fund. CARB should assume some level of vessel payments into the remediation fund; the current omission understates the remediation cost.

- **CARB has not forecasted the statewide increase in energy use (or costs) resulting from electric- or battery-powered capture and control systems.** Using CARB's estimates, more than 30 barge-based and land-based control systems will be needed to comply with the regulation. The land-based systems are almost certain to tie into the grid (as noted in the draft EA), and the barge-based systems may similarly turn to electricity given the limited availability of renewable fuels. These systems will require designated charging locations. CARB has not projected the increased energy usage or costs associated with these systems.

7.0 EMISSIONS ASSUMPTIONS AND FORECASTING

CARB has projected significant emission reductions from the proposed regulation compared to the existing regulation; however, some of CARB's shore-power data conflicts with other publicly available data, and in other cases, CARB has overlooked potential emission sources that might lead to lower-than-expected reductions under the proposed regulation, as described below.

- **In 2021, under the Proposed Regulation, CARB projects changes in the emissions from currently regulated container/reefer and cruise vessels even though there should be no significant difference between the Existing and Proposed Regulation for these vessel types.** CARB should provide further explanation for the significant changes in emissions in 2021 (for most ports, there are fewer emissions, but for other ports, there are more emissions), as shown in CARB's OGV Emissions Spreadsheet, as the publicly available data suggest there should not be any significant change. First, most vessel visits are already covered under the Existing Regulation. Based on publicly available 2018 data for Los Angeles[7] and Oakland,[8] 98% of the Los Angeles calls and 96% of the Oakland calls are from vessel operators covered under the current regulation and subject to the 80% reduction requirements for at-berth auxiliary engine power because they made at least 25 calls in 2018.[9] Second, the Proposed Regulation is comparable to the Existing Regulation for currently regulated fleets given the availability of TIEs, VIEs, and exceptions in the early years, equivalent to 20% of calls. As stated by CARB: "If all TIEs/VIEs are used by both terminals and vessels in these four years, the Proposed Regulation would capture no less than 80 percent of the visits, which aligns with the Existing Regulation at full implementation in 2020" (ISOR, III-31). Thus, the increased emission reductions attributed to the Proposed Regulation over the Existing Regulation as calculated by CARB need further justification. Similarly, CARB should explain the increase in emissions from the Proposed Regulation over the Existing Regulation for the ports of Hueneme and San Diego.

- **CARB understates the at-berth hours subject to the Existing Regulation, which in turn, overstates the projected emission reductions under the Proposed Regulation.** According to CARB's OGV Emissions Inventory, there are roughly 104,000 at-berth hours in Los Angeles and Long Beach covered by the Existing Regulation (based on CARB enforcement data) compared to 136,000 total at-berth hours (based on State Lands data); in other words, according to CARB, only 77% of at-berth activity in Los Angeles/Long Beach is subject to the Existing Regulation, which conflicts with the publicly reported data described in Comment 0.□ , showing coverage rates nearing 100%. Similarly, CARB's OGV Emissions Inventory assumes only 74% of at-berth activity at Port of Oakland is subject to the Existing Regulation, which conflicts with the publicly reported data described in Comment 7.1, showing

[7] Port of Los Angeles, 2018 AMP Summary*, https://kentico.portoflosangeles.org/getmedia/a4f6e02e-5df6-4f68-8a3c-1e6b2c099dd3/AMP-Containership-01-01-2018-to-12-31-2018*

[8] Port of Oakland 2018 Shore Power Usage, *https://www.oaklandseaport.com/wp-content/uploads/2019/11/2019-10_Oakland-shorepower.pdf*

[9] The 80% at-berth auxiliary engine power requirement may be closer to 90% due to the 10% additional shore power requirements for Proposition 1B-funded berths.

coverage rates nearing 100%. This difference will significantly understate the benefits of the Existing Regulation, and, as carried forward through the forecast methodology, significantly overstate the benefits of the Proposed Regulation. CARB should consider the data described in Comment 7.1 and reassess its assumptions about vessel hours subject to the Existing Regulation.

- **The overall compliance rate under the existing regulation is unclear.** From looking at "Table 20: Percent of Time on Shore Power by Year" (H-41), it is unclear what CARB assumed as the overall compliance rate in 2020 and 2030 under the existing regulation. Also, it is not clear whether Table 20 accounts for additional shore power usage (beyond 80%) for Proposition 1B-funded berths. CARB should confirm that for the existing rule, the analysis assumes that container and cruise vessels are meeting the 80% at-berth shore power requirement in 2020 and 90% requirement for Proposition 1B berths.

    - Additionally, CARB should clarify why there appears to be an increase in the percentage of time using shore power between 2020 and 2030 under the existing rule when the regulation stops at 80% in 2020.
    - CARB should clarify why the overall compliance rate for cruise ships at POLA and POLB is 54% in 2020 as well as in 2030.
    - Additionally, CARB should clarify whether it took into account the difference in average at-berth time between container/reefer/cruise vessels covered under the existing regulation versus those vessels not covered. Per Table H-20, small container vessels have a lower compliance rate under the existing regulation, and these vessels have a lower average time at berth compared to larger vessels. Depending upon the assumption of what container size vessels are covered under the proposed regulation that are in addition to those covered under the existing regulation, the emissions benefit of the Proposed Regulation will vary. A table similar to Table 20 showing compliance rate by vessel type and size will help understand how CARB estimated emissions reduction or increases due to the Proposed Regulation.

- **The projected compliance rate for 2030 does not look accurate, particularly for large container vessels; CARB should clarify its assumptions.** In 2030, under the existing regulation, CARB assumes less than 50% shore power compliance for POLA and POLB container vessels size 13000 TEU through 18000 TEU (14000 TEU is an exception). For Container 16K, 0% compliance is assumed in 2030. According to tables on H-71 and H-72, these vessel types have the highest growth rates and yet they are assumed to comply 0% under the existing regulation. CARB needs to clearly articulate how it calculated the compliance rate assumption for future years. Although it could be due to CARB's at-berth shore power time forecast methodology, a lower percentages of at-berth shore power time for larger vessels is not realistic because these are newer vessels operated by vessel operators making 25 or more calls and more likely to be equipped with shore power capability. The benefit of the Proposed Regulation could be overestimated because larger vessels tend to stay longer at-berth.

- **CARB needs to provide the overall compliance rate under the proposed regulation in the same format as provided in Table 20 for the existing regulation. CARB should clarify the inputs used in the "atberth_OGV_port_specific_emissions" spreadsheet, specifically the following:**

    - For each year, what is the compliance rate by vessel type assumed for the existing and proposed rule?
    - For each year, by vessel type, what percent of vessel calls was assumed to meet the 20 visits per terminal threshold and are not subject to proposed regulation?
    - What percent of calls by vessel type and vessel size were assumed for TIE/VIE?
    - In 2021, why is there an increase in POLA at-berth cruise emissions with proposed rule?

- **CARB should evaluate the emission reductions and cost-effectiveness of the Proposed Regulation for auto carriers and RoRo ships.** Starcrest conducted a detailed emission-reduction evaluation for CARB's Proposed Regulation for auto carriers and RoRo ships at Los Angeles and Long Beach using actual data from both ports' 2018 emissions inventories. Key findings:

    - Reduction of PM (including PM10, PM2.5, and DPM) and NOx emissions in the 36%-40% range could be achieved from auto carrier and RoRo vessel control, but emissions of other pollutants (CO2e, SOx and CO) are estimated to increase in the range of 28% to 151% due to emissions from increased bunkering activities at anchorage and supporting activities such as tugs and generators needed to operate barge-based systems.
    - Cost effectiveness (CE) calculations resulted in cost effectiveness between $115k and $200k for the barge rental scenario (varies based on effective hourly rate) and $54,987 for the scenario that includes the purchase of four barge-based systems to serve 100% of calls made to POLA and POLB. Both scenarios are far less cost effective than CARB's Carl Moyer Program (CMP), which has an upper CE limit of $30,000 per weighted ton of emissions reduced.
        - It is noted that the CMP also allows for a second tier CE limit for the higher cost of advanced/emerging technology projects; this second tier CE limit is $100k per weighted ton. The $100k/ton limit is only applied to the small increment between today's technology and the advanced technology level, which in practice is zero-emission or near-zero emissions (i.e., 90% cleaner than current technology). Since barge-based systems are not using technology that is 90% cleaner than today's clean-up technology, these systems should be evaluated at the $30k/weighted ton CE limit.
    - Currently most of the auto carrier and RoRo ships bunker while operating at berth. If rental barges are utilized during at-berth operations, bunkering will most likely take place at anchorage, resulting in emissions increases at anchorage. In addition to emissions increases due to use of harbor crafts to move barges and generators used on the barges, CARB should address the displacement of at-berth RoRo bunkering and associated emissions.

- **CARB does not account for efficiency changes in the growth analysis.** As stated in Appendix H, updated inventory, "CARB staff do not assume any vessel practice changes or system efficiency changes in the growth analysis except for POLA and POLB as discussed in section 4.2. Therefore, if tonnage increases 35 percent over 20 years for a vessel type in a specific region, the total activity from that vessel type was modeled as increasing 35 percent over the same period" (H-29). Applying growth factors without taking into account efficiencies will overestimate future at-berth emissions and thus overstate the emissions benefit of the proposed regulation.

- **CARB did not account for changes in vessel size over time for most ports.** CARB states: "This change in container vessel sizes was included for POLA and POLB as they were the only ports included in the study. Other ports may see a shift over time but could be limited by berth size and channel depth, port space and capacity, and other limiting factors. Any shifts in vessel sizes for other ports will be reviewed in future inventories" (H-32). Nearly all vessels calling San Pedro Bay also call the Port of Oakland; thus, the POLA and POLB container forecast by size will also apply to the Port of Oakland forecast and should be contemplated in the analysis. CARB could validate this approach by comparing the Port of Oakland liner service schedule to the POLA and POLB schedules.

- **CARB should include a table showing statewide NOx emissions by vessel and engine type.** In Figure 10, CARB displays "2016 Statewide At-Berth PM 2.5 Emission by Vessel and Engine Type" (H-46). A similar figure should be added for NOx, showing the magnitude of boilers NOx emissions reduced from tankers.

- **CARB should conduct a comprehensive GHG analysis related to barge-based control systems that includes the totality of GHG emissions, from the vessel and barge-based control system itself to the likely shift in bunkering activities.** First, vessels will continue to burn fuel and emit GHGs while connected to the system; these emissions must be taken into account. Second, barge-based systems will require a fuel source; even if this fuel source is grid-neutral, it may result in additional emissions not contemplated in CARB's current analysis. Third, barge-based systems will require harbor craft to move them into place, and these harbor craft will emit GHGs that must be included. Lastly, vessels that use barge-based systems may not be able to bunker at berth. These vessels will need to make additional trips to anchorage for bunkering; these emissions should be included in the analysis. Lastly, CARB should include power plant emissions owing to the switch to grid-based electricity. Only after including all of these parameters and likely impacts can CARB determine the net effect on GHG emissions.

-
    - Additionally, by 2025, there is a requirement for grid-neutral control systems; however, GHG emissions increase for tankers and RoRos in 2027 and 2031. CARB should clarify the reason for the emissions increase.

8.0 DRAFT ENVIRONMENTAL ASSESSMENT

The following comments refer to the Draft Environmental Assessment and compliance with the California Environmental Quality Act.

- **The Proposed Regulation exceeds the emission reductions necessary under the State Implementation Plan.** A key purpose for the Proposed Regulation is CARB's commitment under the State Implementation Plan (SIP) to amend the at-berth regulation. The SIP strategy calls for a regulation that generates 2 tpd of NOx by 2031; however, the Proposed Regulation analyzed in the EA achieves 5.9 tpd, nearly double what is necessary.

    - When analyzing the Alternatives, the EA compares air quality benefits to the Proposed Regulation (5.9 tpd) rather than the stated project purpose (2 tpd), dismissing alternatives that might have achieved lesser – but still adequate – reductions.

- **CARB should analyze the emissions associated with constructing a new shore power berth at the Port of San Francisco.** CARB states there is uncertainty in the way San Francisco may proceed with the construction and thus deems these emissions "too speculative for evaluation" (EA, 24); however, emissions associated with shore-power berth construction can be estimated from the dozens of such projects already completed statewide and in a similar manner as CARB estimated emissions associated with shore power vault construction. This project is a "reasonably foreseeable compliance response" for the Port of San Francisco as it is included in the Berth Analysis, cost analysis, and based on information from the port, and as such should be analyzed.

- **Construction emissions exceed significance thresholds in the Bay Area Air Quality Management District.** CARB presents criteria pollutant and greenhouse gas emissions on a per-vault and per-control system basis in each air quality district to demonstrate this regulation will not exceed significance thresholds. CARB states: "While it is possible multiple installations could occur within a given district, it is not reasonably foreseeable at this time whether such installations would occur, specifically where they would occur, or whether they would overlap in time" (EA, 45). However, in order to meet the compliance deadlines, it is almost certain that multiple installations will occur concurrently. When considering all of the land-based tanker systems that must be constructed in the BAAQMD (11 units), the Proposed Regulation exceeds significance thresholds for NOx and GHGs, which is not reflected in the Draft EA and should be disclosed[10]:

[10] Note, emissions do not include construction of new shore power berth in San Francisco.

Table 7: Cumulative Construction Emissions in Bay Area Air Quality Management District, CY 2021+

Inputs	ROG/VOC ppd	NOx ppd	PM_{10} ppd	$PM_{2.5}$ ppd	GHG (MT/Year)
Unmitigated construction emissions - landside tanker*	4	36	2	2	447
Number of units needed - BAAQMD	11	11	11	11	11
Total	**44**	**396**	**22**	**22**	**4917**
Threshold	54	54	82	54	1100
Exceeded?	**No**	**Yes**	**No**	**No**	**Yes**

*Source: CARB Draft Environmental Assessment

- **CARB should analyze the impacts in the geographic location in which they are expected to occur.** CARB states: "Conducting a berth-by-berth emissions analysis for the hundreds of berths in California would provide information that could be misleading, should a different berth-by-berth scenario come to fruition" (EA, 91); however, the general location of these emissions and other impacts (i.e., by air district or city) is reasonably foreseeable. The compliance measures can only take place in the ports subject to the regulation. The locations, compliance options, and regulatory timeline are known and well-established.

- **CARB should analyze energy impacts by utility or region.** CARB evaluates energy demand on a statewide basis, finding that at full implementation in 2031, shore power will consume the equivalent of 0.001% of the grid's total power capacity (EA, 75); however, because the energy demand is concentrated in only a few key locations (seaports, primarily Long Beach/Los Angeles and Bay Area), a more refined analysis should consider the energy demand impacts in those known, reasonably foreseeable locations.

- **CARB should analyze energy demand increases resulting from capture and control systems.** CARB states, "Some capture and control systems may be powered by electricity, but it is expected the additional electricity needed would be minimal" (EA, 74). In Attachment B of the Draft EA, however, CARB assumes significant electrical infrastructure is needed to develop and install land-based capture and control systems for RoRos and tankers. This is the likely scenario given the need for such systems to be grid-neutral.

- **CARB assumes capture and control systems would have no impact on utilities.** CARB states: "Shore-side and barge-based capture and control systems would be powered by clean diesel and would not be connected to public utility infrastructure" (EA, 134). This assertion conflicts with other references in the EA showing significant electrical infrastructure required for land-based control systems, specifically in Attachment B.

- **CARB should analyze vessel-traffic impacts associated with barge-based control systems.** As noted throughout the ISOR and Berth Analysis, barge-based control systems can impose navigational hazards in waterways. In Long Beach/Los Angeles alone, CARB assumes 5 total barge-based capture and control systems (2 existing units, plus 3 additional units for container vessels and RoRos, although an additional 2 systems are likely to be needed for full compliance, for a total of 7 units). These systems are likely to operate concurrently and may increase traffic in narrow waterways. CARB should acknowledge and analyze these impacts.

- **CARB has not demonstrated sufficient engagement of the utilities.** Of the 232 outreach meetings listed in Appendix F of the regulatory documents, only 3 meetings involved utilities, and 2 meetings included the same utility (San Diego Gas & Electric). This proposed regulation is certain to require a significant investment in electrical infrastructure by 2025 to power grid-neutral land-based capture and control systems and to charge battery-powered barge-based capture and control systems.

9.0 IMPLICATIONS OF ALTERNATIVE ASSUMPTIONS

By necessity, CARB has made a number of assumptions about the proposed regulation, its emissions benefits, and cost impacts. These assumptions were likely based on CARB's best information at the time. However, small changes in these assumptions can result in dramatically different projected outcomes. Below, we list a few key assumptions that, if updated to reflect more accurate data or other equally reasonable interpretations of the data, would lead to vastly different results. Of note, none of the costs have been annualized or adjusted for growth.

Labor Costs for RoRo Land-Based Control Systems:
If CARB were to include labor to operate land-based control systems at RoRo terminals, it would add $24 million to the Proposed Regulation (Comment 0.□).

Capital Costs for Barge-Based Control Systems:
If CARB were to include capital costs for barge-based control systems, at CARB's assumption of $4.9 million per barge and 6 barges needed, it would add another $29.4 million to the Proposed Regulation. If we were to assume a more realistic number of 14 barge-based systems to ensure full coverage (assuming 3 terminals use land-based systems as projected by CARB), the cost would be $68.6 million (Comment 0.□).

Hourly Rates for Barge-Based Systems:
If CARB were to assume a higher hourly rate for barge-based control systems, specifically $1,422 an hour, which is consistent with actual invoices, it would add another $231 million to the Proposed Regulation for all RoRo calls (Comment 0.□).

Projected Emission Reductions:
If CARB were to adjust its assumptions about the number of at-berth hours covered by the Existing Regulation in alignment with publicly reported data from major seaports, the Proposed Regulation would result in far fewer emission reductions than currently projected (Section 0).

Cost-Effectiveness:
If CARB were to modify any of the cost assumptions noted above and/or adjust its emissions estimates, the cost-effectiveness of the Proposed Regulation could swing dramatically. As it stands now, CARB has calculated the total cost of this regulation as $2.164 billion with $2.245 billion in health care benefits, which is a thin margin of error. A more realistic hourly rate for barge-based control systems alone would add $231 million to the costs of the Proposed Regulation for a total cost of $2.4 billion, exceeding the health benefits.

ATTACHMENT A: INVOICES FOR BARGE-BASED CONTROL SYSTEMS

Receipt Excerpt #1:

AMECS Emission Control Services Invoice

Bill To	[redacted]	Invoice#	[redacted]
		Invoice Date	[redacted]
		Amount	$ 145,519.00
Wire To	Advanced Environmental Group LLC 230-234 East C Street Wilmington, CA 90744	[redacted]	

Visit Summary

Record#	[redacted]	Visit Date	[redacted]
Company	[redacted]	Vessel	[redacted]
Location	[redacted]	IMO/Call Sign	[redacted]

Visit Data

Vessel First Line (estimate)		[redacted]
Barge Arrival		[redacted]
Barge First Line		[redacted]
Connection Time (start control)		[redacted]
Actual Disconnect Time (stop control)		[redacted]
Barge Last Line		[redacted]
Barge Secured at Home Berth		[redacted]
Mobilization Start		[redacted]
Mobilization End		[redacted]
Service Hours([redacted])		120.42
SubTotal		**120.42**
		-
Total Hours Billed		120.42
Hourly Rate	$	1,100.00
Emission Control Services Total (120.42 * 1100)	$	132,462.00
Other: HOLIDAY RATE - [redacted] 330.00 * 24	$	7,920.00
Other: System connection delays - hourly rate applies per contract		
Other: [redacted] = 4.67 hours	$	5,137.00
Total Additional Charges/Credits	$	**13,057.00**
Total Amount Due	$	**145,519.00**

Terms NET 15. Due By ([redacted] Interest on past due amounts will be charged at a rate of 1.5% per month.

AMECS

Effective Rate:
Total Cost/Vessel Stay
=$145,519/120.42
=$1,208/hour

Generated: [redacted]

Receipt Excerpt #2:

AMECS Emission Control Services Invoice

Bill To	[redacted]	Invoice#	[redacted]
		Invoice Date	[redacted]
		Amount $	87,450.00
Wire To	Advanced Environmental Group LLC 230-234 East C Street Wilmington, CA 90744	[redacted]	

Visit Summary

Record#	[redacted]	Visit Date	[redacted]
Company	[redacted]	Vessel	[redacted]
Location	[redacted]	IMO/Call Sign	[redacted]

Visit Data

Vessel First Line (estimate)		[redacted]
Barge Arrival		[redacted]
Barge First Line		[redacted]
Connection Time (start control)		[redacted]
Actual Disconnect Time (stop control)		[redacted]
Barge Last Line		[redacted]
Barge Secured at Home Berth		[redacted]
Mobilization Start		[redacted]
Mobilization End		[redacted]
Service Hours([redacted])		79.50
SubTotal		**79.50**
		-
Total Hours Billed		79.50
Hourly Rate	$	1,100.00
Emission Control Services Total (79.5 * 1100)	$	87,450.00
	$	-
Other:	$	-
Other:	$	-
Total Additional Charges/Credits	**$**	**-**
Total Amount Due	**$**	**87,450.00**

Terms NET 15. Due By [redacted]

Interest on past due amounts will be charged at a rate of 1.5% per month.

AMECS

Effective Rate:
Total Cost/Vessel Stay
=$87,450/79.50
=$1,100/hour

Generated: [redacted]

Receipt Excerpt #3:

AMECS Emission Control Services Invoice

Bill To	[redacted]	Invoice#	[redacted]
		Invoice Date	[redacted]2019
		Amount	$ 19,200.00
Wire To	Advanced Environmental Group LLC 230-234 East C Street Wilmington, CA 90744	Chase Bank - Bank Contact:	[redacted]

Visit Summary

Record#	[redacted]	Visit Date	[redacted]/2019
Company	[redacted]	Vessel	[redacted]
Location	[redacted]	IMO/Call Sign	[redacted]

Visit Data

Vessel First Line (estimate)	[redacted]	/2019 14:30
Barge Arrival	[redacted]	2019 17:50
Barge First Line	[redacted]	/2019 18:15
Connection Time (start control)	[redacted]	2019 19:01
Actual Disconnect Time (stop control)	[redacted]	/2019 03:01
Barge Last Line	[redacted]	/2019 03:16
Barge Secured at Home Berth	[redacted]	2019 04:55
Mobilization Start	[redacted]	/2019 15:30
Mobilization End	[redacted]	/2019 05:00
Mobilization/Demobilization Hours		4.00
Service Hours [redacted]19 15:30 [redacted]19 05:00]		13.50
SubTotal		**17.50**
Total Hours Billed		17.50
Hourly Rate	$	800.00
Emission Control Services Total (17.5 * 800)	$	14,000.00
Note: Minimum Charge of 24 hours 800* 6.5	$	5,200.00
Other:	$	-
Total Additional Charges/Credits	**$**	**5,200.00**
Total Amount Due	**$**	**19,200.00**

Terms NET 15. Due By [redacted]/2019 Interest on past due amounts will be charged at a rate of 1.5% per month.

HRLY Charge $1422

Generated: [redacted]

NOTE: Short Stay Vsl.
VSL STAY: 13.5 HRS
Tug Call: 4.0 HRS
Min Charge: 24 HRS
Effective Hourly Charge $19,200 / 13.5 hrs = $1422.22

Receipt Excerpt #4:

HOURLY CHARGE	$900 USD per hour. The Hourly Charge is inclusive of all tug services and/or other 3rd party services required for mobilizing, de-mobilizing, and positioning System to Customer's vessel. Notwithstanding the above, any and all charges for "Spacer Barges," "Fenders" and/or supplemental 3rd party crew boats are not included in the Hourly Charge and will be passed through to Customer at the actual cost to Operator + 20%. Additional charges may only be added upon written authorization by Customer. In the event Terminal may require a Spacer Barge between the VENDOR and Vessel.
EMISSION CONTROL SERVICE CHARGES	Service hours will be charged from the beginning of VENDOR mobilization to the end of VENDOR demobilization. Customer understands that Operator has a minimum charge of twenty-four (24) hours per vessel.

At an hourly rate of $900, applied across the minimum 24 hour billing requirement, the total cost is 24 x $900) / 17 hours (avg. call time) = $1,270 effective hourly rate.

Attachment B:
Starcrest Consulting Group
CARB At-Berth Regulation Cost Effectiveness Analysis for Auto Carriers and RoRo Ships at Port of Long Beach & Port of Los Angeles
December 2019

CARB At-Berth Regulation Cost Effectiveness Analysis for Auto Carriers and RoRo Ships at Port of Long Beach & Port of Los Angeles

PMSA
PACIFIC MERCHANT SHIPPING ASSOCIATION

Port of
LONG BEACH
The Green Port

LA
THE PORT
OF LOS ANGELES

December 2019

Prepared by:
STARCREST CONSULTING GROUP, LLC

CARB AT-BERTH REGULATION COST EFFECTIVENESS ANALYSIS FOR AUTO CARRIERS AND RORO SHIPS AT PORT OF LONG BEACH & PORT OF LOS ANGELES

Starcrest developed an emission reduction evaluation for CARB's proposed amendments to the at-berth regulation for Auto Carrier and RoRo ships at the Port of Long Beach (POLB) and the Port of Los Angeles (POLA), also referred to as the San Pedro Bay Ports (SPBP). Using this evaluation, Starcrest developed an Excel calculation tool (the Auto/RoRo Tool) to assess the emission reductions and cost-effectiveness of the proposed amendments for these vessels based on the SPBP 2018 Annual Emissions Inventories and Carl Moyer Program methodology. Based on this assessment, the cost of the proposed amendments as they relate to Auto Carrier and RoRo ships at the SPBPs is significant compared to other emission-reduction projects with similar benefits, and alternative more cost-effective emission reduction approaches should be explored.

The Auto/RoRo Tool currently utilizes the SPBP 2018 Annual Emissions Inventories for the emissions reduction analysis and the cost assumptions/information provided in Standardized Regulatory Impact Assessment (SRIA) for CARB's Proposed Control Measure for Ocean-Going Vessels at Berth released on August 20, 2019, for the cost effectiveness analysis. This tool was designed with flexibility to allow input modifications to explore alternative cost inputs. Two financing approaches are included in the tool: (1) hourly rental of barge-based emission capture and control (C&C) systems, and (2) capital investment of four barge-based C&C systems dedicated to treat Auto Carrier and RoRo ships The need for four (4) barge-based systems to control 100 percent of calls was established by an evaluation of 2018 calls from these vessel types. This evaluation is included as a worksheet in the Auto/RoRo Tool.

Project Goals

- Estimate emission reductions that may be achieved by barge-based C&C systems applied to the auto carrier and RoRo vessels calling at the SPBP.
- Assess cost effectiveness (CE) for barge-based treatment options to meet the requirements of the proposed amendments.
- Estimate the portion of auto carrier/RoRo at-berth emissions to all at-berth emissions in both mass and percent.
- Estimate the portion of auto carrier/RoRo at-berth emissions to all OGV emissions in both mass and percent.

Key Assumptions

- This review assumes that 100 percent of calls are treated by a barge-based C&C system (based on an evaluation of 2018 calls from these vessel types in the SPBP).
- Barge-based emission C&C systems will control 80% of NOx, ROG and DPM emissions.

Key Findings

Reduction of PM (including PM_{10}, $PM_{2.5}$, and DPM) and NO_x emissions in the 36%-40% range could be achieved from auto carrier and RoRo vessel control, but emissions of other pollutants (CO2e, SOx and CO) are estimated to increase in the range of 28% to 151% due to emissions from increased bunkering activities at anchorage and supporting activities such as tugs and generators needed to operate barge-based C&C systems. A summary of the proposed regulation's emission reduction benefits, based on the auto carrier and RoRo calls made at SPBP in 2018, is provided in Table A1 (tons per year (tpy)) and Table A2 (tons per day (tpd)). Negative numbers indicate increased emissions.

Table A1: Reductions from Barge-Based at-Berth Capture and Control, tpy

Port	PM_{10} tpy	$PM_{2.5}$ tpy	DPM tpy	NO_x tpy	SO_x tpy	HC tpy	CO tpy	CO_2e mt/yr
Emission Reductions (or increases)								
POLB	0.40	0.38	0.38	19.61	-0.66	-0.73	-5.04	-1,615
POLA	0.22	0.20	0.18	8.98	-0.37	-0.43	-3.30	-1,005
Total	**0.62**	**0.58**	**0.56**	**28.59**	**-1.03**	**-1.15**	**-8.33**	**-2,620**
Percent Reduction (or increase)								
POLB	36%	36%	38%	40%	-28%	-44%	-113%	-49%
POLA	39%	38%	39%	40%	-35%	-52%	-151%	-53%
Total	**37%**	**37%**	**38%**	**40%**	-30%	-47%	-125%	-50%

Table A2: Reductions from Barge-Based at-Berth Capture and Control, tpd

Port	PM10 tpd	PM2.5 tpd	DPM tpd	NOx tpd	SOx tpd	HC tpd	CO tpd	CO2e mt/yr
Emission Reductions (or increases)								
POLB	0.0011	0.0010	0.0010	0.0537	-0.0018	-0.0020	-0.0138	-4.4
POLA	0.0006	0.0006	0.0005	0.0246	-0.0010	-0.0012	-0.0090	-2.8
Total	**0.0017**	**0.0016**	**0.0015**	**0.0783**	**-0.0028**	**-0.0032**	**-0.0228**	**-7.2**
Percent Reduction (or increase)								
POLB	36%	36%	38%	40%	-28%	-44%	-113%	-49%
POLA	39%	38%	39%	40%	-35%	-52%	-151%	-53%
Total	**37%**	**37%**	**38%**	**40%**	-30%	-47%	-125%	-50%

To place these reductions in context, Tables B1 (tpy) and B2 (tpd) summarize the 2018 SPBP auto carrier and RoRo emissions at berth, all OGVs at berth, and all OGVs in all modes (at berth, maneuvering, transit). The tables also show the percentages that the auto carrier and RoRo emissions make up of all OGV emissions at berth and of the entire 2018 OGV inventory. **Overall, auto carrier and RoRo at berth emissions made up approximately one percent (1%) of all OGV emissions in the SPBPs' 2018 inventory or between 2% to 4.5 % of all at-berth emissions.**

Table B1: Auto Carriers and RoRo At-berth Emissions Contribution in CY 2018, tpy

Port	Vessel Type	PM	PM2.5	DPM	NOx	SOx	HC	CO	CO2e
		tpy	tpy	tpy	tpy	tpy	tpy	tpy	mt/y
SPBP	Auto and RoRo at Berth	1.7	1.6	1.4	69.9	3.4	2.4	6.5	5,001
SPBP	All vessels at Berth	60.1	56.3	31.4	1894.8	169.7	72.7	188.7	264,414
SPBP	All vessels	142.0	133.0	106.1	7078.5	323.3	270.9	590.3	503,286
SPBP	Percent of all OGV at Berth	2.8%	2.8%	4.5%	3.7%	2.0%	3.3%	3.5%	1.9%
SPBP	Percent of all OGV	1.2%	1.2%	1.3%	1.0%	1.0%	0.9%	1.1%	1.0%

Table B2: Auto Carriers and RoRo At-berth Emissions Contribution in CY 2018, tpd

Port	Vessel Type	PM10	PM2.5	DPM	NOx	SOx	HC	CO	CO2e
		tpd	tpd	tpd	tpd	tpd	tpd	tpd	mt/d
SPBP	Auto and RoRo at Berth	0.0045	0.0043	0.0039	0.1916	0.0092	0.0066	0.0179	14
SPBP	All vessels at Berth	0.1648	0.1543	0.0861	5.1914	0.4649	0.1993	0.5170	724
SPBP	All vessels	0.3891	0.3642	0.2907	19.3931	0.8857	0.7421	1.6172	1,379
SPBP	Percent of all OGV at Berth	2.8%	2.8%	4.5%	3.7%	2.0%	3.3%	3.5%	1.9%
SPBP	Percent of all OGV	1.2%	1.2%	1.3%	1.0%	1.0%	0.9%	1.1%	1.0%

A utilization analysis evaluated how many auto carrier or RoRo vessels were at berth in one of the ports during each day of 2018. A maximum of four concurrent calls took place on five days during the year, and three concurrent calls took place on 12 days. This indicates that four barge-based C&C systems would have been needed to accommodate all SPBP auto carrier and RoRo calls in 2018 and would be needed going forward assuming 2018 was representative of future call frequency at these two ports. Because three or four concurrent calls occur so infrequently, the C&C barge fleet would be utilized about 19 percent of the time.

Cost effectiveness (CE) calculations, discussed below, result in cost effectiveness between $115k and $200k for the barge rental scenario (varies based on effective hourly rate) and $54,987 for the scenario that includes the purchase of four barge-based C&C systems to serve 100% of calls made to SPBP. **Both scenarios are far less cost effective than CARB's Carl Moyer Program (CMP), which has an upper CE limit of $30,000 per weighted ton of emissions reduced.**

It should be noted that the CMP also allows for a second tier CE limit for the higher cost of advanced/emerging technology projects; this second tier CE limit is $100k per weighted ton. The $100k/ton limit is only applied to the small increment between today's technology and the advanced technology level, which in practice is zero-emission or near-zero emission (i.e., 90% cleaner than current technology). Since barge-based C&C systems are not using technology that is 90% cleaner than today's clean-up technology, these systems should be evaluated at the $30k/weighted ton CE limit.

Emissions Assessment

The key elements and the sources of information included in the emissions reduction evaluation include:

- OGV at-berth emissions for auxiliary and boiler engines are based on auto carrier and RoRo vessels that visited POLA and POLB in 2018 and are consistent with both Ports' 2018 annual emissions inventory. The average at-berth hours and emissions (in grams per hour) by port, by terminal and by anchorage are shown in Tables 1 and 2 of the Auto/RoRo Tool under the tab "2018 Data Summary".
- The frequency of auto carrier and RoRo calls per day in 2018 was analyzed and it was determined that four dedicated barges would be required to treat emissions for the entire auto carrier and RoRo fleet arriving at SPBP. Importantly, four barges would have been needed to ensure ALL calls were serviced in 2018, but for a large percentage of the year, most of the barges would have been idle because four (4) vessels were in port simultaneously on only five days. In addition, more than four vessels may call simultaneously in future years so having four barges available would not guarantee full coverage. This analysis is provided in the Auto/RoRo Tool on the "Utilization" tab.
- The emissions analysis scenario assumes that the use of a barge system would require additional emission-producing activities that would reduce the overall effectiveness of the system. These activities include the following:
  - **Additional trips from harbor craft** (**HC)** as follows:
    1. HC home base to barge home base
    2. Barge home base to terminal
    3. HC home base
    4. HC home base to terminal
    5. Terminal to barge home base
    6. Barge home base to HC home base
  - **Harbor craft idling time** during this process. The average emissions in g/hr for assist tugs and the average time per trip are shown in Tables 3 and 5 of the Auto/RoRo Tool under tab "2018 Data Summary." These values are based on SPBP 2018 EI data.
  - **Two small generator sets** to provide electrical power to the system. It was assumed that the generator sets will be similar to those used by the Alternative Maritime Emission Control System (AMECS) barge currently being operated at the SPBP ports. Table 4 of the Auto/RoRo Tool under tab "2018 Data Summary" shows the emission factors in g/hr for these generators.
  - **Additional time at anchorages for bunkering**. Currently most of the auto carrier and RoRo ships bunker while operating at berth. If C&C barges are utilized during at-berth operations, bunkering will most likely take place at anchorage resulting in increases in emissions at anchorage.

Control efficiencies of 80% for PM/DPM and NOx were assumed, based on CARB's SRIA. It was assumed that barge system will treat auxiliary as well boiler engines exhaust.

Cost Effectiveness Assessment

The CE assessment is based on CARB's CMP methodology. This methodology combines the annual emission reductions in terms of "weighted emission reductions," or WER, in tons per year (tpy) as follows:

$$\mathbf{WER = NOx + ROG^{1} + (20 * PM2.5^{2})}$$

The WER is applied to the project cost, which is annualized by multiplying by the capital recovery factor (CRF), which is based on a discount rate and the project life. Cost-effectiveness is calculated under the CMP as follows:

$$\mathbf{CE\ (tpy) = Project\ Cost\ (\$) * CRF\ /\ WER\ (tpy)}$$

Below is a summary of the two scenarios included in the Auto/RoRo tool, based on CARB's SRIA:

- Hourly Rental: As determined in the "Emissions Summary" worksheet of the Auto/RoRo tool and based on 2018 SPBP EI data, a total of 4,934 hours per year of RoRo operation would need to be treated by the rented barge-based C&C systems to fully comply with the proposed regulation.

In the Auto/RoRo tool, hourly rate is a variable to determine CE at different hourly rates for the estimated emissions reductions. Attachment A provides excerpts of four actual C&C service transactions that demonstrate the effective hourly rate is greater than CARB's assumption of $900 an hour. Two invoices in attachment A show that the vendor required a 24-hour minimum usage time, which effectively raises the hourly rate if the barge system is used for anything less. The CE at each of the four hourly rates documented in Attachment A, as well as both CARB's $900 assumption and our application of the 24-hour minimum to the lowest hourly rate that we could document, $1,100, is provided below in Table C.

Table C: Cost Effectiveness at Different Hourly Rates

Hourly Rate	Cost-Effectiveness ($/weighted ton)	Rate Source (assumes/indicated all inclusive)
$900	$115,707	CARB SRIA Excel - "Cost Input Tab"
$1,100	$141,419	Receipt #2, Attachment A
$1,208	$155,304	Receipt #1, Attachment A
	$163,275	$900/hr for 17 hr call (avg.), includes 24-hr min. charge
$1,270		(Receipt #4)
$1,422	$182,816	Receipt #3
$1,552	$199,530	$1,100/hr for 17 hr call (avg.), includes 24-hr min. charge

[1] CMP uses ROG for CE evaluation. Since EI tracks HC, not ROG, HC is converted to ROG using this formula: ROG = HC * 1.26639, per 2017 CMP Guidelines, CARB

[2] PM2.5 is used in this CE evaluation to be consistent with CARB's methodology.

Using CARB's assumption of a $900/hr rental rate, the CE to reduce the estimated 38.76 weighted tons per year (discount rate of 1%, project life of 1 year), is estimated as $115,707 per weighted ton. Note that at the rate of $900 per hour for 4,934 hours/year, a total annual investment of $4.4M would be required to reduce 38.76 weighted tons of emissions (as calculated by CMP as WER) per year from Auto carrier/RoRo vessels (based on 2018 data).

As shown in Table C, the CE of the hourly rental scenario is highly sensitive to the effective hourly rental rate, which fluctuates for each transaction based on how the billing is structured for each client. For each $100 over the estimated rental rate of $900/hr, the project CE increases by $12,856/weighted ton. For an average 17-hour call serviced at a rate of $1,100/hr, the effective rate is $1,552/hr to account for the 24-hour minimum charge, which results in a CE of nearly $200,000 per weighted ton.

As documented in Attachment A, C&C system pricing depends on a key factor that drives the hourly cost higher. The vendor requirement to apply a 24-hour minimum charge skews costs higher than those based on CARB's assumed hourly rate ($900/hr) for all vessels with calls less than 24 hours. Note that the average call length in 2018 across Auto carrier/RoRo vessels is approximately 17 hours – the need to pay for these additional hours that were not used will drive the hourly rental service costs higher than projected by CARB.

- Purchase and Operate: As determined by the Utilization analysis (see Utilization tab), for the 2018 calls by RoRo/Auto carriers, a total of four (4) barge-based C&C systems would be required to cover all SPBP calls. There are limited data on the capital cost to purchase and operate barge-based C&C systems.
    - In the SRIA, CARB assumes[3] the capital cost to purchase a barge-based system is $4.9 million. While not provided for barge-based C&C systems, CARB estimates the land-based C&C system operating costs as follows: annual maintenance cost of $17,500 and an hourly operating rate of $100. No additional terminal labor costs were included, an assumption that merits further review. Using these values over a 20-year project life and a 5% discount rate (CARB's assumptions) the CE of purchasing and operating four units is estimated as $54,987 per ton, nearly double CARB's CMP limit of $30k per ton.
    - However, the only publicly available documentation of a barge-based C&C system is the Bay Area Air Quality Management District (BAAQMD) contract with Advanced Environmental Group, LLC for a project to design, build and operate a barge-based C&C system in Benicia. The total project cost is $8.844M. At this total project cost, assuming that this cost includes operation pursuant to contract requirements, the CE exceeds $73,012 per ton, well beyond the CMP limit of $30k per ton.

[3] CARB SRIA, page 80, *https://ww3.arb.ca.gov/regact/2019/ogvatberth2019/appc-1.pdf*

Discussion Based on Data and Assumptions Currently Included in the Auto/RoRo tool

- CARB uses the CMP cost effectiveness methodology to evaluate the CE of the proposed amendment. While this methodology accounts for the increase in hydrocarbon (and therefore ROG) emissions, it does not take into consideration the increase in CO2e, SOx and CO. The regulatory amendment should address associated increases in other pollutants.
- CARB estimates that just nine C&C systems would be needed statewide (seven of them barge-based), but 2018 call frequency analysis indicates four of these systems would need to be assigned to the Ports of Los Angeles and Long Beach to assure full compliance.
- Based on SPBP EI 2018 EI data, and a conservative estimate of 80% reduction in NOx and DPM emissions from Barge based C&C, it is estimated that 100% compliance with CARB's proposed amendments to the at-berth regulation would result in the reduction of approximately 38.76 weighted tpy.
- These reductions come at a very significant cost. As discussed above, the CE of the proposed amendments far exceeds the CMP CE limit of $30k/weighted ton. Under the CMP, emission reductions are achieved at far better CE levels. For example, repowering harbor craft such as tug, work and crew+supply boats (from Tier 2 to Tier 3) is far more cost-effective than including auto carriers and RoRo vessels under this proposed regulatory amendment. Specifically, at a one-time cost of about $800k-$900k, a tugboat repower will reduce from 4 to 15 weighted tpy of emissions[4] at a 10-year CE that ranges from $9k - $25k per weighted ton. This investment is well below the CMP CE limit of $30k/ton.

[4] This range is a function of engine horsepower, annual hours of operation, vessel type etc.

Attachment A

Receipt Excerpt #1:

AMECS Emission Control Services Invoice

Bill To	[redacted]	Invoice#	[redacted]
		Invoice Date	[redacted]
		Amount	$ 145,519.00
Wire To	Advanced Environmental Group LLC 230-234 East C Street Wilmington, CA 90744	[redacted]	

Visit Summary

Record#	[redacted]	Visit Date	[redacted]
Company	[redacted]	Vessel	[redacted]
Location	[redacted]	IMO/Call Sign	[redacted]

Visit Data

Vessel First Line (estimate)		[redacted]
Barge Arrival		[redacted]
Barge First Line		[redacted]
Connection Time (start control)		[redacted]
Actual Disconnect Time (stop control)		[redacted]
Barge Last Line		[redacted]
Barge Secured at Home Berth		[redacted]
Mobilization Start		[redacted]
Mobilization End		[redacted]
Service Hours([redacted])		120.42
SubTotal		**120.42**
		-
Total Hours Billed		120.42
Hourly Rate	$	1,100.00
Emission Control Services Total (120.42 * 1100)	$	132,462.00
Other: HOLIDAY RATE - [redacted] 330.00 * 24	$	7,920.00
Other: System connection delays - hourly rate applies per contract		
Other: [redacted] = 4.67 hours	$	5,137.00
Total Additional Charges/Credits	$	**13,057.00**
Total Amount Due	$	**145,519.00**

Terms NET 15. Due By ([redacted]

Interest on past due amounts will be charged at a rate of 1.5% per month

AMECS

Effective Rate:
Total Cost/Vessel Stay
=$145,519/120.42
=$1,208/hour

Generated: [redacted]

Receipt Excerpt #2:

AMECS Emission Control Services Invoice

Bill To	[redacted]	Invoice#	[redacted]
		Invoice Date	[redacted]
		Amount $	87,450.00
Wire To	Advanced Environmental Group LLC 230-234 East C Street Wilmington, CA 90744	[redacted]	

Visit Summary

Record#	[redacted]	Visit Date	[redacted]
Company	[redacted]	Vessel	[redacted]
Location	[redacted]	IMO/Call Sign	[redacted]

Visit Data

Vessel First Line (estimate)		[redacted]
Barge Arrival		[redacted]
Barge First Line		[redacted]
Connection Time (start control)		[redacted]
Actual Disconnect Time (stop control)		[redacted]
Barge Last Line		[redacted]
Barge Secured at Home Berth		[redacted]
Mobilization Start		[redacted]
Mobilization End		[redacted]
Service Hours([redacted])		79.50
SubTotal		**79.50**
		-
Total Hours Billed		79.50
Hourly Rate	$	1,100.00
Emission Control Services Total (79.5 * 1100)	$	87,450.00
	$	-
Other:	$	-
Other:	$	-
Total Additional Charges/Credits	**$**	**-**
Total Amount Due	**$**	**87,450.00**

Terms NET 15. Due By [redacted]

Interest on past due amounts will be charged at a rate of 1.5% per month.

AMECS

Effective Rate:
Total Cost/Vessel Stay
=$87,450/79.50
=$1,100/hour

Generated: [redacted]

Receipt Excerpt #3:

AMECS Emission Control Services Invoice

Bill To	[redacted]	Invoice#	[redacted]
		Invoice Date	[redacted]2019
		Amount	$ 19,200.00
Wire To	Advanced Environmental Group LLC 230-234 East C Street Wilmington, CA 90744	Chase Bank - Bank Contact	[redacted]

Visit Summary

Record#	[redacted]	Visit Date	[redacted]/2019
Company	[redacted]	Vessel	[redacted]
Location	[redacted]	IMO/Call Sign	[redacted]

Visit Data

Vessel First Line (estimate)	[redacted]	/2019 14:30
Barge Arrival	[redacted]	2019 17:50
Barge First Line	[redacted]	/2019 18:15
Connection Time (start control)	[redacted]	2019 19:01
Actual Disconnect Time (stop control)	[redacted]	/2019 03:01
Barge Last Line	[redacted]	/2019 03:16
Barge Secured at Home Berth	[redacted]	2019 04:55
Mobilization Start	[redacted]	/2019 15:30
Mobilization End	[redacted]	/2019 05:00
Mobilization/Demobilization Hours		4.00
Service Hours [redacted]/19 15:30 - [redacted]19 05:00		13.50
SubTotal		17.50
Total Hours Billed		17.50
Hourly Rate	$	800.00
Emission Control Services Total (17.5 * 800)	$	14,000.00
Note: Minimum Charge of 24 hours 800* 6.5	$	5,200.00
Other:	$	-
Total Additional Charges/Credits	$	5,200.00
Total Amount Due	$	19,200.00

Terms NET 15. Due B[redacted]/2019 Interest on past due amounts will be charged at a rate of 1.5% per month.

HRLY Charge $1422

AMECS

Generated: [redacted]

NOTE: Short Stay Vsl.
VSL STAY: 13.5 HRS
TUG CALLOUT: 4.0 HRS
Min charge: 24 HRS
Effective Hourly Charge $19,200 / 13.5 hrs = $1422.22

Receipt Excerpt #4:

HOURLY CHARGE	$900 USD per hour. The Hourly Charge is inclusive of all tug services and/or other 3rd party services required for mobilizing, de-mobilizing, and positioning System to Customer's vessel. Notwithstanding the above, any and all charges for "Spacer Barges," "Fenders" and/or supplemental 3rd party crew boats are not included in the Hourly Charge and will be passed through to Customer at the actual cost to Operator + 20%. Additional charges may only be added upon written authorization by Customer. In the event Terminal may require a Spacer Barge between the VENDOR and Vessel.
EMISSION CONTROL SERVICE CHARGES	Service hours will be charged from the beginning of VENDOR mobilization to the end of VENDOR demobilization. Customer understands that Operator has a minimum charge of twenty-four (24) hours per vessel.

At an hourly rate of $900, applied across the minimum 24 hour billing requirement, the total cost is 24 x $900) / 17 hours (avg. call time) = $1,270 effective hourly rate.

San Pedro Bay Ports
At-Berth Auto and RoRo Cost-Effectiveness Analysis
CY 2018 Data Summary
04 October 2019
DRAFT

Table 1
CY 2018

Port / Location	Vessel type	Average Berth hrs/Call
POLB		
Terminal	Auto Carrier	15
Anchorage	Auto Carrier	18
POLA		
Terminal	Auto Carrier	16
Terminal	RoRo	36
Anchorage	Auto Carrier	45
Anchorage	RoRo	5

Table 2

			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
OGV Emissions CY 2018						**g/hr**	**PM**	**PM2.5**	**DPM**	**NOx**	**SOx**	**HC**	**CO**	**CH4**	**CO2**	**N2O**	**CO2e**
POLB																	
Terminal	Auto Carrier	Aux					321	302	321	15,259	573	503	1,385	10	863,331	37	874,513
Terminal	Auto Carrier	Auxiliary Boiler					45	42	0	646	200	33	65	1	301,594	25	308,945
Anchorage	Auto Carrier	Aux					145	137	145	6,965	260	228	628	5	391,338	17	396,407
Anchorage	Auto Carrier	Auxiliary Boiler					49	46	0	710	219	36	72	1	331,316	27	339,391
POLA																	
Terminal	Auto Carrier	Aux					201	186	201	9,612	256	327	900	7	560,928	24	568,193
Terminal	Auto Carrier	Auxiliary Boiler					44	41	0	664	142	34	67	1	309,929	25	317,483
Terminal	RoRo	Aux					192	180	192	7,907	342	300	826	6	515,111	22	521,782
Terminal	RoRo	Auxiliary Boiler					35	33	0	511	158	26	52	1	238,669	19	244,486
Anchorage	Auto Carrier	Aux					148	139	148	7041	225	238	653	5	407429	17	412,706
Anchorage	Auto Carrier	Auxiliary Boiler					43	40	0	633	156	32	64	1	295361	24	302,560
Anchorage	RoRo	Aux					111	104	111	4569	198	174	477	3	297680	13	301,536
Anchorage	RoRo	Auxiliary Boiler					34	32	0	495	153	25	50	1	231297	19	236,935

Table 3
Assist Tug Boat Emissions CY 2018

						g/hr	**PM**	**PM2.5**	**DPM**	**NOx**	**SOx**	**HC**	**CO**	**CH4**	**CO2**	**N2O**	**CO2e**
POLB							73	67	73	2,101	2	229	1,540	4	189,138	9	191,775
POLA							73	67	73	2,103	2	229	1,542	4	189,138	9	191,775
SPBP Average							73	67	73	2,102	2	229	1,541	4	189,138	9	191,775

Table 4

Emission Control System	**g/hr**	**PM**	**PM2.5**	**DPM**	**NOx**	**SOx**	**HC**	**CO**	**CH4**	**CO2**	**N2O**	**CO2e**
AMECS Gen Set		0.4	0.4	0.4	16	11	27	422	8	109,099	3	110,314

Table 5
Tug Boat Distance and Time Calculation

Sub Trip	From	To	Time in hr
1	HC Home Base	Barge Home Base	0.66
2	Barge Home Base	Terminal	0.66
3	Terminal	HC Home Base	0.66
4	HC Home Base	Terminal	0.66
5	Terminal	Barge Home Base	0.66
6	Barge Home Base	HC Home Base	0.66
7	Harbor Craft Wait	Harbor Craft Wait	1.00
Total			**5.0**

1 short ton	907,180	grams
1 mt	1,000,000	grams

San Pedro Bay Ports
At-Berth Auto and RoRo Cost-Effectiveness Analysis
CY 2018 Scenario Analysis
22 October 2019
DRAFT

% Calls Barge Based Capture and Control (BCC)

POLB	100%
POLA	100%

Barge Reduction

Pollutant:	PM	PM2.5	DPM	NOx	SOx	HC	CO	CO2e
Reduction:	80%	80%	80%	80%	0%	0%	0%	0%

Barge set-up	3	hrs/call set-up and take-down
Assist tug (Y/N)	Y	
% of calls bunkering at anchorage	50%	
Average bunkering time, hrs	12	
# of barge genset engines on	2	Assumed current AMEC engines

Baseline - OGV emissions without control

Port	Terminal	Berth	Vessel Type	Engine Type	# of Berth Calls	Berth hrs/call	Tot Berth hrs	PM tpy	$PM_{2.5}$ tpy	DPM tpy	NOx tpy	SOx tpy	HC tpy	CO tpy	CO_2e mt	BC
POLB	LBA010	B83	Auto Carrier	Aux	83	15	1,245	0.44	0.41	0.44	20.94	0.79	0.69	1.90	1,089	
POLB	LBB030	F207	Auto Carrier	Aux	62	15	930	0.33	0.31	0.33	15.64	0.59	0.52	1.42	813	
POLB	LBB031	F205	Auto Carrier	Aux	41	15	615	0.22	0.20	0.22	10.34	0.39	0.34	0.94	538	
POLB	LBA010	B83	Auto Carrier	Auxiliary Boiler	83	15	1,245	0.06	0.06	0.00	0.89	0.27	0.04	0.09	385	
POLB	LBB030	F207	Auto Carrier	Auxiliary Boiler	62	15	930	0.05	0.04	0.00	0.66	0.20	0.03	0.07	287	
POLB	LBB031	F205	Auto Carrier	Auxiliary Boiler	41	15	615	0.03	0.03	0.00	0.44	0.14	0.02	0.04	190	
POLB	ANC		Auto Carrier	Aux	12	18	216	0.03	0.03	0.03	1.66	0.06	0.05	0.15	86	
POLB	ANC		Auto Carrier	Auxiliary Boiler	12	18	216	0.01	0.01	0.00	0.17	0.05	0.01	0.02	73	
POLA	LAO060	198	Auto Carrier	Aux	71	16	1,136	0.25	0.23	0.25	12.04	0.32	0.41	1.13	711.51	
POLA	LAO060	198	RoRo	Aux	0	36	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
POLA	LAO060	199	Auto Carrier	Aux	0	16	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
POLA	LAO060	199	RoRo	Aux	2	36	72	0.02	0.01	0.02	0.63	0.03	0.02	0.07	41.41	
POLA	LAC060	121	RoRo	Aux	25	36	900	0.19	0.18	0.19	7.84	0.34	0.30	0.82	517.65	
POLA	LAC060	126	RoRo	Aux	1	36	36	0.01	0.01	0.01	0.31	0.01	0.01	0.03	20.71	
POLA	LAO060	198	Auto Carrier	Auxiliary Boiler	71	16	1136	0.06	0.05	0.00	0.83	0.18	0.04	0.08	361	
POLA	LAO060	198	RoRo	Auxiliary Boiler	0	36	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	
POLA	LAO060	199	Auto Carrier	Auxiliary Boiler	0	16	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	
POLA	LAO060	199	RoRo	Auxiliary Boiler	2	36	72	0.00	0.00	0.00	0.04	0.01	0.00	0.00	18	
POLA	LAC060	121	RoRo	Auxiliary Boiler	25	36	900	0.03	0.03	0.00	0.51	0.16	0.03	0.05	220	
POLA	LAC060	126	RoRo	Auxiliary Boiler	1	36	36	0.00	0.00	0.00	0.02	0.01	0.00	0.00	9	
POLA	ANC		Auto Carrier	Aux	4	45	180	0.03	0.02	0.02	0.91	0.04	0.03	0.09	54	
POLA	ANC		RoRo	Aux	1	5	5	0.00	0.00	0.00	0.03	0.00	0.00	0.00	2	
POLA	ANC		Auto Carrier	Auxiliary Boiler	4	45	180	0.01	0.01	0.00	0.10	0.03	0.00	0.01	43	
POLA	ANC		RoRo	Auxiliary Boiler	1	5	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1	

Scenario			Vessel scenario			OGV emissions after control by BCC															
C Control	# of BCC	io-control	Barge Controlled	Uncontr.	Control	PM	$PM_{2.5}$	DPM	NOx	SOx	HC	CO	CO_2e	PM	$PM_{2.5}$	DPM	NOx	SOx	HC	CO	CO_2e
Y/N	Calls	Hr/Call	Hrs	Hr	%	CF	CF	CF	CF	CF	CF	CF	CF	tpy	tpy	tpy	tpy	tpy	tpy	tpy	mt
Y	83	3	996	249	80%	0.20	0.20	0.20	0.20	1.00	1.00	1.00	1.00	0.159	0.149	0.159	7.539	0.786	0.691	1.900	1,089
Y	62	3	744	186	80%	0.20	0.20	0.20	0.20	1.00	1.00	1.00	1.00	0.118	0.111	0.118	5.631	0.587	0.516	1.419	813
Y	41	3	492	123	80%	0.20	0.20	0.20	0.20	1.00	1.00	1.00	1.00	0.078	0.074	0.078	3.724	0.388	0.341	0.939	538
Y	83	3	996	249	80%	0.20	0.20	0.20	0.20	1.00	1.00	1.00	1.00	0.022	0.021	0.000	0.319	0.274	0.045	0.090	385
Y	62	3	744	186	80%	0.20	0.20	0.20	0.20	1.00	1.00	1.00	1.00	0.016	0.015	0.000	0.238	0.205	0.034	0.067	287
Y	41	3	492	123	80%	0.20	0.20	0.20	0.20	1.00	1.00	1.00	1.00	0.011	0.010	0.000	0.158	0.135	0.022	0.044	190
N	12	0	0	216	0%	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.035	0.033	0.035	1.658	0.062	0.054	0.149	86
N	12	0	0	216	0%	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.012	0.011	0.000	0.169	0.052	0.009	0.017	73
Y	71	3	923	213	81%	0.20	0.20	0.20	0.20	1.00	1.00	1.00	1.00	0.088	0.082	0.088	4.213	0.321	0.410	1.126	712
Y	0	3	0	0	0%	0.20	0.20	0.20	0.20	1.00	1.00	1.00	1.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0
Y	0	3	0	0	0%	0.20	0.20	0.20	0.20	1.00	1.00	1.00	1.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0
Y	2.0	3	66	6	92%	0.20	0.20	0.20	0.20	1.00	1.00	1.00	1.00	0.004	0.004	0.004	0.167	0.027	0.024	0.066	41
Y	25	3	825	75	92%	0.20	0.20	0.20	0.20	1.00	1.00	1.00	1.00	0.051	0.048	0.051	2.092	0.339	0.298	0.820	518
Y	1	3	33	3	92%	0.20	0.20	0.20	0.20	1.00	1.00	1.00	1.00	0.002	0.002	0.002	0.084	0.014	0.012	0.033	21
Y	71	3	923	213	81%	0.20	0.20	0.20	0.20	1.00	1.00	1.00	1.00	0.019	0.018	0.000	0.291	0.178	0.042	0.084	361
Y	0	3	0	0	0%	0.20	0.20	0.20	0.20	1.00	1.00	1.00	1.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0
Y	0	3	0	0	0%	0.20	0.20	0.20	0.20	1.00	1.00	1.00	1.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0
Y	2	3	66	6	92%	0.20	0.20	0.20	0.20	1.00	1.00	1.00	1.00	0.001	0.001	0.000	0.011	0.013	0.002	0.004	18
Y	25	3	825	75	92%	0.20	0.20	0.20	0.20	1.00	1.00	1.00	1.00	0.009	0.009	0.000	0.135	0.157	0.026	0.051	220
Y	1	3	33	3	92%	0.20	0.20	0.20	0.20	1.00	1.00	1.00	1.00	0.000	0.000	0.000	0.005	0.006	0.001	0.002	9
N	4	0	0	180	0%	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.029	0.021	0.022	0.907	0.039	0.034	0.095	54
N	1	0	0	5	0%	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.001	0.001	0.001	0.025	0.001	0.001	0.003	2
N	4	0	0	180	0%	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.008	0.006	0.000	0.098	0.030	0.005	0.010	43
N	1	0	0	5	0%	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.000	0.000	0.000	0.003	0.001	0.000	0.000	1

Barge gen scenario - additional emissions

PM	$PM_{2.5}$	DPM	NOx	SOx	HC	CO	CO_2e
tpy	tpy	tpy	tpy	tpy	tpy	tpy	mt
0.0011	0.0010	0.0011	0.0432	0.0314	0.0747	1.1593	275
0.0008	0.0007	0.0008	0.0323	0.0235	0.0558	0.8660	205
0.0005	0.0005	0.0005	0.0214	0.0155	0.0369	0.5727	136
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0
0.0010	0.0009	0.0010	0.0394	0.0287	0.0681	1.0578	251
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0
0.0001	0.0001	0.0001	0.0025	0.0018	0.0043	0.0670	16
0.0008	0.0007	0.0008	0.0313	0.0227	0.0540	0.8380	199
0.0000	0.0000	0.0000	0.0013	0.0009	0.0022	0.0335	8
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0

Assist tug scenario - aditional emissions

Assist Tug		Total	PM	$PM_{2.5}$	DPM	NOx	SOx	HC	CO	CO_2e
Used	hrs/call	hrs	tpy		tpy	tpy	tpy	tpy	tpy	mt
Y	5.0	415	0.03	0.03	0.03	0.96	0.00	0.10	0.70	80
Y	5.0	310	0.02	0.02	0.02	0.72	0.00	0.08	0.53	59
Y	5.0	205	0.02	0.02	0.02	0.48	0.00	0.05	0.35	39
Y	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Y	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Y	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
N	0	0	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0
N	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Y	5	355	0.03	0.03	0.03	0.82	0.00	0.09	0.60	68
Y	5	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Y	5	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Y	5	10	0.00	0.00	0.00	0.02	0.00	0.00	0.02	2
Y	5	125	0.01	0.01	0.01	0.29	0.00	0.03	0.21	24
Y	5	5	0.00	0.00	0.00	0.01	0.00	0.00	0.01	1
Y	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Y	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Y	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Y	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Y	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Y	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
N	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
N	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
N	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
N	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0

Vessel bunkering at anchorage - additional emissions

# Calls	Total hrs	PM	PM2.5	DPM	NOx	SOx	HC	CO	CO2e
		tpy	tpy	tpy	tpy	tpy	tpy	tpy	mt
42	498	0.08	0.08	0.08	3.82	0.14	0.13	0.34	197
31	372	0.06	0.06	0.06	2.86	0.11	0.09	0.26	147
21	246	0.04	0.04	0.04	1.89	0.07	0.06	0.17	98
42	498	0.03	0.03	0.00	0.39	0.12	0.02	0.04	169
31	372	0.02	0.02	0.00	0.29	0.09	0.01	0.03	126
21	246	0.01	0.01	0.00	0.19	0.06	0.01	0.02	83
0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
36	426	0.07	0.06	0.07	3.27	0.12	0.11	0.29	169
0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
1	12	0.00	0.00	0.00	0.09	0.00	0.00	0.01	5
13	150	0.02	0.02	0.02	1.15	0.04	0.04	0.10	59
1	6	0.00	0.00	0.00	0.05	0.00	0.00	0.00	2
36	426	0.02	0.02	0.00	0.33	0.10	0.02	0.03	145
0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
1	12	0.00	0.00	0.00	0.01	0.00	0.00	0.00	4
13	150	0.01	0.01	0.00	0.12	0.04	0.01	0.01	51
0.5	6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2
0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0

Overall emission reductions (or increases, which are negative reductions)

PM	PM25	DPM	NOx	SOx	HC	CO	CO2e
tpy		tpy	tpy	tpy	tpy	tpy	mt
0.17	0.16	0.17	8.57	-0.17	-0.30	-2.21	-552
0.13	0.12	0.13	6.40	-0.13	-0.23	-1.65	-412
0.08	0.08	0.08	4.24	-0.09	-0.15	-1.09	-273
0.01	0.01	0.00	0.18	-0.12	-0.02	-0.04	-169
0.01	0.01	0.00	0.13	-0.09	-0.01	-0.03	-126
0.01	0.01	0.00	0.09	-0.06	-0.01	-0.02	-83
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.07	0.06	0.07	3.69	-0.15	-0.26	-1.96	-488
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.01	0.01	0.01	0.34	-0.01	-0.01	-0.09	-23
0.10	0.10	0.10	4.28	-0.07	-0.12	-1.15	-282
0.00	0.00	0.00	0.17	0.00	0.00	-0.05	-11
0.01	0.01	0.00	0.21	-0.10	-0.02	-0.03	-145
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.02	0.00	0.00	0.00	-4
0.02	0.02	0.00	0.25	-0.04	-0.01	-0.01	-51
0.00	0.00	0.00	0.01	0.00	0.00	0.00	-2
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0

San Pedro Bay Ports
At-Berth Auto and RoRo Cost-Effectiveness Analysis
CY 2018 Emission Summary
22 October 2019
DRAFT

Table A1: Reductions from Barge Based at-Berth Capture and Control, tpy

Port	PM_{10} tpy	$PM_{2.5}$ tpy	DPM tpy	NO_x tpy	SO_x tpy	HC tpy	CO tpy	CO_2e mt/yr	Barge Op hrs
Emission Reductions (or increases)									
POLB	0.40	0.38	0.38	19.61	-0.66	-0.73	-5.04	-1,615	2,790
POLA	0.22	0.20	0.18	8.98	-0.37	-0.43	-3.30	-1,005	2,144
Total	**0.62**	**0.58**	**0.56**	**28.59**	**-1.03**	**-1.15**	**-8.33**	**-2,620**	**4,934**
Percent Reduction (or increase)									
POLB	36%	36%	38%	40%	-28%	-44%	-113%	-49%	
POLA	39%	38%	39%	40%	-35%	-52%	-151%	-53%	
Total	**37%**	**37%**	**38%**	**40%**	-30%	-47%	-125%	-50%	

Negative indicates a net increase in emissions

Table A2: Reductions from Barge Based at-Berth Capture and Control, tpd

Port	PM10 tpd	PM2.5 tpd	DPM tpd	NOx tpd	SOx tpd	HC tpd	CO tpd	CO2e mt/yr
Emission Reductions (or increases)								
POLB	0.0011	0.0010	0.0010	0.0537	-0.0018	-0.0020	-0.0138	-4.4
POLA	0.0006	0.0006	0.0005	0.0246	-0.0010	-0.0012	-0.0090	-2.8
Total	**0.0017**	**0.0016**	**0.0015**	**0.0783**	**-0.0028**	**-0.0032**	**-0.0228**	**-7.2**
Percent Reduction (or increase)								
POLB	36%	36%	38%	40%	-28%	-44%	-113%	-49%
POLA	39%	38%	39%	40%	-35%	-52%	-151%	-53%
Total	**37%**	**37%**	**38%**	**40%**	-30%	-47%	-125%	-50%

Negative indicates a net increase in emissions

Table B1: Auto Carriers and RoRo at-berth Emissions Contribution in CY 2018 in tpy

Port	Vessel Type	PM	PM2.5	DPM	NOx	SOx	HC	CO	CO2e
		tpy	tpy	tpy	tpy	tpy	tpy	tpy	mt/y
SPBP	Auto and RoRo at Berth	1.7	1.6	1.4	69.9	3.4	2.4	6.5	5,001
SPBP	All vessels at Berth	60.1	56.3	31.4	1894.8	169.7	72.7	188.7	264,414
SPBP	All vessels	142.0	133.0	106.1	7078.5	323.3	270.9	590.3	503,286
SPBP	Percent of all OGV at Berth	2.8%	2.8%	4.5%	3.7%	2.0%	3.3%	3.5%	1.9%
SPBP	Percent of all OGV	1.2%	1.2%	1.3%	1.0%	1.0%	0.9%	1.1%	1.0%

Table B2: Auto Carriers and RoRo at-berth Emissions Contribution in CY 2018 in tpd

Port	Vessel Type	PM10	PM2.5	DPM	NOx	SOx	HC	CO	CO2e
		tpd	tpd	tpd	tpd	tpd	tpd	tpd	mt/d
SPBP	Auto and RoRo at Berth	0.0045	0.0043	0.0039	0.1916	0.0092	0.0066	0.0179	14
SPBP	All vessels at Berth	0.1648	0.1543	0.0861	5.1914	0.4649	0.1993	0.5170	724
SPBP	All vessels	0.3891	0.3642	0.2907	19.3931	0.8857	0.7421	1.6172	1,379
SPBP	Percent of all OGV at Berth	2.8%	2.8%	4.5%	3.7%	2.0%	3.3%	3.5%	1.9%
SPBP	Percent of all OGV	1.2%	1.2%	1.3%	1.0%	1.0%	0.9%	1.1%	1.0%

San Pedro Bay Ports
At-Berth Auto and RoRo Cost-Effectiveness Analysis
Cost Effectiveness Scenarios
22 October 2019
DRAFT

Blue font/blue background:	inputs on this sheet that can be changed based on assumptions
Black font/yellow background:	inputs on this sheet that are linked from this sheet or other sheets in this workbook
Red font/white background:	calculations performed on this sheet

Assumptions are in BLUE	Description	Notes
EMISSIONS REDUCTION/INCREASE PER YEAR		
0.58	change in PM2.5 emissions	
28.59	change in NOx emissions	
-1.15	change in HC emissions	Negative change means emissions *increase* .
-1.460	change in ROG emissions	ROG = HC * 1.26639, per 2017 CMP Guidelines, CARB
20	PM weighting factor	per CMP: weighted emissions = (20*DPM) + ROG + NOX reductions in tpy
38.76	weighted redux, tpy	
4,934	total hours / year	Hrs of vessel operation per year cleaned up by the barge C&C technology.

Case #1: Hourly Rental

1%	discount rate	
1	project life	
1.01	Capital Recovery Factor (CRF)	
$900	hourly rental rate	per CARB excel - "Cost Input Tab" (assumes all inclusive)
$4,440,600	total cost/yr to operate the system across total cleanup hours	
$115,707	annualized cost effectiveness, based on project life and discount rate	

Hourly Rate	Cost-Effectiveness	Rate Source (assumes/indicated all inclusive)
$900	$115,707	CARB SRIA Excel - "Cost Input Tab"
$1,100	$141,419	Receipt #2
$1,208	$155,304	Receipt #1
$1,270	$163,275	$900/hr for 17 hr call, includes 24-hr min. charge (Receipt #4)
$1,422	$182,816	Receipt #3
$1,552	$199,530	$1,100/hr for 17 hr call, includes 24-hr min. charge

Case #2: Purchase Barge-Based C&C System(s)

4	number of barge-based C&C systems to serve both ports	
38.76	tpy, weighted redux, tpy	
4,934	total hours / year	Hrs of vessel operation per year cleaned up by the barge C&C technology.
Capital Costs		
$4,900,000	barge-based C&C system - estimated capital cost	
5%	discount rate	ARB uses 5% and 20-yr life for the land-based system.
20	project life	
0.08	Capital Recovery Factor (CRF)	
$1,568,000	Annualized Capital Cost	
Operating Costs		
$17,500	Ann'l Maint. Cost per Barge, $ / hr	Per CARB SRIA excel - Assume each barge maint is needed, not a f(hours)
$70,000	Total Annual Maint. Cost, $/yr	Assumes same $/yr per system.
$0	Labor Cost, $ / hr	ARB assumes this is zero. Need to vet this.
$0	Annual Operating Cost, $ / yr	Applied to total hours, independent of # of barges.
$100	Hourly Operating Cost, $ / hr	Per CARB SRIA excel - cost inputs (consumables, etc., not labor)
$493,400	Annual Operating Cost, $ / yr	Applied to total hours, independent of # of barges.
$563,400	Annual Operating Cost, $ / yr for all systems (cell A34)	
Cost-Effectiveness		
$2,131,400	Annualized capital cost plus operating cost ($/yr)	
$54,987	Cost-effectiveness ($/ton)	

from CMP 2017 Guidelines : https://ww3.arb.ca.gov/msprog/moyer/guidelines/2017gl/2017_cmp_gl_volume_1.pdf

(d) EMFAC provides HC emission factors which are converted into ROG. ROG = HC * 1.26639.
(e) Emission Factors are based on zero-mile rates contained in EMFAC 2014.
(f) Deterioration Rate per 10,000 miles.
(g) All model year 2007 and newer engines with Family Emission Limits (FEL) from 0.21 g/bhp-hr to 0.50 g/bhp-hr NOx must use different emission factors from those listed for model years 2010 and newer engines certified to 0.20 g/bhp-hr NOx standards. FEL emission factors are based on EMFAC factors for model year 2010-2012 engines that include weighted averaging of 0.5, 0.35, and 0.20 g/bhp-hr NOx standards based on sales.
(h) Deterioration rates for 2013+ engines incorporate use of on-board diagnostic system.
(i) Factors for 2010+ engines are reduced values of 2013 factors by 50 percent, 75 percent, and 90 percent to correspond with 0.10 g/bhp-hr NOx, 0.05 g/bhp-hr NOx, and 0.02 g/bhp-hr NOx optional low NOx standards.
(j) Factors for 2006 or older engines are for unfiltered trucks.

06/20/2017 D - 1 EMISSIONS TABLES

Context
CMP CE to bring old tech up to current standards: $30k / weighted ton
CMP CE to bring tech that meets current standards to advanced tech (ZE / NZE): $100k / weighted ton

San Pedro Bay Ports
At-Berth Auto and RoRo Cost-Effectiveness Analysis
Barge Utilization Evaluation
04 October 2019
DRAFT

Number of RoRo and Auto Carier calls to both ports (LA/LB) combined. Note: a call is defined as an Arrival to berth or a Shift to berth from Anc.

Concurrent calls	2018 days	% of days		
			4	barges (needed to accommodate busiest days)
			1,460	barge days per year
0	173	47%		<-- longest stretch with no calls: once at 6 days
1	130	36%	130	barge days with 1 vessel
2	45	12%	90	barge days with 2 vessels
3	12	3%	36	barge days with 3 vessels
4	5	1%	20	barge days with 4 vessels
	365		276	(billable) barge days per year
			19%	billable barge days % of total barge days
			90%	billable days basis of hourly rate (assumption)
			4.8	hourly rate multiplier to account for low utilization

oc_datetime	num_calls
2018-01-01	1
2018-01-02	1
2018-01-03	2
2018-01-04	3
2018-01-05	1
2018-01-06	0
2018-01-07	0
2018-01-08	0
2018-01-09	2
2018-01-10	0
2018-01-11	1
2018-01-12	1
2018-01-13	0
2018-01-14	0
2018-01-15	2
2018-01-16	0
2018-01-17	1
2018-01-18	0
2018-01-19	0
2018-01-20	0
2018-01-21	1
2018-01-22	1
2018-01-23	0
2018-01-24	0
2018-01-25	2
2018-01-26	0
2018-01-27	1
2018-01-28	0
2018-01-29	2
2018-01-30	0
2018-01-31	0
2018-02-01	1
2018-02-02	2
2018-02-03	0
2018-02-04	1
2018-02-05	2
2018-02-06	1
2018-02-07	1
2018-02-08	1

2018-02-09	0
2018-02-10	0
2018-02-11	0
2018-02-12	3
2018-02-13	0
2018-02-14	0
2018-02-15	2
2018-02-16	0
2018-02-17	0
2018-02-18	2
2018-02-19	2
2018-02-20	2
2018-02-21	0
2018-02-22	1
2018-02-23	1
2018-02-24	1
2018-02-25	0
2018-02-26	1
2018-02-27	1
2018-02-28	0
2018-03-01	0
2018-03-02	0
2018-03-03	1
2018-03-04	0
2018-03-05	1
2018-03-06	1
2018-03-07	1
2018-03-08	2
2018-03-09	1
2018-03-10	0
2018-03-11	0
2018-03-12	4
2018-03-13	0
2018-03-14	1
2018-03-15	1
2018-03-16	0
2018-03-17	0
2018-03-18	2
2018-03-19	0
2018-03-20	1
2018-03-21	2
2018-03-22	1
2018-03-23	2
2018-03-24	1
2018-03-25	0
2018-03-26	1
2018-03-27	0
2018-03-28	1
2018-03-29	0
2018-03-30	0
2018-03-31	2
2018-04-01	0
2018-04-02	1
2018-04-03	1
2018-04-04	2
2018-04-05	2
2018-04-06	0
2018-04-07	0

2018-04-08	3
2018-04-09	2
2018-04-10	0
2018-04-11	0
2018-04-12	0
2018-04-13	0
2018-04-14	0
2018-04-15	3
2018-04-16	0
2018-04-17	0
2018-04-18	1
2018-04-19	0
2018-04-20	1
2018-04-21	0
2018-04-22	1
2018-04-23	4
2018-04-24	1
2018-04-25	1
2018-04-26	2
2018-04-27	1
2018-04-28	1
2018-04-29	0
2018-04-30	0
2018-05-01	0
2018-05-02	2
2018-05-03	0
2018-05-04	1
2018-05-05	0
2018-05-06	1
2018-05-07	2
2018-05-08	1
2018-05-09	1
2018-05-10	0
2018-05-11	1
2018-05-12	0
2018-05-13	0
2018-05-14	1
2018-05-15	1
2018-05-16	0
2018-05-17	0
2018-05-18	0
2018-05-19	0
2018-05-20	0
2018-05-21	3
2018-05-22	1
2018-05-23	1
2018-05-24	0
2018-05-25	0
2018-05-26	0
2018-05-27	0
2018-05-28	0
2018-05-29	0
2018-05-30	2
2018-05-31	0
2018-06-01	1
2018-06-02	0
2018-06-03	1
2018-06-04	1

2018-06-05	1
2018-06-06	0
2018-06-07	2
2018-06-08	0
2018-06-09	1
2018-06-10	1
2018-06-11	0
2018-06-12	1
2018-06-13	0
2018-06-14	1
2018-06-15	1
2018-06-16	1
2018-06-17	1
2018-06-18	2
2018-06-19	1
2018-06-20	1
2018-06-21	1
2018-06-22	1
2018-06-23	0
2018-06-24	0
2018-06-25	1
2018-06-26	0
2018-06-27	1
2018-06-28	1
2018-06-29	0
2018-06-30	0
2018-07-01	1
2018-07-02	3
2018-07-03	1
2018-07-04	1
2018-07-05	0
2018-07-06	1
2018-07-07	0
2018-07-08	0
2018-07-09	0
2018-07-10	1
2018-07-11	1
2018-07-12	0
2018-07-13	0
2018-07-14	0
2018-07-15	1
2018-07-16	3
2018-07-17	1
2018-07-18	1
2018-07-19	1
2018-07-20	0
2018-07-21	0
2018-07-22	0
2018-07-23	0
2018-07-24	1
2018-07-25	0
2018-07-26	2
2018-07-27	1
2018-07-28	0
2018-07-29	0
2018-07-30	2
2018-07-31	1
2018-08-01	0

2018-08-02	2
2018-08-03	2
2018-08-04	0
2018-08-05	0
2018-08-06	3
2018-08-07	1
2018-08-08	0
2018-08-09	0
2018-08-10	0
2018-08-11	0
2018-08-12	1
2018-08-13	2
2018-08-14	0
2018-08-15	1
2018-08-16	1
2018-08-17	0
2018-08-18	0
2018-08-19	1
2018-08-20	0
2018-08-21	0
2018-08-22	0
2018-08-23	0
2018-08-24	2
2018-08-25	1
2018-08-26	1
2018-08-27	1
2018-08-28	0
2018-08-29	0
2018-08-30	1
2018-08-31	1
2018-09-01	1
2018-09-02	0
2018-09-03	0
2018-09-04	2
2018-09-05	0
2018-09-06	0
2018-09-07	1
2018-09-08	1
2018-09-09	0
2018-09-10	0
2018-09-11	1
2018-09-12	1
2018-09-13	3
2018-09-14	1
2018-09-15	0
2018-09-16	0
2018-09-17	1
2018-09-18	0
2018-09-19	2
2018-09-20	1
2018-09-21	1
2018-09-22	0
2018-09-23	2
2018-09-24	1
2018-09-25	1
2018-09-26	0
2018-09-27	0
2018-09-28	0

2018-09-29	0
2018-09-30	1
2018-10-01	0
2018-10-02	4
2018-10-03	2
2018-10-04	0
2018-10-05	0
2018-10-06	0
2018-10-07	0
2018-10-08	4
2018-10-09	0
2018-10-10	0
2018-10-11	0
2018-10-12	0
2018-10-13	0
2018-10-14	1
2018-10-15	1
2018-10-16	0
2018-10-17	0
2018-10-18	2
2018-10-19	1
2018-10-20	0
2018-10-21	0
2018-10-22	3
2018-10-23	1
2018-10-24	0
2018-10-25	0
2018-10-26	1
2018-10-27	0
2018-10-28	1
2018-10-29	0
2018-10-30	3
2018-10-31	0
2018-11-01	0
2018-11-02	1
2018-11-03	1
2018-11-04	0
2018-11-05	1
2018-11-06	2
2018-11-07	0
2018-11-08	1
2018-11-09	1
2018-11-10	1
2018-11-11	0
2018-11-12	1
2018-11-13	1
2018-11-14	1
2018-11-15	0
2018-11-16	0
2018-11-17	0
2018-11-18	1
2018-11-19	0
2018-11-20	3
2018-11-21	0
2018-11-22	0
2018-11-23	0
2018-11-24	2
2018-11-25	1

2018-11-26	1
2018-11-27	0
2018-11-28	0
2018-11-29	2
2018-11-30	0
2018-12-01	2
2018-12-02	2
2018-12-03	0
2018-12-04	0
2018-12-05	1
2018-12-06	0
2018-12-07	0
2018-12-08	1
2018-12-09	0
2018-12-10	0
2018-12-11	0
2018-12-12	4
2018-12-13	0
2018-12-14	0
2018-12-15	1
2018-12-16	1
2018-12-17	1
2018-12-18	1
2018-12-19	0
2018-12-20	1
2018-12-21	2
2018-12-22	2
2018-12-23	0
2018-12-24	1
2018-12-25	0
2018-12-26	2
2018-12-27	0
2018-12-28	2
2018-12-29	0
2018-12-30	1
2018-12-31	1

San Pedro Bay Ports
At-Berth Auto and RoRo Emissions Contribution
CY 2018 Data
04 October 2019
DRAFT

SPBP Table B for the document

Port	Vessel Type	PM_{10} tpy	$PM_{2.5}$ tpy	DPM tpy	NOx tpy	SOx tpy	HC tpy	CO tpy	CO_2e mt/yr
SPBP	Auto and RoRo at Berth	1.7	1.6	1.4	70	3.4	2.4	6.5	5,001
SPBP	All vessels at Berth	60.1	56.3	31.4	1,895	169.7	72.7	188.7	264,414
SPBP	All vessels	142.0	133.0	106.1	7,078	323.3	270.9	590.3	503,286
SPBP	Percent of all OGV at Berth	2.8%	2.8%	4.5%	3.7%	2.0%	3.3%	3.5%	1.9%
SPBP	Percent of all OGV	1.2%	1.2%	1.3%	1.0%	1.0%	0.9%	1.1%	1.0%

Port	Vessel Type	Mode	PM	$PM_{2.5}$	DPM	NOx	SOx	HC	CO	$CO2_e$	Units
POLA	Auto and RoRo	at-berth	0.6	0.5	0.5	22.5	1.1	0.8	2.2	1,799	tons
POLA	All	at-berth	24.3	22.6	12.8	766.9	58.8	30.7	82.2	109,452	tons
POLA	All	All	57.0	52.9	42.7	2909.4	110.0	119.5	249.5	205,486	tons
POLA	Auto &RoRo vs All OGV	at-berth	2.3%	2.3%	3.7%	2.9%	1.8%	2.7%	2.7%	1.6%	%
POLA	Auto &RoRo vs All OGV	All	1.0%	1.0%	1.1%	0.8%	1.0%	0.7%	0.9%	0.9%	%
POLB	Auto	at-berth	1.1	1.0	1.0	47.4	2.3	1.6	4.3	3,202	tons
POLB	All	at-berth	35.9	33.8	18.6	1127.9	110.8	42.1	106.5	154,962	tons
POLB	All	All	85.0	80.0	63.4	4169.1	213.2	151.4	340.8	297,800	tons
POLB	Auto &RoRo vs All OGV	at-berth	3.0%	3.0%	5.1%	4.2%	2.1%	3.8%	4.1%	2.1%	%
POLB	Auto &RoRo vs All OGV	All	1.3%	1.3%	1.5%	1.1%	1.1%	1.1%	1.3%	1.1%	%

Hourly Rate	Cost-Effectiveness ($/weighted ton)	Rate Source (assumes/indicated all inclusive)
$900	$115,707	CARB SRIA Excel - "Cost Input Tab"
$1,100	$141,419	Receipt #2, Attachment A
$1,208	$155,304	Receipt #1, Attachment A
$1,270	$163,275	$900/hr for 17 hr call (avg.), includes 24-hr min. charge (Receipt #4)
$1,422	$182,816	Receipt #3
$1,552	$199,530	$1,100/hr for 17 hr call (avg.), includes 24-hr min. charge

Attachment C:
SRIA – Air Resources Board, Proposed Control Measure for Ocean-Going Vessels At Berth
August 26, 2019

August 26, 2019

Irene Asmundson, Chief Economist
Department of Finance
State Capitol
Sacramento, CA 95814
Delivered via email to: *majorregulations@dof.ca.gov*

Re: SRIA – Air Resources Board, Proposed Control Measure for Ocean-Going Vessels At Berth

Dear Ms. Asmundson:

The Department of Finance has received a Standardized Regulatory Impact Assessment (SRIA) from the California Air Resources Board (CARB) for its Proposed Control Measure for Ocean-Going Vessels At Berth ("Proposed Regulation"). We submit these comments for your consideration during the review of the SRIA for this Proposed Regulation.

Over the past several years, the California Association of Port Authorities (CAPA), Cruise Lines International Association (CLIA), Pacific Merchant Shipping Association (PMSA), Western States Petroleum Association (WSPA), and World Shipping Council (WSC) (collectively, "Coalition") have been actively engaged with CARB staff on the development and assessment of amendments to existing regulations which exist for the regulation of emissions from vessels at berth and the possibility of a new set of regulations for additional vessel fleets.

In reviewing the SRIA for the Proposed Regulation, the Coalition's assessment is that it is lacking much of the analysis mandated by the SRIA regulations, and many of the conclusions are not accurate because they are based on flawed methodologies and flawed data on costs, emissions, and health benefits. Furthermore, in the absence of a feasibility evaluation study demonstrating that the required emissions controls are actually achievable and cost-effective at scale for the terminals proposed to be regulated, the conclusions of the SRIA are speculative at best.

The Department of Finance should review the SRIA with comments below and those attached and return the SRIA to CARB with a request that it be revised to accurately reflect the impacts of the Proposed Regulation and resubmitted before proceeding with their formal rulemaking.

The Coalition is attaching letters previously submitted by the Coalition or its members that address issues required to be discussed in the SRIA. The letters address the range of issues to be covered in the SRIA, including, but not limited to, cost assumptions, emissions benefit assumptions, labor issues, policy consistency, and proposed alternatives. This cover letter will briefly summarize these and other issues relevant to the SRIA that have been addressed in these letters and those issues covered in public workshops, industry workshops, and numerous conversations with CARB staff.

Regulatory History and Policy Setting

The CARB Proposed Regulation is intended to address two separate classes of ocean-going vessels under one new At Berth rule: fleets of vessels which are already covered by existing CARB at berth regulations (container, cruise, and refrigerated vessels) and vessels which were previously excluded by CARB from inclusion in the existing at berth regulations (breakbulk, bulk, tanker, and roll-on/roll-off vessels). In addition to the existing regulations on at berth engines, CARB, US EPA, and the IMO have adopted clean fuel rules which apply to nearly all standard vessel operating types. The state has also awarded to various seaports Proposition 1B grants for vessels at berth where emissions reductions are required to be reduced beyond and in excess of the existing regulatory baselines for ocean-going vessels.

The existing regulatory environment is already producing exceptional levels of emissions reductions from all vessel types. For instance, under clean fuel rules overall vessel emissions are down roughly 70% across all fleets. With those fleets which are further subject to the existing at berth regulation and Proposition 1B performance criteria, CARB staff has projected that total emissions reductions from currently regulated fleets will be at 96%.

Given that existing regulations already provide significant emissions reductions, CARB's Statement of Need in the SRIA (pg. 28) is inadequate. This is especially true because all current and relevant policy-setting documents previously adopted by CARB that address the reduction of emissions from vessels at berth acknowledge these existing rules and limit the nature of an expansion to exploring the viability of additional technology which may offer the potential of new fleet controls and minor amendments to fix compliance for existing fleets.

The SRIA claims that the Proposed Regulation is necessary to achieve the state's goals in multiple contexts, but the Proposed Regulation is inconsistent with those plans and policies. The Proposed Regulation goes beyond these existing enunciated policy aims or specific emissions reductions needed to achieve Clean Air Act, GHG, or community benefit targets already established. For example:

- The SRIA asserts that the goals of this Regulation are necessary to meet NOx reductions standards in impacted areas (pg. 28, 34, 37), however the Proposed Regulation is not part of the State Implementation Plan, is not part of any localized Air Quality Management Plan, does not represent specific emissions reductions targets to meet under the Clean Air Act, and is inconsistent with the policy statement regarding vessel at berth provisions that were adopted by the CARB Board in the Mobile Source Strategy and adopted in the California Sustainable Freight Action Plan.

- The SRIA references that this is intended to implement emissions reductions under SB 32 (pg. 28-29, 34-35, 38), but the Proposed Regulation is also inconsistent with the few at berth provisions in the SB 32 Scoping Plan.

- The SRIA also asserts the need to reduce specific community emissions in part based on AB 617 (pg. 37), but the Proposed Regulation is once again inconsistent with the recently-adopted AB 617 Blueprint.

Cost Analysis

The SRIA is deficient in that it systematically understates the anticipated costs of complying with the At Berth Regulation. For example, the Ports of Long Beach and Los Angeles have substantial experience with the deployment of shore power infrastructure and alternative control strategies. Together, the two ports have installed more shore power infrastructure than the rest of the world combined. Additionally, the two ports are the only California ports that have experience testing and deploying alternative at berth control technologies at the scale required by the Proposed Regulation.

In response to the proposed regulatory language the two ports prepared detailed assessments of the additional costs that would be required if the Proposed Regulation were implemented. (see "Port of Los Angeles and Port of Long Beach Comments on February 22-23 Workshops for the "Control Measure for Ocean Going Vessels Operating At Berth and At Anchor", May 20, 2019"). The Ports conservatively estimated the total costs between the two Ports at nearly $300 million just for their portion of capital costs required to maximize vessel participation under the Proposed Regulation. (pg. 3, "In summary, the POLB and POLA estimates approximately $106 million and $147-$193 million respectively for additional electrical infrastructure. *These estimates are rough orders of magnitude, with many exclusions and limitations, so the actual cost could be much higher*.")

The comment letters are included in the Appendices as back-up documentation of the real-world engineering costs the ports have actually incurred in deploying existing at berth technologies as a basis for their estimates. For instance, in Appendix B, the Port of Long Beach's extensive engineering review concluded that $106 million in additional costs were necessary in order to maximize electrification of its waterfront.

The SRIA unfortunately does not consider the POLA and POLB assessment. CARB's assessment simply assumes no additional infrastructure costs, citing to no evidentiary support, even though that is not consistent with the evidence and data in the record. For example, with respect to the Port of Long Beach (SRIA, pg. 99-100):

> "Staff has assumed no additional shore power capital projects would be required at POLB to meet the incremental increase of visits controlled with shore power under the Proposed Regulation. This is because the shore power infrastructure needed to meet the Existing Regulation's 80 percent requirement in 2020 and Proposition 1B's additional 10 percent requirement would provide sufficient shore power capacity to meet the requirements of the Proposed Regulation."

With respect to cost analyses as applied to other fleets, port complexes, and alternative technologies and alternative compliance methodologies, the assumptions used are also suspect and rely on weak or non-existent data. For instance, with respect to the barge-based alternative compliance systems proposed, the SRIA assumes that the cost is a bare $900 per hour. It appears that this estimate is based solely on phone conversations with a potential vendor of this technology. However, this methodology and estimate was contested by regulated parties who provided both specific billing and cost evidence to the contrary, in addition to methodological concerns including the lack of accounting for capital costs, standby costs, tug costs, variability of access up and down the coast, and unclear use of average costs across large fleet and geographic discrepancies.

Growth and Jobs

The statewide weighted compound annual growth factors used to estimate port growth are simply unrealistic and do not track the data that CARB staff had compiled on their own, much less the actual growth rates on the ground. The SRIA creates a presumption that growth factors would be scaled to growth in cargo and at Annual Industry Growth Factors starting in 2019 for Container, Cruise and Ro-Ro vessels on Table C2 (pg 67) of 8% and 7.5%. These are unrealistic approximations of continuous growth in cargo and of growth in vessels.

These numbers are not compared with the internal analysis provided by CARB staff for the ports of Long Beach and Los Angeles based on the ports' specific forecast, or with the Port of Hueneme, which are identified individually. CARB staff had the same opportunity to do so for the Port of Oakland but chose not to. Instead, CARB staff selected a compound growth rate for the Port of Oakland of 5% based on federal freight statistics that are NOT specific to the Port of Oakland.

This number is not supported by the facts. Looking historically, since 2007, when the original At Berth rule was adopted, the compound growth rate has been 0.59%. The number CARB has selected to use is nearly 10 times greater. Alternatively, CARB could have selected the Port of Oakland forecast which the BCDC Bay Area Seaport Forecast estimated at 2.2% or less than half the CARB estimate.

In either case, the SRIA's use of exaggerated growth rates has the effect of overestimating future emissions which in turn overstates future emission benefits, and significantly overstates the cost-effectiveness of the Proposed Regulation.

Additionally, the SRIA does not discuss potential negative impacts on growth or interstate/international commerce at the Ports and private terminals that may result from the extremely high costs of compliance and resulting cargo diversion (discussed further below). If real-world compliance costs end up being several times higher than CARB's underestimates, future development and expansion of the Ports and terminals could suffer, operations and transportation costs could increase, and cargo may seek other, less costly ports of entry (and indeed, documentation presented to CARB to date shows that such diversion is likely to occur). We are concerned that the SRIA omits any discussion of these risks or their potential impacts on the flow of commerce in and out of the ports and terminals.

In addition, the draft SRIA understates the potential negative impacts on jobs that could accompany the burdens discussed above. Consideration of the creation or elimination of jobs in the draft SRIA appears to be limited only to those construction jobs created by the requirement to install emission control systems and retrofit ports and terminals. The SRIA then minimizes the impact of anticipated lost jobs by pointing out that it will be small (0.01%) compared to the entire California economy. What the SRIA ignores is the potential impact of lost business or industry jobs associated with the extremely high costs of compliance for stakeholders, and/or potential loss of commerce due to cargo diversion. As stakeholders have pointed out to CARB, these impacts are likely to be significant and felt deeply, particularly to the thousands of Californians who rely on the business of the Ports and terminals for their livelihood. These impacts are real. They must be fully assessed and should not be minimized or dismissed by a simple comparison to the statewide economy at large.

Proposition 1B

The SRIA fails to account for the benefits of the emissions reductions that will result from the investment of Proposition 1B bonds and attributes Proposition 1B emission reductions to the proposed rule. Under Proposition 1B, the State made investments in shore power infrastructure that will ensure shore power emission reductions exceed the emission reductions required by the current At Berth rule. In funding the project, CARB determined that the emission reductions were real, surplus, quantifiable, and enforceable.

The SRIA, however, contains no accounting of those emission reductions. CARB acknowledges the fact that Proposition 1B infrastructure provides emissions benefits (see comments above), but has refused to quantify the emissions benefits or specify how grant compliance will be achieved. By failing to include the benefits of the Proposition 1B investment, the SRIA attributes the benefits to the proposed rule, overestimating future benefits and cost-effectiveness.

Emissions Benefits

The SRIA analysis also understates the documented emissions benefits resulting from the existing rule. The existing rule requires that if a vessel is capable of connecting to shore power it must do so. As a result, the current rule requires overcompliance. CARB staff have repeatedly acknowledged that under the existing rule, fleets must over comply to meet the 80% emission reduction requirement in 2020. No attempt to model this overcompliance has been made. Future emission benefits would be lower and the Proposed Regulation would not be cost-effective.

This trend is amplified by the time at berth for modern containerships, particularly in San Pedro Bay. Looking at the Port of Los Angeles' 2017 Emissions Inventory, the average time at berth for all containerships is 58 hours. Assuming the full three-hour allowance for connect and disconnect is taken under the current rule, the average vessel at the Port of Los Angeles would be connected for 55 hours out of 58 hours. Put another way, the average vessel would achieve a 94% emission reduction under the existing rule. Instead, by contrast, the forecast assumes without evidentiary support that after full implementation emission reductions will amount to only 65% for the ports of Long Beach and Los Angeles, with some vessel categories actually decreasing emission reductions as the existing rule tightens.

By minimizing the benefits of the existing rule, the SRIA overestimates future emissions, overestimates future emission reductions from the proposed rule, resulting in an unreasonable emission cost-effectiveness.

Safety and Reliability

The SRIA also does not discuss (and largely dismisses) the potential safety and reliability issues associated with land-based emissions control systems, and the additional costs that may be borne by regulated facilities to mitigate those concerns. Again, this is an area in which Coalition member WSPA and others have articulated serious concerns to CARB – concerns which further underline the need for a feasibility study. Without first conducting a feasibility study to determine if the proposed control systems can be safely and reliably operated at scale and under real-world conditions, the proposed At Berth Regulation risks creating unintended dangers that would need to be addressed or mitigated by regulated ports and terminals. The SRIA contains no discussion or analysis of the potential impacts of these issues.

Analysis of Harbor Craft Emissions

As discussed above, the SRIA cost-effectiveness conclusions depend on overestimations of the emission reductions predicted to be achieved under the Proposed Regulation versus the existing baseline. Unfortunately, they also depend on ignoring emissions increases likely to result from the Proposed Regulation. For example, the Proposed Regulation envisions expanded use of barge-based emission control systems. The use of barge-based systems requires the use of tugboats. Typically, tugboats use engines several times the size of the auxiliary engine the regulation seeks to control. Stakeholders have repeatedly pointed out that no information has been provided about the increased emissions that will result from increased harbor craft use.

During workshops, CARB staff has assured stakeholders that these emissions have been examined and an analysis would be presented. Unfortunately, however, tug emissions and costs are not reflected in the SRIA.

Every use of a barge-based system will require up to six tugboat moves. Those moves would occur only because of the Proposed Regulation resulting in significant emissions when compared to emissions the regulation seeks to control. In some areas, like the San Francisco Bay, a three-hour tugboat transit may be required. These emissions have not been included in the assessment or accounted for in the SRIA. These additional emissions cause cost-effectiveness values to rise, reduce mass emissions benefits, and reduce health benefits. These emissions are significant compared to the source and directly undercut the Incidences per Ton (IPT) analysis presented in the SRIA.

If the regulation results in emissions increases that offset emissions benefits, those emission increases should be deducted from the claimed health benefits presented in the SRIA. Given how small changes in the emissions benefit produce enormous changes in the cost of health outcomes, the IPT analysis needs to be reworked. *None of the benefits assessed in the SRIA are accurate without inclusion of offsetting harbor craft emission increases.*

No Analysis of Industry Alternatives Presented for Purposes of SRIA Analysis

The CARB SRIA notes that at industry work group meetings "staff specifically requested stakeholders to submit proposed regulatory alternatives for the economic analysis" and "staff again requested suggestions for regulatory alternatives" and "solicited alternatives for this SRIA" at its meetings in 2018 (pg. 43).

In February, the Coalition submitted a formal Alternative proposal in response to the solicitation of an industry alternative from the CARB program staff. This was in addition to at least four different alternatives which were presented to CARB staff for consideration prior to the formal solicitation by individual coalition members after previous workshops in 2017.

The SRIA does not acknowledge or analyze any of the alternatives submitted. Indeed, the SRIA's section on Public Engagement all but implies that in response to its requests for alternatives that none were received. This is not accurate.

Instead of analyzing the Coalition Alternative proposal, or the other submitted industry alternatives, only theoretical alternatives developed internally were considered (pg. 128-147), those were incorrectly analyzed (see comments regarding Harbor Craft and Ro/Ros), and summarily dismissed.

If CARB had evaluated the alternatives presented in the comment letters, we believe it could have found some of them to be superior to the Proposed Regulation, in that some or all of these alternatives would avoid unnecessary safety risks, reliability concerns, excessive costs, implementation delays and operational inefficiencies associated with mandating the potentially infeasible control strategies required by the Proposed Regulation.

The SRIA must be re-tuned in order to acknowledge the multiple alternatives that industry stakeholders have submitted through this ongoing process. The SRIA must then analyze and weigh those alternatives in a comprehensive manner, taking into account the issues raised in this letter and prior correspondence.

Economic Analysis Flawed

The CARB SRIA examines the impact of the regulation on the cost of a TEU, cost of a vehicle, or cost on a gallon of gas, but the proper analysis would examine the impact on the cost of transportation, not the impact relative to the value of the item being ultimately transported.

The impacted parties provide transportation services on a diverse array of economic activities which range from agricultural exports, to petroleum distribution, to automobile import and export, to tourism. As a result, by not examining the impact to the cost of transportation, CARB staff failed to accurately account for the economic impacts to the industries regulated. These costs are concentrated at seaports, but the CARB SRIA analysis looks only at the downstream distribution of costs across the entire supply chain. This is improper.

While CARB considered costs on a macro average per TEU as a measure of economic activity, CARB did not analyze California competitiveness on a macro average as a measure of competitiveness, which is a required step in a SRIA analysis. If CARB had done this, it would have found that this regulation will exacerbate an existing cargo diversion trend in the containerized cargo sector. California's container ports have been steadily losing market share for a decade due to reasons like increased cost and increased regulatory burden. California ports have lost approximately 20% market share over the last decade, that lost market share represents lost jobs, lost economic activity, and lost tax revenue. A proper analysis would compare increased cost against alternative transportation options, namely other port gateways.

The overwhelming majority of containerized cargoes entering California ports are discretionary intermodal and ultimately destined for use outside of California. As a result, other gateways are competitive on a cost-basis against California ports. The SRIA did not examine any of these potential and foreseeable economic impacts. In addition, cargo diversion also has dramatic environmental impacts discussed below.

The approach that CARB staff has taken would be the equivalent of assessing the cost of a taxi ride against the net worth of the passenger rather than against other transportation options like public transit or a personal vehicle. Unless the SRIA examines the economic impact on the service being provided, transportation, the SRIA cannot seriously examine the economic impacts.

We would also note that the per TEU metrics used in the CARB SRIA also seem to be focused exclusively on impacts to containerized imports and not to California's exports. This makes it difficult to fairly assess impacts to California agriculture and manufacturing sectors with respect to downstream impacts of this rule and is incompatible with the baseline requirements of the SRIA guidelines which require full competitiveness analyses on imports and exports.

In order to clearly demonstrate the actual costs and benefits, the SRIA must be revised to demonstrate comparative analyses applied on a port-by-port basis and on a vessel-type basis within each port.

Selective Analysis Distorts Conclusions

The analysis contained in the SRIA relies on selective analysis to achieve predetermined outcomes. As described in other sections, the analysis ignores the emissions benefits of Proposition 1B, the impact of harbor craft and bunkering operations, and the emissions benefit of the existing regulation that occurs as a result of the requirement that vessels capable of shore power must connect. But the analysis also does this at the macro level as well. In choosing to aggregate some analysis and segregating the analysis in others, the SRIA analysis hides the true cost and true benefits that would occur at the local level. For example, most benefits are analyzed on a statewide basis. The Port of Hueneme is not comparable to the San Pedro Bay ports in size, impact, or resources. Yet, the SRIA does not analyze the benefits or impacts to a port like Hueneme.

The difference between ports make the benefits of the Proposed Regulation extraordinarily disproportionate. Relying on average growth factors or state-wide cost-effectiveness masks the regulations effects in places like the Port of San Diego or Benicia. A port-by-port analysis would reveal if some ports could be excluded from the regulation while maintaining emission reductions. It is impossible to make that determination without that level of analysis. Similarly, an analysis that examined the benefits and costs of the Proposed Regulation on the different vessel types (i.e., current regulated fleet, tankers, Ro/Ros, and bulk), would reveal what vessel types could be cost-effectively controlled at each port. None of that crucial information on impacts, benefits, or costs are included in the SRIA.

Container Vessel Diversion and Related Economic and Greenhouse Gas Impacts Not Analyzed

As discussed above, CARB staff has been presented data documenting cargo diversion from California ports over the past decade. Regulations that increase cost and compliance uncertainty will also increase cargo diversion. With cargo diversion ultimately comes vessel rerouting, and CARB has not addressed diversion in its analysis.

PMSA has submitted data to CARB showing that when vessels reroute or are diverted from California ports it results in significant increases of greenhouse gas emissions. On average, these GHG emissions will increase 22%. None of these offsetting emission increases have been analyzed in the SRIA, even though such market competitiveness is a specific component of SRIA analysis.

Cruise Ship Diversion and Related Economic Impacts Not Analyzed

In addition to failing to analyze cargo diversion, CARB staff did not analyze lost economic benefits as a result of cruise ships avoiding California ports. Due to the nature of cruise ships, alternative control technologies are not a feasible compliance strategy, making shore power the only compliance option.

Vessels that regularly visit California ports are retrofitted for shore power. But other cruise vessels may call a California port as part of a repositioning move; these vessels would not be equipped for shore power. To the degree that these vessels are forced to avoid California ports there will be significant economic impact that has not been analyzed. For instance, each Port of San Diego turn around cruise call generates almost $2 million. A single stop of a transiting cruise ship generates nearly $600,000 for the San Diego region. In 2017, the Port had 88 cruise calls, generating a total of $46 million in direct economic output and 460 direct jobs. The SRIA should properly analyze these economic impacts.

Analysis and Alternative Consideration of Ro/Ros Costs vs Benefits Is Incomplete

The Coalition continues to believe that if the costs of controlling Ro/Ro at berth emissions using shore based or barge based control technologies are adequately assessed and compared to the very short time Ro/Ros are at berth, CARB would reach the conclusion not to regulate Ro/Ro auxiliary emissions in the expanded at berth regulation.

Ro/Ros have incredibly short times at berth, as little as 9 hours and on average less than 14 hours at the Port of Long Beach. Individual Ro/Ro vessels also operate similarly to tramp bulk vessels in that they make inconsistent and often infrequent port calls to California. Since Ro/Ros would be unable to use installed shore-power equipment in other ports, CARB has considered the use of shore and barge-based emissions capture devices for Ro/Ro visits. These options also pose problems. Ro/Ros sometimes use older, shared berths that may not be adequate for land-based emission control systems. Barge-based emission control systems pose operational problems because they impact a Ro/Ro's ability to take on a bunkering barge and some Ro/Ro stack configurations may not be accommodated by a barge-based emissions control technology.

The use of barge-based systems results in additional GHG emissions from the barge-based system itself and increased criteria and toxic emissions from the tugboat required to position the barge. Typically, a tugboat will use engines two to four times larger than the target auxiliary engines to be controlled. As a result, any tugboat activity can significantly offset emissions from Ro/Ro vessel calls.

CARB staff has not taken these offsetting emissions into account. The SRIA includes an alternative analysis that excludes Ro/Ros from the Proposed Regulation. By not taking tugboat emissions into account, emissions that would only occur as a result of the Proposed Regulation, the alternative analysis does not accurately report the impact of the exclusion of Ro/Ro vessels. A significant number of Ro/Ro vessels bunker at berth. But the analysis does not consider the impact on bunkering operations for Ro/Ro vessels and the increase in emissions that will occur as a result of bunkering taking place at anchorage instead of at berth, as described below.

If Ro/Ros are diverted – either to concentrated docks within the state or to out-of-state alternative ports - due to lack of technology, access to alternatives, or simply to avoid increased costs, CARB's SRIA needs to analyze the related emissions and costs of the delivery of automobiles by other intermodal methods, principally by rail for long-haul and truck for local distribution. Acknowledging that GHG emissions per ton vary widely by transportation mode, but with ocean going vessels always having the lowest emissions per ton per mile, it is likely that Ro/Ro vessel diversions will not only have significant economic costs to the state in terms of lost employment and activity but also increased criteria pollutants and GHG emissions from the use of alternative transportation for vehicle delivery.

No Consideration of the Impact on Bunkering

The San Pedro Bay ports are among the busiest bunkering ports. Vessels not even destined for San Pedro Bay will take advantage of the port complex to bunker. As result, many vessels that do visit San Pedro Bay will take on bunker while at berth. It is an efficient and safe way for a vessel to refuel within the protection of the harbor.

As mentioned, the Proposed Regulation envisions significantly increased use of barge-based emission control systems. The use of the barge-based system prevents a vessel from bunkering at berth. As a result, a vessel needing bunker will need to move to anchorage after discharging the vessel in order to receive fuel. While at anchorage, auxiliary engines will run uncontrolled. These emissions would not have occurred in the absence of the Proposed Regulation. For vessels like large containerships, the time bunkering at anchorage would be a portion of the time at berth, resulting in net emission reductions but less than if shore power was used. For a vessel with short visits like small containerships or especially Ro/Ro vessels, the entire emissions reduction of a barge-based system can be fully offset by the time spent at anchorage. This would result in a net increase of emissions from the tugboat and excess GHG emissions from the barge-based system itself.

None of the offsetting impacts from bunkering activities were analyzed as part of the SRIA. These activities directly impact the claimed emissions benefits, the claimed health outcomes, and the claimed cost-effectiveness. The alternative would be a net decrease in bunkering activity in San Pedro Bay and other California ports which would have an enormous economic impact, which was also not analyzed.

Analysis of Exclusion of Bulk and General Cargo Vessels Is Missing

The SRIA fails to include the analysis and methodology used to determine (correctly) that the application of this rule with respect to bulk and general cargo vessel fleets would not be cost-effective and should be avoided. All industry stakeholders have asked for this analysis and methodology to be included in order for the assumptions and conclusions applied to this specific fleet to be revealed and then compared to its potential application to other fleets, including the other currently non-regulated Ro-Ro and Tanker fleets.

Since the SRIA does not explain what the cost per ton of emissions reduced threshold is for determining whether a vessel class should or should not be covered by the at berth requirements it is impossible to discern how and by what standard of application CARB has decided to leave bulk and general cargo vessels out of the expanded list of regulated vessels but has proposed to keep Ro/Ro vessels and tankers on this expanded list. What threshold and other factors did CARB consider to justify these decisions?

Given the very similar fleet dynamics, economics and costs of compliance, and infrastructure challenges, it is likely that the same methodologies, and potentially the same conclusions, would reveal that the expansion of the rule is as similarly problematic for other non-regulated fleets as it was for bulk and breakbulk vessel fleets.

The SRIA continues the silence around this fundamental analysis, and it is conspicuous by its absence.

Conclusion

We would respectfully request that the SRIA for the "Proposed Control Measures for Ocean Going Vessels At Berth" be returned to CARB as facially inadequate and inconsistent with the requirements of the SRIA statutes and Department of Finance regulations. We would further request that the Department of Finance direct CARB to not resubmit any SRIA on this subject without first working with industry to address its Alternative proposals, fully analyzing all competitiveness and import/export impacts, and acknowledging and analyzing all facts and evidence of existing costs submitted for the record and any additional costs identified by the industry stakeholders in future processes.

Thank you for your attention to these very complex matters on the very short SRIA timeline within which you are provided. We appreciate the continued dialogue with state policymakers on these important subjects.

Sincerely,

California Association of Port Authorities
Cruise Lines International Association
Pacific Merchant Shipping Association
Western States Petroleum Association
World Shipping Council

Attachments:
In reverse chronological order

WSPA Comments on CARB Proposed At Berth Regulation Working Draft, August 15, 2019

Port of Los Angeles and Port of Long Beach Comments on May 14 & 16, 2019 Workshops for the "Control Measure for Ocean-Going Vessels Operating At-Berth and At Anchor", July 1, 2019

Comments on Proposed At-Berth Amendment Regulatory Concept, June 14, 2019

Comments on At-Berth Draft Regulation Order - 5/8 2019 Version, June 13, 2019

Port of Oakland Comments on May 10, 2019, Draft Proposed Control Measure for Ocean-Going Vessels At Berth and Supporting Documents, June 10, 2019

Preliminary Comments on Proposed At-Berth Amendments Cost Analysis, May 29, 2019

Port of Los Angeles and Port of Long Beach Comments on February 22-23 Workshops for the "Control Measure for Ocean Going Vessels Operating At Berth and At Anchor", May 20, 2019

Comments on Revised Draft Regulatory Concept, April 10, 2019

Industry Coalition Alternative Proposal for Amendments to At-Berth Regulations, February 15, 2019

Port of Los Angeles and Port of Long Beach Comments on Proposed Draft Regulatory Language, "Control Measure for Ocean-Going Vessels Operating At Berth and At Anchor", February 6, 2019

Comments on Preliminary At-Berth Cost Analyses Presented at "Workgroup Meetings to Discuss Costs of Proposed Amendments to the Ocean-Going Vessel At-Berth Regulation", September 14, 2018

PMSA Comments on CARB Proposed At-Berth Regulation Amendment Workshop, October 9, 2017

PMSA Comments on CARB Proposed At-Berth Regulation Amendment Concepts, August 4, 2017

WSPA Comments on CARB Proposed At Berth Regulation
Working Draft, August 15, 2019

WSPA

Thomas A. Umenhofer
Vice President

August 15, 2019

Ms. Cynthia Marvin
Division Chief, Transportation and Toxics
California Air Resources Board
1001 I Street
Sacramento, California 95812

sent via e-mail to: Cynthia.Marvin@arb.ca.gov

Re: Additional WSPA Comments on CARB Proposed At Berth Regulation Working Draft

Dear Cynthia,

Western States Petroleum Association (WSPA) appreciates the continuing opportunity to provide additional feedback on the California Air Resources Board (CARB) proposed California Code of Regulations, Title 17, Division 3, Chapter 1, Subchapter 7.5, Sections 93130-93134.14 (At Berth Regulation) Working Draft, dated May 8, 2019. WSPA is a non-profit trade association representing companies that explore for, produce, refine, transport and market petroleum, petroleum products, natural gas and other energy supplies in California and four other western states.

This letter follows up on our conversation with you and your staff on July 18, 2019 and provides additional information regarding the need for a comprehensive feasibility evaluation study before any At Berth Regulation is adopted. Enclosed with this letter is a general outline of the contents of such a study and additional information to explain why the current compliance deadlines of 2027 and 2029 on the At Berth Regulation Working Draft are not achievable.

WSPA and many other stakeholders share CARB's strong desire to see regulations that are legally supportable, can be feasibly implemented, and are likely to achieve real-world air quality goals. In our view, the key to meeting these goals is to set a realistic rulemaking schedule to obtain the necessary information, then to work openly with stakeholders and the public to carefully assess and incorporate that information as required to ensure workable regulations. Failure to properly account for the real-world feasibility of the At Berth Regulation, we believe, could lead to adopting requirements that simply cannot be met safely and in a cost-effective manner, or that are impossible to meet at all.

Evaluation of the Feasibility of Shore-Based Emission Control for Tankers

As we discussed with you and CARB staff, WSPA continues to have serious concerns that no version of the At Berth Regulation can succeed without ensuring that it can be technically, feasibly, cost-effectively, and, as important, safely implemented within the timeline that CARB is proposing. To that end, WSPA acknowledges CARB's engagement with stakeholders to date, but believes that it is critical to first conduct a study to evaluate the technical feasibility of the proposed control option (shore-based emission capture and control) for tankers before any compliance date can be set. This is because the technology, as proposed in the regulatory analysis, has never been implemented on tankers; assuming the technology is available when it has not been proven to succeed on a tanker is a flawed approach. There are several technical differences between tankers and cargo vessels, such as managing boiler pressures when exhaust is captured, and

the possibility of vapors from tanker cargo finding their way into the capture system. At a high level, this evaluation study should assess the safety, reliability, operability, and availability of the proposed control option as well as the ability of the proposed control option to meet the regulatory requirements within the proposed timelines.

WSPA believes that participation from CARB, as well as the numerous other regulatory agencies involved in permitting and evaluation of large-scale projects such as those proposed by the At Berth Regulation, is critical for the success of the study. Such participation is especially critical in that, not only are the technical and safety issues important, but the review and permitting timelines of local and state regulatory agencies for projects of this scope are crucial for everyone to understand and factor into any given regulatory time deadline. WSPA is proposing that this effort be undertaken collaboratively between WSPA, CARB, and other local and state permitting agencies with the goal of completing the study within 3 years from the adoption of the At Berth Regulation. Upon completion of the study, WSPA proposes that a detailed evaluation report be produced, and that CARB convene additional public workshops as necessary to adequately address the findings in the report and make any necessary revisions to the proposed Regulation.

To that end, attached is a proposed report outline for an Evaluation of At Berth Shore-Based Emission Control for Tankers at California Ports. This outline provides a basic framework for an evaluation study to assess technical feasibility that we believe will address critical questions that must be answered for the At Berth Regulation to satisfy legal criteria and ultimately accomplish the goals the At Berth Regulation set out to achieve.

The following is a list of critical questions that we believe must be answered, at a minimum, by the study:

- Is the type of shore-based emission control system envisioned by the proposed At Berth Regulation technologically feasible at this time? If not currently feasible, is there a reasonable basis, supported by significant evidence, to expect that such a system will become technologically feasible in the timeframes set forth in the proposed At Berth Regulation for tankers?

- What potential safety, reliability, and operability concerns need to be resolved before the type of shore-based emission control system and vessel interface envisioned by the At Berth Regulation could be installed and operated?

- Do any of the safety, reliability, or operability concerns identified create a significant risk to human health, safety or the environment?

- Can the type of shore-based emission control system envisioned by the At Berth Regulation meet the 80% reduction in NOx, Particulate Matter, and Diesel Particulate Matter required by the At Berth Regulation?

- Can the type of shore-based emission control system envisioned by the At Berth Regulation operate in compliance with all other applicable laws and regulations, including those related to interstate and international commerce?

- Is there room for the type of shore-based emission control system envisioned by the At Berth Regulation within the existing developed footprints of marine terminal facilities? If not, would installation of the systems require new construction in expanded onshore

footprints and/or installation of new facilities on fill or pilings in wetlands, tidelands and/or submerged lands, with significant impacts on coastal onshore and offshore habitat and other sensitive areas and resources? Will new tideland leases or lease amendments from the State Lands Commission be necessary?

- Will modifications to equipment on tankers be required? Boilers and auxiliary engine connections and controls should be considered.

- What potential safety, reliability and operability concerns needs to be addressed by ship owners, manufacturers, classification societies, USCG before such a modification is applied to vessels? How will CARB ensure third party vessels are modified to comply with shore-based emission control system before calling?

- If the type of shore-based emission control system envisioned by the At Berth Regulation can be feasibly built and operated, what timeframes would be required for such construction and operation, considering timeframes required for permitting and approvals by regulatory oversight agencies and local jurisdictions with land use authority, and including delays due to potential litigation?

- If the type of shore-based emission control system envisioned by the proposed regulation can be feasibly built and operated, what would be the costs to the regulated industry?

Timeline for Implementation of the At Berth Regulation for Tankers

Even under ideal conditions, WSPA does not believe that any marine terminal can meet the proposed compliance deadlines of 2027 for the Port of Long Beach (POLB) and Port of Los Angeles (POLA), or 2029 for all other marine terminals where tankers are berthed. Based on information received from WSPA member companies, we believe that the earliest a marine terminal could comply with the proposed regulatory requirements is 2033. Additional time would be needed, at least up to two years, for larger and more complex terminals requiring a compliance date no sooner than 2035 for those facilities due to in-water work window limitations and operational construction constraints.

As was discussed and requested by CARB during our meeting on July 18, 2019, enclosed with this letter are the aggregated results from our member companies showing the estimated timelines to meet compliance with the proposed regulatory requirements. Included in the enclosure is a chart showing how long (as a range) each major step is expected to take and what timeframe (as a range) that each of those steps is expected to occur within. In general, larger and more complex terminals will need more time to complete each step due to the larger scale of the engineering, design and construction effort and because additional time needed to complete each individual step compounds over the life of the project. Also included is a table which describes in more detail what activities are include in each major step.

The major steps for any facility to meet compliance with the proposed regulation are as follows:

- General and Site-specific Feasibility Evaluation Study
- Site-Specific Design
- Engineering
- CEQA Review
- Permitting and Other Approvals

- Contracting
- Construction (Crane, Emission Control System, and Support Systems)
- Commissioning

While there are several factors that drive a longer timeline for facilities than the timeline that CARB has proposed, the single largest factor is that, at present, the technology proposed is untested and unproven as safe for tankers. This means that significantly more work is needed up front to assess the risks and ensure that the project is feasible. If there existed a proven, off-the-shelf technology that was safe for use on tankers and boilers, many of the early steps could be bypassed or the timeline shortened. But that is not the case, as was communicated by vendors during the CARB vendor meeting held on April 16, 2019, as well as in the WSPA comment letter of June 14, 2019.

Based on our conversations with you and CARB staff, WSPA also believes that CARB has underestimated the time it takes to complete many of the steps needed to meet compliance with the proposed regulation. For example, WSPA believes that CARB has significantly underestimated the time it will take a facility to apply for and receive all the required permits for a project of this nature.

At a minimum, facilities will need to receive permits or regulatory and land use approvals from the local air quality control/management district, the California State Lands Commission, the San Francisco Bay Conservation and Development Commission (for northern Californian terminals), the United States Army Corps of Engineers, the local Regional Water Quality Control Board, the California Department of Fish and Wildlife and the U.S. Fish and Wildlife Service (if protected species are affected), the National Marine Fisheries Service (where marine mammals may be present), the United States Coast Guard, building permits and/or coastal development permits from the local city/county, and (if not delegated to the local city/county) coastal development permits from the California Coastal Commission, in addition to going through the California Environmental Quality Act (CEQA) environmental review process prior to receiving any permits and approvals.

Note that, separate from WSPA's timeline, many facilities are also in the process of updating terminals to comply with the Marine Oil Terminal Engineering and Maintenance Standards (MOTEMS) -- projects that have been in permitting, design and construction for many years. Due to the large variety of timelines for each terminal, WSPA has not included ongoing and proposed MOTEMS construction projects in our timeline.

While many of the activities can occur in parallel, those that must occur in series often will dictate the timeline. The most basic example of this occurs during permitting and construction. Construction cannot begin until permitting is complete, and permits cannot be issued until the CEQA review is complete. Construction and installation of any equipment on terminal cannot begin until such time that the support structure (foundation) is complete.

The nature of the proposed equipment, weights and locations can result in a terminal having to complete a seismic retrofit, which would extend well beyond the actual footprint of the equipment foundations. As you may recall, during our meeting WSPA members provided examples of how long it has taken to obtain permits and implement construction on marine terminal projects, such as MOTEMS. For one of our member companies, the MOTEMS initial audit was conducted in 2009 and, after design, California State Lands Commission peer review, and CEQA review and

resource agency permitting, construction was able to begin in 2018 – nine years later -- for a project that is much smaller than the size and scope proposed in the At Berth Regulation.

Below are other examples of steps that will hinder further progress on the project until completed:

- For any pilot test of the equipment installed at a port or Marine Terminal, permitting, design and construction will require additional time.

- Detailed engineering cannot begin until the feasibility evaluation study is completed, and the risks associated with the control technology are well understood, to allow for design of appropriate mitigation.

- CEQA review cannot begin until a lead agency is assigned and at least 30-60% of the design is complete, in order to provide an accurate and stable project description as the basis for review.

- Building and other permits are dependent on completing the CEQA analysis and certifying a final Environmental Impact Report (EIR) or Negative Declaration. Many responsible agencies with permit or approval authority will not begin processing applications before the CEQA document is approved.

- Contracting for construction and installation cannot be finalized until the permits and approvals are received; before that time, the conditions under which construction will occur remain yet unknown. Additionally, construction cannot commence until contracting is complete.

- CEQA lead agencies and responsible regulatory agencies may require completion of some mitigation measures before construction commences.

- In some cases, commissioning of individual pieces of equipment can occur in parallel with the construction; however, overall commissioning cannot begin until all construction is completed.

- And of course, no construction or installation can occur without first obtaining applicable permits.

It is important to note that the aggregated timeline that WSPA has attached to this communication is only an estimate. The results of the feasibility evaluation study will be necessary to refine the estimated timeline.

WSPA believes the Government Code, Health and Safety Code and other California laws and regulations require CARB to revise its current rulemaking timetable to allow for proper preparation and consideration of feasibility, cost effectiveness and timelines. See, e.g., Cal. Health & Safety Code §§ 38560, 39602.5, 39665, 43013; *see also* Gov. Code § 11346.36 & 1 C.C.R. §§ 2000-2004 (SRIA requirements to assess proposed regulation's cost impact on public health and safety, fairness and social equity, state's economy and other criteria). We would request that, at the very least, CARB include in its proposed At Berth Regulation language that allows for a feasibility evaluation study and an appropriate delay in regulatory implementation in the event the feasibility evaluation study concludes that shore-based technologies and/or other elements of the At Berth Regulation are not feasible in the regulatory timeframes provided.

WSPA also believes that the At Berth Regulation should include "off-ramp" scenarios that provide next steps for facilities that demonstrate an inability to implement all the required elements in the default timelines provided under the At Berth Regulation. In summary, WSPA requests that CARB:

1. Incorporate the feasibility evaluation study and the details included in the outline attached into the proposed regulatory language,

2. Include language in the At Berth Regulation that will provide an off-ramp or adjust the compliance deadlines based on the results of the feasibility evaluation study, and

3. Revise the proposed compliance deadlines in the At Beth Regulation to 2033 for typical terminals and 2035 for complex terminals where tankers berth.

WSPA appreciates this opportunity comment on the At Berth Regulation Working Draft. If you have any questions regarding this submittal, please contact me at (805) 705-9142 or via email at tom@wspa.org.

Sincerely,

Cc: Catherine Reheis-Boyd – WSPA
Richard Corey - CARB

Evaluation of At Berth Shore-Based Emission Control
for Tankers at California Ports
Report Outline

The evaluation study of Tankers At Berth Shore-Based Emission Control will be documented in a report that reflects the approach taken by California Air Resources Board (CARB) in the development of the document Evaluation of Cold-Ironing Ocean-Going Vessels at California Ports, dated March 2006.

The new study, to be entitled Evaluation of At Berth Shore-Based Emission Control for Tankers at California Ports will contain the following elements:

Executive Summary
I. Introduction
II. General Description of Tankers and Marine Terminals
III. Tanker Emission Inventory
IV. Technical, Safety, and Operational Review
V. Cost-Effectiveness and Economic Impact Review
VI. Conclusions
VII. References

An overview of the Sections I through VI is presented below.

Introduction

- Statement of purpose and objectives.
- Identify focus of analysis of the feasibility and cost effectiveness of shore-based emission control for tankers.
- Define shore-based emission control for tankers as capture of NO_X and PM emissions from boiler and auxiliary engines on tankers pursuant to § 93130.5 and § 93130.7 of CARB At Berth Regulation (currently Working Draft).

General Description of Tankers and Marine Terminals

- Identify unique characteristics of affected ports and marine terminals, while protecting any individual company competitively sensitive or proprietary information.
- Identify tanker classes, frequency of visits, ownership.
- Summarize tanker visit and duration information.

Tanker Emission Inventory

- Summarize updated CARB tanker sector NO_X and PM emission inventory taking into account the IMO regulations regarding Tier 3 ships and their predicted penetration into California.
- Assess by emission source types for NO_X and PM emissions.
- Review in context of overall California emission inventory.

Evaluation of At Berth Shore-Based Emission Control
for Tankers at California Ports
Report Outline

Technical, Safety, and Operational Review

Methodology

- Identify regulatory/legal requirements applicable to proposed regulations, including but not limited to:
    - Health & Safety Code (H&SC).
        - Technological and operational feasibility
        - Safety, reliability and effectiveness
        - Necessary to attain Ambient Air Quality Standards
        - Articulate potential adverse health, safety and environmental impacts
        - Show reductions are real, permanent, quantifiable, verifiable and enforceable
    - CEQA.
        - Identification of significant adverse impacts of regulations
        - Identification of reasonably foreseeable compliance alternatives/mitigation
    - U.S. Coast Guard Regulations (33 CFR)
    - PSM Regulations (e.g. 8 CCR 5189.1, 19 CCR 2762, RISO)
    - Marine Oil Terminal Engineering and Maintenance Standards (24 CCR)
- Identify regulatory agencies, local jurisdictions with land use authority, other agencies with permitting or approval authority and certification entities. Include them as stakeholders.
- Set criteria for demonstration of technical and operational acceptability (including consideration of site-specific limitations).
- Set criteria for demonstration of safety acceptability.

Analysis

The technical assessment will be prepared consistent with the criteria established through the methodology:

- Determine whether the installation of systems required to comply with the proposed regulation would satisfy or conflict with the safety, reliability, operability and effectiveness of vessels, marine terminals, the emissions control system, and supporting shoreside infrastructure, as required by regulations identified in the Methodology section.
    - Assess the effectiveness, reliability and safety of proposed methods of compliance.
    - Assess ability to attain ambient air quality standards and technological feasibility and adaptability, and potential preemption by federal law.
    - Assess whether the proposed methods of compliance are designed to achieve levels of exposure consistent with no significant adverse health impacts; identify risks of the toxic air containments (TACs) at issue and explain how the proposed ATCM will reduce risks; demonstrate the need and appropriate degree of regulation for the

identified TACs; and potential adverse health, safety and/or environmental impacts that may result from implementation.

- Assess reasonable and feasible mitigation measures and alternatives to reduce or avoid significant environmental impacts, identify permitting requirements and timeline for implementation of such mitigation measures and alternatives.

- If possible, identify applicable design standards that would comply with MOTEMS and other existing regulations that can foster vendor competition.

- Identify what changes to technology may be necessary to ensure feasibility for use in marine terminal application, safety, and/or operability.

- Conduct Risk Assessment/HAZOP for a shore-based design.

- Prepare anticipated timeline from planning through implementation, including timeline for obtaining all permits and approvals and potential litigation delay.

- Determine where, if any, a physical demonstration is required to validate the safety, reliability, operability, and effectiveness of vessels, marine oil terminals, the emissions control system, or supporting shore-side infrastructure.

Cost-Effectiveness and Economic Impact Review

Methodology

- Set economic/cost-effectiveness requirements pursuant to regulatory/legal requirements.

- Identify Standardized Regulatory Impact Assessment (SRIA) Requirements.

- Establish process for collection, de-identifying and aggregating individual company estimated capital, design, construction, CEQA review, permitting, and operational costs.

Analysis

- Determine whether systems required by proposed regulation would meet the criteria in the H&SC for cost-effectiveness.

  - Assess cost-effectiveness, relative to reliability and safety of proposed methods of compliance and ensure that the rule will result in a cost-effective combination of control measures.

  - Assess cost-effectiveness, relative to economic and noneconomic costs and public health benefits (including potential impacts on small businesses).

- Assess whether proposed regulation would meet SRIA requirements.

- True-up cost-effectiveness of achievable design and implementation schedule.

Conclusions

- Summarize findings and recommendations (including need for physical demonstration).

Evaluation of At Berth Shore-Based Emission Control
for Tankers at California Ports
Report Outline

Key Stakeholders including but not necessarily limited to the following:

- American Bureau of Shipping for class society and can perform HazOps (also involved in Cold Ironing Feasibility Evaluation Study.
- Maritime safety expertise (i.e., DNV GL, Bureau Veritas).
- Marine boiler, engine and exhaust gas cleaning system manufacturers who understand tankers (including but not limited to, Alfa Laval – familiar with ship-side issues, classification areas and largest provider of tanker boilers in the world), SAACKE – boilermaker, GmbH, Harris Pye – boiler retrofit, MAN and Wartsila - propulsion and auxiliary engine manufacturers).
- Emission abatement industry (i.e., existing technology vendors).
- OCIMF (Oil Companies International Marine Forum)
- U.S. Coast Guard
- California State Lands Commission - Marine Environmental Protection Division
- CARB, BAAQMD, SCAQMD, USEPA
- SF Bay Coastal Development Commission (BCDC)
- International Maritime Organization (IMO) - Marine Safety Committee (MSC), Marine Environment Protection Committee (MEPC) and supporting sub-committees
- Federal non-regulatory agencies: U.S. Navy, U.S. Maritime Administration (MARAD)
- University of California - Riverside
- California Maritime Academy
- International Association of Independent Tanker Ownership (INTERTANKO).

Estimated Timeline - CARB At Berth Regulation
Shore-Based Emission Control System

Major Tasks	Estimated Time (Years)	2020		2021		2022		2023		2024		2025		2026		2027		2028		2029		2030		2031		2032		2033		2034		2035	
		Year 1		Year 2		Year 3		Year 4		Year 5		Year 6		Year 7		Year 8		Year 9		Year 10		Year 11		Year 12		Year 13		Year 14		Year 15		Year 16	
		1H	2H	1H	2H	1H	2H	1H	2H	1H	2H	1H	2H	1H	2H	1H	2H	1H	2H	1H	2H	1H	2H	1H	2H	1H	2H	1H	2H	1H	2H
General & Site-Specific Studies	3.5 to 4																														
Site-Specific Design	3.5 to 5.5																														
Engineering	3 to 4.5																														
CEQA Analysis	3 to 5.5																														
Permits	2.5 to 3.5																														
Contracting	2.5 to 3.5																														
Crane Construction	3 to 5.5																														
Facility Construction	4.5 to 7.5																														
Commissioning	1 to 1.5																														

Legend

Anticipated average time needed to complete each task

Additional time needed for complex installations to complete the task

NOTES

1. The shaded areas of the bar chart which may be longer in duration than the expected time for a task as the start date of a task may vary from installation to installation.
2. The General and Site-Specific Studies are critical to evaluate the feasibility of various elements of compliance requirements to each installation (technological, safety, efficiency, cost-effectiveness etc).
3. The results of General and Site-Specific Studies may necessitate further refinement of the anticipated compliance options and timeline.
4. With unknown permitting timelines and delays, contracting and vendor timelines, the earliest compliance demonstration for most facilities is estimated to not occur before 2033.
5. For complex installations, this date could be further out; there could also be unexpected delays that are beyond operator control.

Timeline Survey Summary

Major Tasks (note tasks that can be run concurrently to help determine total lapse time from project design to commissioning)	Additional Information (provide sufficient information to break down the activity so that it is clear what it includes and its expected duration)	Estimated Years							
		Average	Min	Max	Range (Min to Max)	Range (Average to Max)	Begin Year	End Year (Avg)	End Year (Max)
General & Site-Specific Studies	General Evaluation Study	2.0	2.0	2.0	2.0	2.0	2020	2021	2021
	Site-specific Study including Safety review and possible field test	1.6	0.8	2.0	0.8 - 2	1.6 - 2	2022	2023	2023
Site-Specific Design (preliminary and final, includes assessments on utilities, siting for egress and safety as well as infrastructure)	Front End Engineering Design, Preliminary and Detailed Design, Crane, Scrubber, Electrical Design, Shipside Modification Design, Determine footprint, electrical calssification and unit supply requirements, Coordinate with engineering, construction and technology companies, Review of utilities and existing infrastructure to support future terminal projects, Requirements for and consideration of MOTEMS.	3.5	1.0	5.5	1 - 5.5	3.5 - 5.5	2022	2025	2027
Engineering (engineering drafts for construction ex. built-for purpose, ship-to-berth variable height for loading and unloading operations, utility and infrastructure details)	Marine analysis of current and future vessels (MOTEMS Review), Detailed engineering calculations for process, energy and structural integrity, Coordination with utility providers that supply electricity, water and natural gas to the facility, Engineering Design Issued for Permit, Engineering Design Issued for Construction, Engage Classification Society to Develop Standards for Shipside Modifications	2.9	1.8	4.5	1.8 - 4.5	2.9 - 4.5	2023	2026	2027
CEQA Analysis (engineering and site-specific details will be evaluated under CEQA to determine whether additional mitigations are required including preparation of an EIR, public comment periods, hearings, review of the EIR until a final adopted EIR results with specific mitigations for impacts if any)	Initiate Multi-Agency Process, Prepare applications, Initiate EIR, Develop EIR, Develop Mitigation Strategy, Finalize and Approve Mitigation Strategy, Public comment review, possible re-engineering of design to meet public concerns, Re-evaluation of both Site specific design and engineering (as needed), Purchase Mitigation Credits	2.9	1.2	5.5	1.2 - 5.5	2.9 - 5.5	2024	2026	2028
Permits (local, state, federal – CSLC, Bay Conservation and Development Commission, ACOE, CF&W, RWQCB, National Marine Fisheries Service, Air Districts, Port permits includes: preparation, review by agency, approval, development of mitigation plans and other recommendations made by agency.)	Coordination with multiple permitting agencies, at various locations within the state, Includes time for review, comments and any necessary requested changes which may require some re-design and engineering, Submit Environmental Applications, Environmental Applications Approved, Submit Building Applications, Building Applications Approved	2.5	1.1	3.5	1.1 - 3.5	2.5 - 3.5	2025	2027	2029
Contracting (bid process, selection, procurement)	Multiple RFPs (General Engineering, Specialty Engineering, Marine Engineering, Emissions Control Equipment, Pumps/Blowers, Crane and Scrubbers Design and Fabrication, Construction RFPs including general, marine, electrical, crane installation), Contractor vetting and selection, Insurance and procurement of long lead items such as steel, pre-fab materials	2.2	0.6	3.5	0.6 - 3.5	2.2 - 3.5	2026	2028	2030

Timeline Survey Summary

Major Tasks (note tasks that can be run concurrently to help determine total lapse time from project design to commissioning)	Additional Information (provide sufficient information to break down the activity so that it is clear what it includes and its expected duration)	Estimated Years							
		Average	Min	Max	Range (Min to Max)	Range (Average to Max)	Begin Year	End Year (Avg)	End Year (Max)
Crane Construction / Installation	Install Crane Foundations and Cranes - Consider extensive lead times, Multiple locations, Limited availability of construction equipment, Delays when ships at berth	2.7	0.7	5.5	0.7 - 5.5	2.7 - 5.5	2028	2031	2033
Facility Construction (including deck modifications, pilings, gangway construction, additional/new ducting, piping, , seismic retrofit, new power infrastructure)	Multiple phases of construction at various locations (Limited ability to overlap construction at different locations, constrained by contractor availability and safety oversight and continuation of business, Assumes construction at one facility at a time), Consider extensive lead times, Piling, foundation, civil/structural steel works, electrical upgrades, Fabrication and Transport of Cranes & Scrubber, Procurement of Other Materials, Prep and Demo Work, Install Central Gas Collection System, Scrubbers, Support Systems (Piping/Electrical), Shipside Modifications, Consider confined construction activity for few months per year (power supply, threatened species protection)	4.5	0.7	7.5	0.7 - 7.5	4.5 - 7.5	2029	2033	2035
Commissioning and Compliance Demonstration (verification of CARB compliance along with other federal and state requirements)	Consider longer commissioning durations for new technology, Commissioning for Terminal Operations and Operator-owned ships, Operator training and oversight, modifications to ensure proper operation to achieve compliance, Multiple agencies would either witness compliance testing or perform their own (CARB, local Air District, etc.)	0.9	0.2	1.5	0.2 - 1.5	0.9 - 1.5	2033	2034	2035

Port of Los Angeles and Port of Long Beach Comments on May 14 & 16, 2019 Workshops for the "Control Measure for Ocean-Going Vessels Operating At-Berth and At Anchor", July 1, 2019

SAN PEDRO BAY PORTS

CLEAN AIR ACTION PLAN

July 1, 2019

Bonnie Soriano
Chief, Freight Activity Branch
California Air Resources Board
1001 "I" Street
Sacramento, CA 95814

SUBJECT: PORT OF LOS ANGELES AND PORT OF LONG BEACH COMMENTS ON MAY 14 & 16, 2019 WORKSHOPS FOR THE "CONTROL MEASURE FOR OCEAN-GOING VESSELS OPERATING AT BERTH AND AT ANCHOR"

Dear Ms. Soriano:

The ports of Los Angeles and Port of Long Beach (Ports) appreciate this opportunity to provide comments on the concepts and draft regulation language presented at the California Air Resources Board's (CARB) May 14 and 16, 2019 workshops regarding the "Control Measure for Ocean-Going Vessels Operating At Berth and At Anchor."

We want to thank CARB for continuing to work with the Ports and our tenants during this regulatory development process to obtain the best available data and to craft a regulation that achieves significant public health benefits. The Ports continue to appreciate the open dialog with CARB staff to discuss the regulatory concepts and share our comments and concerns.

The purpose of this comment letter is to respond to the May 8, 2019 version of the Draft Regulation Order provided at the May workshops. In Appendix A, CARB will find specific information relative to Port of Los Angeles.

The following summarizes the Ports' comments regarding the regulatory concepts presented at the May 2019 workshops:

- **The Proposed Implementation Timelines Are Still Too Aggressive** – In the May 8, 2019 draft regulation, container terminals are still required to control ship emissions for every

Port of LONG BEACH
The Green Port
Port of Long Beach | Environmental Planning
4801 Airport Plaza Drive | Long Beach, CA 90815
562.283.7100

THE PORT OF LOS ANGELES
Port of Los Angeles | Environmental Management
425 S. Palos Verdes Street | San Pedro, CA 90731
310.732.3675

visit by 2021, with 10% flexibility split evenly between Terminal Incident Exception (TIEs) and Vessel Incident Exception (VIEs), by 2021, with further reduction to 6% flexibility split between TIEs and VIEs for 2022 and beyond. This timeline is unreasonable. While the TIEs and VIEs provide some flexibility for terminals and vessels to avoid compliance action for a limited number of unforeseen circumstances that result in a vessel not being able to plug in, that flexibility does not avoid the need for infrastructure to be installed to allow for access to shore power for 100% of all calls. Given the anticipated schedule for finalization of the proposed regulation, there will be less than a year from adoption to when this implementation requirement comes into effect, which does not allow for any of the necessary shore power improvements to be constructed.

If CARB hopes terminals and fleets will opt for shore power, a greenhouse gas reduction strategy, to meet their increased compliance requirements rather than the alternative emission control devices, which are known to increase greenhouse gases, this timeline does not allow for that compliance path to materialize for at least several years. The Ports have provided documentation in their previous letter dated May 20, 2019 that shore power projects take 5 years on average to complete. In addition, there are still considerable feasibility concerns regarding the ability of terminal operators, and/or third party vendors to develop and deploy alternative emission control devices on a stringent time line of one year.

The Ports are encouraged that CARB plans to have an interim evaluation in 2023 for tankers and Ro-Ros, but this evaluation should not replace a technical feasibility assessment to better inform this regulation, as described below. We also believe more than one evaluation maybe necessary. We ask that a feasibility assessment be updated in 2025 and beyond to evaluate the state of the technology and industry's ability to comply with the regulation. The Port of Los Angeles has specific concerns for tanker terminals as detailed in Appendix A.

- **A Technology Feasibility Assessment Process Is Needed** – The Ports continue to urge CARB to develop a technology feasibility assessment of the alternative At Berth technologies, which would look at the state of technological development and their readiness to be deployed in the marketplace to support efforts to achieve public health benefits. The berth analysis developed by CARB should not be misconstrued as a technical document at the level of detail upon which regulation should be formed. It is an aggregation of terminal operator and harbor pilot opinions (no data), and Google Maps research, and is not founded upon any engineering assessment of the infrastructure required at the terminals. Further, there are challenges associated with the technologies upon which this regulation depends which, by all appearances, are too costly, technologically and operationally infeasible in some cases, and/or unsafe to use.

In addition, this necessary feasibility assessment should include an evaluation of: (i) state of technology and deployment readiness for both shore power and alternative emission control devices; (ii) the requisite timeline to design, build, test, and deploy shore power and alternative control technologies for each California port to achieve at minimum 95% compliance, and identification of any associated constraints such as wharf space; (iii) safety and navigation of harbor waters space due to applications of new technologies for unregulated vessel types; (iv) number and types of alternative control technologies, which would be needed at each California port; (v) the cost of the various types of technologies and availability of incentives to encourage early demonstration of such technologies; and importantly, (vi) the appropriate remediation fee to encourage investment in ship- and shore-side infrastructure and alternative emission control devices, while not driving business out of California.

- **All Terminals Should Be Required to Submit Terminal Plans** – The proposed regulation language allows terminals to have the ports submit plans on their behalf. The Ports should not be responsible for the submission of each terminal's plans on their terminal operators' behalf. All terminals should submit their own terminal plans. Ports do not have control over the financial and operational decisions terminals will have to make in order to comply with the regulation, and Ports cannot be liable for terminal infrastructure deployment under the new rule. In addition, if the terminal operator intends to install the shore power infrastructure themselves, they should be required to provide the elements outlined in the proposed port plan requirements rather than the Port.

  In the past, the Ports have supported shore power deployment by providing the design, bid, build, and services. In some cases, the investment was recouped through terminal leases. This was a service to our terminals, particularly for the initial installations under the original 2007 shore power regulation, but is not necessarily the path forward given the Ports' current capital project commitments and the extensive electrical infrastructure required to achieve the zero emission goals of the Clean Air Action Plan (CAAP) at the terminals.

  If the Ports are still required to submit port plans in the proposed regulation update, then the terminal plan deadlines must be set at least six months prior to port plan deadlines to allow the Ports sufficient time to review the submitted terminal plans, negotiate lease terms with their terminals, and compile the necessary information CARB has requested for the Ports to submit port plans. There is no guarantee that agreements will be reached in time to meet the timeline for this part of the proposed regulation. Many of these leases have several years remaining and terminals may be reluctant to renegotiate lease terms, especially for strategies that have no CARB certification.

  If terminals determine they need to construct more infrastructure, project initiation will not commence until the proposed At Berth Regulation goes into effect. It is unrealistic to

expect terminals or the ports to have design or schedules for equipment installation completed by June 2020. The earliest date according to CARB's timeline for project initiation is January 2020, assuming terminals do not use the first six months to evaluate their best compliance option. Given that project initiation, consultant selection for design, preliminary design, CEQA approval, and final design can take 23-30 months, it does not make sense to anticipate a schedule and estimation of the electrical infrastructure required at a terminal in just six months. If the terminals/Ports submitted plans solely based on preliminary design, which is a vastly premature estimate of project scope and timeline, it would take 11-15 months. This challenge once again points to the impossibility of meeting the 2021 timeline with shore power, the most mature, emission-efficient, technological solution.

- **Exceptions to Delays in Port Plan Schedules** – If ports are still required to submit port plans, then CARB should provide exceptions to any possible enforcement action if port plan schedules are not met. The port plans can only provide an estimated schedule of installing equipment and/or necessary construction projects. Delays can and will happen outside of the control of the Ports. For example, delays due to permitting, equipment acquisition, environmental assessment, and other events that may cause schedules to not be met should be given exemptions to enforcement action in this regulation. It is unfair to hold the Ports liable for mobile source operators' actions and emissions outside of our direct control.

- **Specifics on Remediation Fund** – The Ports request that CARB revise the fees for payment into the remediation fund for longer-term outages due to construction projects or repairs. CARB has set remediation fee costs as shown below in Table XVIII of the "Control Measure for Ocean-Going Vessels At Berth Cost Analysis Inputs and Assumptions for Standardized Regulatory Impact Assessment."

Table XVIII. Remediation Fee Costs

<table>
<tr><th>Data Input</th><th colspan="3">Value</th><th>Basis</th></tr>
<tr><td>Hourly remediation fee for terminal and for vessel, for each vessel type</td><td>Vessel Type</td><td>Vessel Hourly Fee</td><td>Terminal Hourly Fee</td><td rowspan="6">Staff analysis using Carl Moyer formula to calculate average emissions in tons per hour by vessel category. Product and crude tanker values were averaged for cost estimation purposes, however the fee would be dependent on the vessel type. Note that these values are estimates based on current Staff analyses at the time this document was prepared, and do not necessarily represent the exact fees that would apply.</td></tr>
<tr><td></td><td>Container/ Reefer</td><td>$2,395</td><td>$2,395</td></tr>
<tr><td></td><td>Cruise</td><td>$12,879</td><td>$12,879</td></tr>
<tr><td></td><td>Auto/Ro-Ro</td><td>$1,515</td><td>$1,515</td></tr>
<tr><td></td><td>Product Tankers</td><td>$1,783</td><td>$1,783</td></tr>
<tr><td></td><td>Crude Tankers</td><td>$9,873</td><td>$9,873</td></tr>
<tr><td>Which terminals would offer the remediation fee as an option?</td><td colspan="3">All (100%)</td><td>Staff assumes that all terminals would offer the remediation fee as an option.</td></tr>
</table>

CARB has set the remediation fee cost at an unreasonable level for long term construction projects. Appendix A gives an example of how the remediation fees using Table XVIII would have more than doubled the cost of a recent Port of Los Angeles construction project,

which increased shore power capabilities, by upgrading electrical infrastructure at their World Cruise Center. If terminals decide that their strategy to meet this regulation is to install more shore power infrastructure, then similar situations are likely.

The Ports are also concerned that unforeseen repairs that may take several months or more could occur. In these types of prolonged incidences, the remediation fund fees set per hour will become so prohibitively high that terminals may have to shut down or turn away vessels during the repair. Ports again encourage CARB to conduct a feasibility study that would help set the rates for the remediation fund and determine the state of alternative emission control technology.

There are currently a total of two certified alternative emissions control systems in use at this time, and those systems are only certified for use on container vessels. The Ports are uncertain in how many, if any, additional systems will be deployed in the next few years. This limited number of options makes it difficult for terminals or shipping lines to secure exclusive service of these systems, which would mean most construction or repairs would cause the payment of large fines pursuant to the remediation fee fund.

The Ports encourage CARB staff to set up the remediation funds for use specifically in technology research, development, demonstration, and deployment of emissions reduction technologies specific to ocean going vessels rather than for general emission reduction use. As stated in our previous letters, in order to accelerate the development and deployment of shore power and alternative control options, including infrastructure for non-container terminals and vessels, the Ports request that CARB prioritize funding as they did for the currently regulated fleet through Proposition 1B in 2006. The remediation fund can be better utilized to accelerate emission reductions from this under-represented category.

- **Compliance May Hinder CAAP Efforts** – Lastly, the Ports remain concerned that the cost to comply with CARB's proposed Rule will affect our ability to meet the goals under the 2017 CAAP Update given the significant upfront costs of an At Berth Infrastructure Program. The costs shown in the May presentation were annualized, but much of the costs will be upfront rather than spread over the ten years. CARB staff has also assumed that minimal infrastructure changes will be needed to meet the regulation. Our joint letters to CARB have included cost estimates that we feel are representative of the infrastructure costs that would be necessary to meet compliance and fulfill the Ports' obligations as currently written in this draft regulation. CARB has not included any of these costs in their revisions, even with the provision of invoices and information directly from the Port of Long Beach financial system.

  In addition, Port staff resources are limited. The staff that are currently designing the zero-emission terminal infrastructure for technology demonstration projects, and future full-scale deployments are the same staff members who would be responsible for designing the

infrastructure to support the new At Berth Regulation. This underscores the need for prioritizing programs and funding, as described above and in previous letters, in order to determine how to most effectively allocate our resources to participate in the development and implementation of CARB's regulatory program.

The Ports thank CARB staff for hosting additional workshops, engaging with us directly, and their consideration of the comments contained in this letter as well as in the attached Appendix.

We look forward to continuing to meet with CARB staff in the future to further discuss the proposed amendments to the At Berth Regulation. Please feel free contact us with any questions or concerns regarding this letter.

Sincerely,

CHRISTOPHER CANNON
Director of Environmental Management
Port of Los Angeles

MATTHEW ARMS
Acting Director of Environmental Affairs
and Planning
Port of Long Beach

Attachment

cc: CARB, Cynthia Marvin (Cynthia.Marvin@arb.ca.gov)
CARB, Angela Csondes (Angela.Csondes@arb.ca.gov)
CARB, Nicole Light (Nicole.Light@arb.ca.gov)
CARB: Kaylin Huang (Kaylin.Huang@arb.ca.gov)

CC:LW:TD:AC:yo
APP No.: 010227-517

THE PORT
OF LOS ANGELES

425 S. Palos Verdes Street Post Office Box 151 San Pedro, CA 90733-0151 TEL/TDD 310 SEA-PORT www.portoflosangeles.org

APPENDIX A
Port of Los Angeles
Response to CARB At Berth Regulation Berth Draft Regulation (version May 8, 2019)

The Port of Los Angeles (POLA or Port) appreciates this opportunity to provide more detailed comments on the California Air Resources Board (CARB) draft regulation "Control Measure for Ocean-going Vessels At Berth" (version May 8, 2019). The Port has some concerns regarding tankers and the remediation fees.

Tankers

POLA had provided specific information about our tanker terminals in our previous joint letter with Port of Long Beach on May 20, 2019. Many of our tanker terminals are being redesigned to meet California State Lands Commission (CSLC) Chapter 31.F 2016 California Building Code, Title 24, Part 2, Marine Oil Terminal Engineering and Maintenance Standards (MOTEMS) requirement. MOTEMS is a comprehensive set of codes and standards for analysis, design, inspection/maintenance, and operation of existing and new marine oil terminals in the State of California. MOTEMS requirements will ensure better resistance to earthquakes, protect the public and the environment, and reduce the potential of an oil spill, while maintaining the operation and viability of the marine oil facility.

The new terminal designs will limit the number of emission control strategies that our tanker terminals will be able to utilize. A majority of the new designs do not leave any space for a land-side alternative emission control technology strategy. There is also no shore power infrastructure in the design drawings at this time, nor have there been any discussion from our tanker terminals to install shore power. Finally, as stated in POLA's appendix in the joint letter to CARB on May 20, 2019, there are various areas throughout the Port where navigation of the waterways would preclude the use of a barge-based system.

Two of our terminals have completed their environmental document and design (Shell and PBF). Construction will soon begin at these terminals and is unlikely to be halted due to this regulation to redesign the terminals. CSLC would be averse to any delays to these construction projects as they are meant to protect the public and the environment. Other terminals currently working on their environmental documents and designs are also unlikely to redesign their terminals for CARB's At Berth regulation as there is currently no CARB certified emission control technology for tankers. The terminals would not be able

to wait for the technology to become available in order to design their terminals as they already need to meet MOTEM standards.

The Port stresses the need for CARB to conduct a feasibility assessment to better inform this regulation, especially for tankers due the many variables and restrictions associated with this industry.

Remediation Fund

CARB has set remediation fees in Table XVIII of the "Control Measure for Ocean-Going Vessels At Berth Cost Analysis Inputs and Assumptions for Standardized Regulatory Impact Assessment," that would be used for construction and repair projects.

Table XVIII. Remediation Fee Costs

Data Input	Value			Basis
Hourly remediation fee for terminal and for vessel, for each vessel type	Vessel Type	Vessel Hourly Fee	Terminal Hourly Fee	Staff analysis using Carl Moyer formula to calculate average emissions in tons per hour by vessel category. Product and crude tanker values were averaged for cost estimation purposes, however the fee would be dependent on the vessel type. Note that these values are estimates based on current Staff analyses at the time this document was prepared, and do not necessarily represent the exact fees that would apply.
	Container/ Reefer	$2,395	$2,395	
	Cruise	$12,879	$12,879	
	Auto/Ro-Ro	$1,515	$1,515	
	Product Tankers	$1,783	$1,783	
	Crude Tankers	$9,873	$9,873	
Which terminals would offer the remediation fee as an option?	All (100%)			Staff assumes that all terminals would offer the remediation fee as an option.

POLA owns and maintains shore power infrastructure at our terminals. Construction and repairs to shore power infrastructure are conducted through the Port. We are concerned that the mechanism used to determine the amount paid to the remediation fund is unreasonable for long construction or repair projects. There are instances where unforeseen repairs may take longer than a few months due to the need to order equipment, coordinate times for terminal shutdown during repairs, or other issues that may come up. The current scheme for calculating payment to the remediation fund is based on an hourly basis per a call. For extended periods where shore power will not be accessible, the cost will be extraordinarily high for industry or the Port as shown in the example provided below.

The Port recently upgraded our World Cruise Center to allow for 11 kV and 6.6 kV shore power connections for cruise vessels. This construction required a new transformer at the Cruise Center. The goal of the construction was to provide enough power for the large cruise ships to plug into shore power at POLA. The construction occurred from June 30, 2017 through April 23, 2018, and during the electrical upgrade no visiting cruise vessels were able connect to shore power. Alternative shore power was not an option either since there are no CARB-certified alternative emission control technologies for cruise vessels. The total number of hours for cruise vessels berthed at the World Cruise Center during the construction was 1,056.55 hours. Based on the hourly fee for cruise in Table XVIII, the hypothetical remediation fee for this construction project would have cost $13,607,307 (1,056.55 hour x $12,879/hour). The total cost of the electrical upgrade itself

was about $11 million. This hypothetical remediation fee would have more than doubled the cost of this construction project that took less than a year to complete.

Since there are currently only two CARB-certified alternative emission control systems available at the Ports of Los Angeles and Long Beach, for long periods of construction or repair, there is uncertainty with respect to the availability of these systems in the future. In cases where a system cannot be secured, the remediation fee compliance mechanism would have to be utilized. As shown in our example above, the fee could increase to amounts that are not sustainable to industry or the Port. In our previous and current comment letters, the Ports request that CARB conduct a feasibility assessment. This will help determine the rate for the remediation fund as the current remediation fee costs will be too high for these prolonged instances of shore power construction or repair.

Comments on Proposed At-Berth Amendment Regulatory Concept, June 14, 2019

June 14, 2019

Bonnie Soriano
California Air Resources Board
1001 I Street
Sacramento, California 95812

Subject: Comments on Proposed At-Berth Amendment Regulatory Concept

Dear Ms. Soriano:

Thank you for the opportunity to provide comments on the revised regulatory concept for the At-Berth Regulation Amendments. The industry coalition appreciates that California Air Resources Board (CARB) staff has continued to revise the regulatory concepts in response to comments provided and looks forward to continuing this dialogue with the CARB staff.

Due to the workshop schedules and time constraints, each of the associations of this industry coalition and their members reserve the right to revise and expand the questions and comments contained herein. Some initial comments and questions on the regulatory concept follow.

No Response on Industry Proposal

Earlier this year, an industry-sponsored proposal for amending and expanding the At-Berth Regulation was sent to CARB staff for consideration. That alternative proposal establishes a path forward to increase compliance and continue to ensure further emission reductions from vessels while at-berth in California ports. The Proposal includes measures to ensure compliance and emissions reductions consistent with current CARB emissions goals, expand investments in port infrastructure, and increase vessel compliance.

Unfortunately, the industry coalition has not been provided any feedback on the proposal that has been submitted. No comments have been provided and no concerns raised. The industry coalition strongly believes that the proposal produces the emission reduction benefits that CARB staff is seeking while providing a regulatory framework that meets the dynamic needs of the industry. As a result, the industry coalition renews our request that CARB staff consider the alternative proposal and discuss the proposal through a collaborative process.

Regulatory Proposal Imposes an Indirect Source Rule

The industry coalition remains strongly opposed to any regulatory framework that establishes an indirect source rule. By creating regulatory liability on one party for the actions or emissions of another party, the regulatory concept creates an impossible regulatory burden. It is important that any regulatory framework only hold entities responsible for actions or emissions under their direct control.

Clear lines of responsibilities are the only way an amended At-Berth Rule can be successful and avoid the failures of the existing rule.

Proposed Schedule is Unrealistic

The proposed compliance schedule is unrealistic to achieve for the existing regulated fleet. Under the current rule, implementation was phased in beginning with 50% in 2014, increasing to 70% in 2017, and allowing three years for the industry to improve compliance by 10% to 80% in 2020. From the time the final rule becomes effective to January 2021, there will be less than a single year to increase compliance by 20%. Staff has argued that this is achievable because nearly the entire fleet will need to be retrofitted to achieve the 2020 requirements and that there are significant emission reductions to be gained through the requirement. But these two positions are incompatible with each other; only one can be true. Because the existing rule has a requirement that all equipped vessels must use shore power, either the vessel fleet needs additional retrofitting to meet the proposed requirements resulting in additional emission reductions or the fleet is already equipped to meet the proposed requirements in which case few additional emission reductions can be achieved.

In either case, the certainty that the proposed rule requires means that either additional shoreside infrastructure or alternative control options will be necessary. The less than one-year timeframe from the time the rule becomes effective until January 2021 is unrealistic. The ports of Long Beach and Los Angeles have submitted two extensive letters discussing the additional infrastructure necessary to come into compliance with the proposed regulation. In short, years of additional preparation is necessary. The proposed rule must reflect this reality.

For tankers, CARB has established a schedule that a primary manufacturer of emissions control equipment has told CARB staff is unrealistic. In an apparent effort to force the short circuit of the technology development timeframe, the proposed regulatory concept has established unrealistic goals for developing new technology for the tanker industry.

Equally important, there is insufficient time to prepare terminal and port plans. From the effective date of the rule, until June 2020, will leave less than six months' time to prepare appropriate plans. Terminals and ports will need to coordinate on the development of any plan in order for the plan to be credible. In order to complete the plans, port and terminal operators will likely need to retain outside consulting services. Any such work will be subject to a public contracting process. An port that does not have such services available through on-call contracts would be subject to the State-mandated process to retain outside expert consulting services, which will likely take nearly the entire six months available: preparing a request for proposals, solicitation, proposal review and selection, and contracting. It has been estimated that the design work alone will take 12 months.

From plans through every aspect of implementation, CARB staff has established an unrealistic timeline for implementation that will be impossible to successfully complete.

Proposal Continues to Hold Regulated Entities Responsible for Actions Outside Their Control

The proposed rule continues to be plagued by fundamental problems in its framework. Key among those problems (and with the existing rule) is the rule's attempt to hold one party responsible for the failure of another party or for issues outside the control of any party. As the industry has repeatedly raised time and again, there are multiple parties that are responsible for ensuring a successful shore power connection. While key among the parties are the ocean carrier and terminal operator, an incomplete list of other independent parties involved in the process include utilities, union labor, which is independently responsible for dispatching labor, port authorities that at some ports dispatch labor to energize connections, pilots who determine when a vessel is ready to sail, and tub boat operators. Despite repeated discussions on these issues, the CARB proposal holds terminals and carriers responsible for the possible failures of these other parties.

Far worse, the proposed rule continues to hold marine terminals and ocean carriers responsible for issues completely outside their control. At large terminals, berth space is assigned based on a planned schedule. Those berth assignments allow the terminal to provide shore power and the vessel the ability to reach the shore power connection point. Unfortunately, schedules can be impacted by weather, prior port delays, labor issues, extra loaders, or a host of other issues. However, in the base case, the ocean carrier arrived ready to connect and the terminal assigned space ready to connect the vessel. Impacts such as weather delays (or any issue outside the direct control of the parties) that result in an inability to make a shore power connection should not result in either party being held responsible. While the concept of Terminal Incident Exceptions (TIEs) and Vessel Incident Exceptions (VIEs) may prove useful in a final regulatory framework, the concept should not be used as a bandage for areas that the proposed concept holds regulated parties responsible for issues outside their control.

VIEs/TIEs

As mentioned previously, VIEs/TIEs may prove useful in the regulatory framework. Unfortunately, the current proposal uses VIEs/TIEs to hold carriers and terminals responsible for actions outside their control. As an example, a carrier would need to expend a VIE when a CARB-sanctioned alternative control technology fails. The ocean carrier relies on CARB to verify alternative control technology as the carrier does not have the flexibility to use non-CARB sanctioned equipment. The ocean carrier should not be held responsible for third-party operator equipment failure, nor should they be required to "remediate" any impact through the fees. Any mitigation should be the responsibility of the third-party provider, after all that is the service they are providing.

A similar problem may likely be dispute resolution. When there is a failure to connect shore power, there may be disagreement between terminal operators, ports, and ocean carriers as to the cause. If the parties cannot come to agreement to cause, how will such disputes be resolved. The mechanisms associated with the use of VIEs/TIEs engender finger-pointing. This is due in part to the fact that the regulatory framework continues to hold parties responsible for actions outside their control (as described above). It is also due to the fact that their may not be clear cut answers in all situations. A focus on clear lines of responsibility, as proposed in the industry alternative, as opposed to an attempt

to micromanage all possible circumstances would avoid these problems inherent in the proposed structure.

Also concerning is that CARB is proposing no VIEs for new fleets entering the market. Without a doubt that will put new entrants at a significant disadvantage. New fleets are seen entering markets throughout California. Those fleets should be granted the opportunity to compete with existing fleets on an equal playing field. In the same vein, existing fleets serving California markets would be at a competitive disadvantage if it chose to make a significant expansion within an existing market. If two different fleets serving California offered the same level of service in a given year but one fleet had fewer calls in the prior year, the fleet with fewer calls would be at a measurable competitive disadvantage even though the two fleets were now offering the same level of service. The same scenario is equally applicable for terminal operators. For either new services or expanded services, the allocation of VIEs/TIEs should not create such distortions that favor dominant incumbents over others.

Another concern regarding VIEs/TIEs is the requirement of reporting prior to vessel departure. In some cases, that would give responsible parties less than 10 hours to complete the reporting requirements. In other cases, it may simply be impossible because the cause of a failed connection may not be known immediately. In general, the reporting requirements of the proposal cannot rely on the assumption that the port, terminal, and vessel operators have perfect knowledge. As has been demonstrated multiple times, circumstances outside the control of any of the parties can arise and will leave the responsible parties working to identify all the necessary details to provide a complete report to CARB. At a minimum, responsible parties should have seven days to complete reporting, which would allow time for internal review of the reports.

The declining availability of VIEs/TIEs does not seem to consider the impact of aging equipment over time. Today, the shore power equipment is still relatively new. As it continues to age in a harsh marine environment, equipment failures and the need for repairs/replacements will increase, not decrease. CARB staff should evaluate the foreseeable impact of equipment aging on the need for VIEs/TIEs and propose a VIEs/TIEs schedule that reflects that need. Separate from aging equipment is the fact that many vessels that have been retrofit are approaching their mandatory five-year drydocking. There will be difficulty in finding shore power-capable charter vessels for a short-term substitution. The proposed rule should account for this with in the allocation of VIEs/TIEs. In addition, vessels should not be automatically prohibited from remediation fees when a vessel is not shore power-capable as it is not always possible to secure shore power-capable vessels for short-term charters.

One-Hour Connection Window Unnecessary, Unachievable, and Unsafe

CARB staff has arbitrarily added a one-hour connection requirement to the checklist requirements of the proposed rule. There is no basis for this time limit and there has been no demonstration that it can be done safely for all the connection configurations that are **permitted** under the existing rule. The existing rule permits multiple connection strategies, some of which will require more than one hour. It would be harmful, after five years of experience with existing systems to require vessels to retrofit existing shore power-capable vessels to allow a new connection procedure. Doing so, will take existing shore power-

capable ships out of service for retrofit, decreasing emission reductions in order to save minutes during the connection time.

Ultimately, the shore power connection process requires individual people to manhandle heavy, high-voltage equipment and energize that equipment. Under no circumstances should that work be performed under a stopwatch. In addition, there is no need for the stopwatch. The labor crew on the scene will make the best determination, keeping in mind safety, of how to handle the connection process. The labor crew is there for the purpose of making the shore power connection and there would be no interest on their part to delay it. Finally, the one-hour requirement would likely be ineffective because any exceedance of the one-hour requirement would likely result in a safety exemption being sought, as having labor move faster handling high voltage equipment would be fundamentally unsafe.

Alternative Control Technologies

The proposed language states that "[p]rior to entering into any agreement or contract, vessel operators or terminal operators shall follow due diligence in selecting third party control operators." It is unclear what this language requires. CARB is the sole determiner of whether a technology is verified or not. In addition, ocean carriers and terminal operators are not experts on CARB-certified control technology and would need to rely on the word of the CARB-certified third-party operator that the operator can provided the needed service. If such language remains in the regulation, the onus should be on the third-party operator to seek vessel operating parameters and certify that they are capable providing service consistent with the CARB Executive Order verifying their technology.

In addition, the proposed regulatory concept relies on a number of assumptions regarding the availability of additional alternative control technology options. It is impossible for sufficient additional alternative control technology options to be available by January 2021 in order to support the increased connection requirements proposed for the existing regulated fleet. In addition, no technologies currently exist that can serve the needs of cruise ships or the proposed expansion fleets of tankers and roll-on/roll-off vessels. CARB staff is aware of the limitations of the currently available control technology providers. In addition, CARB staff has heard directly from the manufacturers of the emissions control technology that the horizon for developing control technology is well beyond the proposed compliance dates for the tankers and roll-on/roll-off vessels. CARB is betting the compliance of an entire industry on technology that has not been proven sufficiently reliable over the past five years.

Even more troubling, in regard to greenhouse gases (GHG), CARB has defined an approved emissions control strategy as one that is "grid-neutral, emitting no more carbon emissions than if the strategy were powered by the California gird for the year that the technology is granted an Executive Order." Currently, no alternative control technology can meet this standard today. As a result, upon the effective date of the proposed rule, no alternative control technology will be

available. The language also implies that Executive Orders will only be granted on an annual basis. A temporary Executive Order will create uncertainty about the future availability of alternative control systems. It is unlikely that any company will be able to plan not knowing what the following year's GHG standard for an alternative control technology will be and whether a given technology will be granted an Executive Order.

Vessel Commissioning Should Not Have Limitations

All vessel commissioning should be fully exempt from the provisions of the rule. The purpose of vessel commissioning is to identify problems that **cannot** be identified earlier. If all issues could be resolved with certainty before vessel arrival, there would be no need for commissioning. Commissioning is necessary to protect both the vessel's shore power infrastructure and the shoreside infrastructure, preserving both for long-term successful use. Commissioning is also a function of the technology's high-voltage nature not malfeasance on the part of the port, carrier, or terminal. It should be recognized as a necessary part of supporting this regulation.

Vessel Shore Power Equipment

Shore power connections are located in proximity to electrical panels, therefore, cruise ships and cargo ships currently in the regulation are **not** typically equipped to connect from both Port and Starboard side. The industry coalition opposes a provision in the draft regulatory language that could be used to require a vessel to have shore power equipment on both the starboard and port side of a vessel. The current practice of assigning berths to accommodate the location of vessel shore power connections is manageable by industry and essential for maximizing utilization of shore power.

Expanded Exemptions Are Necessary

The exemptions provided in the proposed regulation are too narrow and do not envision the multiple areas that other government agencies have competing requirements. Often, ocean carriers or terminal operators are required to perform actions at the direction of a government agency that would prevent a shore power connection. Just one example of this might be U.S. Coast Guard testing of auxiliary engines. The regulation should include a broad exemption for actions ordered by a government agency that prevents a shore power connection. Again, TIEs/VIEs should not be necessary for issues that arise outside the control of the regulated parties, whether caused by events like nature or at the direction of governmental agencies.

Ocean-going Vessel Opacity Requirement

The industry coalition opposes the inclusion of an opacity requirement for ocean-going vessels at anchorage. Establishing such a standard infringes upon the exclusive jurisdiction of the International Maritime Organization and the international engine standards established by treaty through MARPOL Annex VI to which the United States is a party. CARB does not have the jurisdiction or authority to implement such requirements. Finally, it is inappropriate to include such a requirement in an At-Berth Rule. There has been no demonstration of need, no estimation of benefit, and no cost to implement. Basic questions on enforceability have not been discussed such as how enforcement would occur or

even how an inspector would distinguish smoke from steam. Such a requirement needs its own rule with evaluation of impacts, benefits, and costs.

Physical Constraints

CARB has defined a "Physical Constraint" as an avoidable barrier that the U.S. Coast Guard has, in writing, made a safety determination that prevents the use of a CARB approved control strategy. Has CARB affirmatively established that the U.S. Coast Guard is willing to provide such letters? Government agencies are often reluctant to prospectively provide an opinion on a set of circumstances and may only provide consultative guidance. Since the definition relies upon the action of another government agency, it is incumbent upon CARB to affirmatively establish that the U.S. Coast Guard will provide such documentation.

Reactive Organic Gases

In the latest draft regulatory proposal, control for Reactive Organic Gases (ROG) has been added. This is the first time ROG has been included as a targeted pollutant within the At-Berth Regulation. It does not appear that any of the normal supporting information that addresses the need to control specific emissions has been prepared. That leaves industry stakeholders with multiple questions regarding the need and feasibility of the proposal. What is the demonstrated need to control this pollutant? What are the benefits of the control? How will control equipment be impacted by the need for control? What is the cost-effectiveness of control for ROGs? Neither of the currently approved alternative control systems are verified to control ROG. Upon the amended rule coming into effect, the existing alternative control systems will no longer meet the regulation's requirement, eliminating the systems as a viable option. What is the potential impact of the inclusion of ROG on the availability and viability of alternative control systems?

Emergency Events

The definition of an Emergency Event has been unreasonably limited to utility related issues. The definition of an Emergency Event, in regard to both vessel and terminal operators, should preserve the judgement of the operator to identify an emergency and take appropriate steps to protect people and property.

California Voyage

The draft regulatory language includes a definition for a California Voyage that could cause confusion with the term visit. The industry coalition recommends that definition be modified to state: "'California Voyage' means a vessel trip to the West Coast of North America that includes one or more vessel calls to California ports or marine terminals." In the revisions to the proposed regulatory language, the use of the term "California Voyage" has been dropped from the regulation. The regulation should use the term to make clear that any corrective action that is needed would be required for a subsequent California Voyage. Otherwise, shifts within a single port or visits to a subsequent California port during the same California Voyage may be subject to penalty before corrective action is possible.

Necessary Infrastructure

Within the section on Terminal and Port Plans, the draft regulatory language includes a concept of "necessary infrastructure". What does this mean? How is it measured? How will it be enforced?

Impact of Harbor Craft Emissions

The draft regulatory language includes many instances where increased tug activity will be necessary, sometimes significant increases. However, there is no analyses of the impact of these emissions or how the emissions reduce the effectiveness of the rule.

In one example, four tug movements would be required for the placement (two movements) and removal (two movements) of a barge-based alternative control system for a Ro/Ro vessel. Main tug engines are significantly larger than auxiliary engines on a Ro/Ro vessel. Given the short visit of Ro/Ro vessels, typically 10 hours, the tug emissions will significantly erode the benefit of the control system, increase greenhouse gas emissions, and reduce the cost-effectiveness of the effort. CARB staff has not shown the impact of these tug emissions for Ro/Ro or any other vessel category. Before proceeding, the analyses should be re-run to determine what emissions benefit remains after the impact of tug emissions.

In another example, there could be significant impact from the requirement that vessel be relocated to a shore power capable berth if one becomes available. Depending on the remaining time of the vessel call, the combined excess emissions from delaying the vessel through the move and the tug emissions to support the move, may exceed any benefit resulting in a net increase in emissions. While terminal operators have taken steps to relocate vessels to ensure the use of shore power whenever possible, a blanket requirement may result in negative as well as positive outcomes. The proposed language should reflect this reality or be removed from the regulation.

Notification for Malfunction

The proposed regulatory language includes a "Notification for Malfunction" section. The section is indicative of the many fundamental problems with the proposed regulatory language. The proposed Notification language is typical for stationary sources. However, the draft rule proposes to impose operational controls on a mobile source. The application of stationary source approaches to emissions control is inappropriate and unworkable. The entire section should be removed from the draft.

Regulatory Language Ambiguities

The draft regulatory language contains several ambiguities in the Ocean-going Vessel Requirements, Terminal Operator Requirements, and the Terminal and Port Plans sections. Due to the regulatory construction it is not always clear what categories are subject to what requirements. This is often due to placement of requirements for vessels or terminals in a parallel structure to the applicability of provisions to vessels and terminals in a given section. Instead, the regulatory language should place requirements in a subsection to applicability. Throughout these sections, the regulatory language should be revised to make clear the relationship between requirements and applicability.

Severability

The proposed regulation contains a severability clause. The proposed regulatory framework is very complex. That complexity has given rise to many unanswered questions regarding implementation and enforcement. Should any portion of the rule be rendered inoperable, the remaining rule would likely be unworkable. As a result, the rule should not contain a severability clause.

ATB Classification

With the proposed expansion of the At-Berth Rule, Articulated Tug-Barges (ATBs) may now fall under both the At-Berth Regulation and Harbor Craft Regulation. It is likely that this was an unintended consequence resulting from the peculiarities of how the rules were separately constructed. CARB staff should revisit the rule construction with regard to ATBs to ensure that the vessels are not captured under both rules.

Conclusion

The industry coalition appreciates the opportunity to submit these comments and looks forward to continuing to work with CARB staff on the development of amendments to the At-Berth Regulation.

Sincerely,

California Association of Port Authorities
Pacific Merchant Shipping Association
Cruise Lines International Association
Western States Petroleum Association

Comments on At-Berth Draft Regulation Order - 5/8 2019 Version, June 13, 2019

June 13, 2019

Ms. Bonnie Soriano
California Air Resources Board
1001 I Street
Sacramento, California 95812

Transmitted via email

Subject: Comments on At-Berth Draft Regulation Order - 5/8 2019 Version

Dear Ms. Soriano:

Thank you for the opportunity to comment on the most recent draft At-Berth Draft Regulation and for the additional time to submit the comments. CLIA also appreciates the meeting with you and your staff to discuss specific issues related to the regulation of concern to the cruise lines. CLIA will be signing on to the PMSA Coalition comment letter and agree with their comments. This letter reiterates the concerns (outlined below) with the At-Berth draft regulation that CLIA brought to your attention at the meeting that are cruise-line specific:

- THE REGULATIONS SHOULD CONTINUE THE EXISTING NON-FREQUENT FLIER EXEMPTION FOR CRUISE SHIPS: CLIA remains concerned that the draft regulation is so rigid with every vessel, every call and mitigation of every emission at 100% that it will impact the cruise markets in California. This could result in world and transitioning cruises which cannot justify the millions of dollars to add shorepower equipment on vessels that visit California only a few times per year, to skip California ports, causing major financial impacts for those ports. CLIA requests that CARB reinstate the non-frequent flier exemption for cruise ships making four or fewer visits per year. CLIA is willing to discuss other potential options to the non-frequent flier exemption such as a major expansion of the types of situations that would qualify to pay a mitigation fee to offset emissions and avoid violations, if the fees are reasonable and based on the emissions of the vessels.

- CRUISE LINES WILL NOT "PLAN TO BE NONCOMPLIANT" AND CANNOT USE EXISTING ALTERNATIVE COMPLIANCE OPTIONS: The reality is that companies will not "plan to be noncompliant" and be subject to a violation should these issues with non-frequent fliers not be resolved. These issues are of particular concern to cruise vessels because they cannot use the existing approved alternative compliance options.

- VIES WILL NOT ADEQUATELY COVER NON-FREQUENT FLIERS OR CRUISE FLEETS ENTERING MARKETS IN CALIFORNIA: The VIEs (Vessel Incident Exceptions) as structured are not adequate to ensure that all non-frequent fliers can avoid violation should they come into California. The calculations that CARB will use to determine the number of VIEs available to a fleet will particularly disadvantage smaller fleets which will not be able to receive in some cases any VIEs, and the VIEs would be non-existent for vessels that did not call on California in the previous year, including scouting voyages for companies pursuing or adding new markets in the state. The CARB decision to treat the Ports of Long Beach and Los Angeles as separate ports is also a major impediment to the usefulness of VIEs for non-frequent fliers or for any other purpose for which the VIEs are allowed to be used.

- THE REGULATIONS SHOULD CLARIFY THAT THE DEFINITION OF "COMPATIBLE" AND "COMPATIBILITY" DO NOT REQUIRE INSTALLATION OF SHOREPOWER ON THE SECOND SIDE OF THE SHIP: Ships should not be required to have shorepower equipment on both sides of the ship -- nor should ships already in compliance with the current regulation to be shorepower-capable be penalized or required to pay a mitigation fee should a berth not be available that can connect to the shorepower already installed on the ship on a specific side. Shorepower connections are located in proximity to electrical panels and cannot easily cross over the bow of the ship. The current practice of assigning berths to accommodate the location of vessel shorepower connections is financially and logistically manageable by industry and is essential for maximizing utilization of shorepower equipment required only in California. (Pages 18, 20 and 26).

- THE USE OF THE RELEVANT ISO STANDARD FOR SHORE POWER INFRASTRUCTURE SHOULD BE REQUIRED IN THE REGULATIONS: The regulation should be updated to require terminals and ports to meet the international standard agreed to by the International Maritime Organization consistent with ISO/IEC/IEEE 80005-1, for shorepower infrastructure to be considered compliant with the regulation.

- A TYPO SHOULD BE FIXED RELATED TO "READY TO WORK" AND "VISIT": The following definitions appear to have a typo that should be corrected:
  (44) "Ready to Work" means that the vessel is tied to the berth, the gangway has been lowered with netting down, and U.S. Coast Guard and U.S. Customs and Border Protection have cleared the vessel.
  (66) "Visit" means the time period when the vessel is "Ready to Work". The visit begins once the vessel is tied to the berth with gangway down and netting secured and has been cleared by U.S. Customs and Border Protection. The visit ends when "Pilot on Board."
  As noted in the above definitions, the USCG is listed under "Ready to Work." However, the USCG is not listed under "Visit." The USCG should be deleted from the "Ready to Work" definition since they do not actually clear the vessel upon arrival (this is what CBP does).

Again, thank you for your consideration of these comments.

Sincerely,

Donald Brown
VP, Maritime Policy
Cruise Lines International Association

cc: Angela Csondes

Port of Oakland Comments on May 10, 2019, Draft Proposed Control Measure for Ocean-Going Vessels At Berth and Supporting Documents, June 10, 2019

PORT OF OAKLAND

June 10, 2019

Angela Csondes
Manager, Marine Strategies Section
California Air Resources Board
P.O. Box 2815
Sacramento, CA 95812-2815
Submitted Via Electronic Comment Log

Subject: Comments on May 10, 2019, Draft Proposed Control Measure for Ocean-Going Vessels At Berth and Supporting Documents

Dear Ms. Csondes:

The Port of Oakland ("Port") appreciates the opportunity to comment on the rulemaking materials posted May 10, 2019, for the Proposed Control Measure for Ocean-Going Vessels At Berth ("Proposed Control Measure"). The Port understands that the California Air Resources Board ("CARB") is planning for the Proposed Control Measure to replace the current Airborne Toxic Control Measure ("ATCM") for Auxiliary Diesel Engines Operated on Ocean-Going Vessels At Berth in a California Port (the "At-Berth Regulation"), with the goal of taking the Proposed Control Measure to the CARB Governing Board in December 2019. On May 10, 2019, CARB posted the revised text of the Proposed Control Measure, and provided, as supporting documents, the presentation from the May 14 and May 16, 2019 public workshops, Cost Inputs and Assumptions in PDF format, and Cost Estimates in Excel format.

The Port supports CARB's ongoing efforts to reduce emissions from ocean-going vessels ("OGVs") at berth and is working diligently to maximize the number of vessel visits using shore power. Port staff work collaboratively with shipping lines to provide education and resources about the shore power program. Port staff also track shore power usage in real time, collecting detailed information from marine terminal operators. The Port posts shore power usage statistics, reasons for equipped vessels not plugging in, and cost information on our shore power website: https://www.oaklandseaport.com/development-programs/shore-power/. In 2018, 75% of all calls to the Port drew shore power.

Public comments on the Proposed Control Measure are due to CARB June 10, 2019. Port staff understand CARB will then finalize the regulatory language and prepare an Initial Statement of

Reasons ("ISOR") to release on October 18, 2019, with public comment on the ISOR closing on December 2, 2019. The CARB Governing Board is scheduled to hear the Proposed Control Measure on December 5, 2019. Do CARB staff intend to respond to public comment on the ISOR? Three days does not leave time for meaningful CARB response to public comment or public review of subsequent changes to the Proposed Control Measure. Port staff suggest a minimum of 14 days for CARB staff to review and respond to public comment, and for the public to review any changes, before the Proposed Control Measure can be heard.

The Proposed Control Measure includes the concept of an Incident Exemption, which is new since CARB published its draft Proposed Control Measure in August 2018. Vessel fleets would be granted Vessel Incident Exemptions (VIEs) and terminals would be granted Terminal Incident Exemptions (TIEs). Starting in 2021 for container ships and terminals, VIEs and TIEs would be granted at levels of 5% of the previous calendar year's calls. CARB stated at the May 14, 2019, public workshop that the expected plug-in level for the container fleet is 90% in 2021.

Port staff submit the following comments and questions, divided into the topic areas of the draft regulatory text of the Proposed Control Measure, the presentation from the May 14, 2019 and May 16, 2019 public workshops, and the Cost Inputs and Assumptions in PDF format.

Comments and Questions on the Draft Regulatory Text of the Proposed Control Measure

1. Port staff request clarification on the definition of "necessary infrastructure…that will enable a terminal to comply with this Control Measure" in Section 93130.10(b) of the Proposed Control Measure and what, in this context, "subject to verification by [CARB] enforcement staff" means. From Table XI Berth and Terminal Counts, Anticipated Infrastructure Needs, and Unique Vessels of the CARB Cost Inputs and Assumptions in PDF format, it appears that CARB believes that three new shore power vaults "would be installed in response to the Draft Regulation [Proposed Control Measure]…" at the Port. Accordingly Port staff request documentation supporting CARB staff's berth-by-berth infrastructure analysis and determination that three new shore power vaults would be required at the Port in response to the Proposed Control Measure.

2. Regarding the Terminal and Port Plans required for Container terminals in Section 93130.11 of the Proposed Control Measure, the deadline of June 1, 2020 does not allow for sufficient time after the anticipated adoption of the Proposed Control Measure for ports and terminals to submit plans. Port staff object to the text in Section 93130.11(a) that "[a]s an alternative, Ports may submit plans for their terminal operators." Ports should not be expected to submit plans for terminal operators. In addition, the statement in Section 93130.10(b) of the Proposed Control Measure that "Ports should use terminal plans as [the] basis for developing port plans" seems to indicate that the deadline for Port Plans should be adjusted to come after the deadline for Terminal Plans.

3. The definition of "Fleet" in Section 93130.2(b)(22) of the Proposed Control Measure does not explain how fleets will be established. What will CARB require at the beginning

of each compliance year to establish fleets? Will this be part of the online Freight Regulations Reporting System ("FRRS") mentioned in the presentation from the May 14, 2019 and May 16, 2019 public workshops?

Port staff request an initial accommodation for new fleets entering the California market. New entrants should be given an opportunity to estimate the coming year's ship calls and estimate the number of VIEs to be awarded for the coming year.

The definition of Fleet and the requirements for VIEs also need to be responsive to changes in the shipping industry, for example when businesses merge or alliances change. Likewise, CARB should clarify what provisions will accommodate changes in the terminal industry, such as new terminals or changes in ownership, in the allocation of TIEs.

4. Port staff have two comments regarding vessel commissioning. Port staff request that vessel commissioning events that do not successfully connect to shore power as discussed in Section 93130.7(f)(2) of the Proposed Control Measure be considered eligible for exceptions under the regulation. The commissioning attempt shows that the goal was to reduce emissions through shore power and as such an Exception should be available to operators in this situation. Port staff conduct each vessel commissioning (with the exception of those at the Matson Terminal) to ensure the safety of the vessel, terminal, and workforce. Vessel commissioning is an invaluable safety procedure and should not be penalized under the Proposed Control Measure.

   Port staff request that the definition of "Vessel Commissioning" in Section 93130.2(b)(61) of the Proposed Control Measure be expanded to include the case in which the port authority is the commissioning agent, as is the case at the Port of Oakland. Likewise, in Section 93130.7(d)(1) ("If applicable, commission vessel as required by terminal operator"), Section 93130.8(a)(4) ("It is the terminal operator's responsibility to commission vessels equipped with shore power"), and Section 93130.8(d)(1) ("If applicable, commission vessel for use of shore power"), the commissioning requirement should be determined by the port authority or the terminal operator.

5. The reduction in VIEs and TIEs for Container, Reefer, and Passenger vessels from 5% each to 3% each discussed in Sections 93130.7(g)(1)(A)(ii) and 93130.8(h)(1)(A)(ii) of the Proposed Control Measure serves to increase the usage of the Remediation Fund [Section 93130.12(a)] in and after 2023. Port staff request further information from CARB on when and where the Remediation Fund will be deployed, given that CARB anticipates zero-emissions regulation on trucks, transport refrigeration units, forklifts, and cargo-handling equipment in the time frame of enhanced usage of the Remediation Fund, making those categories ineligible for incentive-funded emissions reductions.

6. The allotted VIEs and TIEs for vessels other than Container, Reefer, and Passenger vessels in Sections 93130.7(g)(1)(A) and 93130.8(h)(1)(A) of the Proposed Control Measure reduce from 5% to 3% after only one year. Port staff note that at the advent of the ATCM, the requirement was 50% of all calls in the first year. An initial expectation of 90% usage does not accommodate the fact that the Proposed Control Measure is the first-of-its-kind requirement for Ro-Ro and Tanker vessels in the world, and the technologies and equipment required do not exist at this time and have not been tested.

7. Regarding the Remediation Fund described in Section 93130.12 of the Proposed Control Measure, what is the procedure and timeline for CARB to approve a public entity to manage the funds generated at the Port?

8. Port staff request clarification from CARB of what constitutes a failure to achieve "full emission reductions" as referenced in Section 93130.12(a)(3) of the Proposed Control Measure, regarding when the Remediation Fund may be used.

9. In response to the suggestion in Section 93130.8(a)(2) of the Proposed Control Measure that a terminal operator should be responsible to interrupt a vessel call to shift the vessel to a berth with shore power if no berth was previously available, Port staff request CARB prepare and share an analysis of harbor craft emissions associated with such a shift at each port. Second to OGV, harbor craft are the second-highest emitting sources of emissions in the Port's 2017 Emissions Inventory. Given the short duration of the average vessel call to the Port, the suggestion to call additional harbor craft to reduce the remaining hours of an OGV call's auxiliary emissions could lead to increased overall emissions.

10. Likewise, Port staff question if the suggestion in Section 93130.8(a)(3) of the Proposed Control Measure that a terminal operator should be responsible to provide an alternative CARB-approved emission control strategy if a commissioned shore power vessel is berthed such that it cannot connect to shore power is necessary. CARB's own analysis in the Cost Inputs and Assumptions in PDF format, Table XI, declares that no barge-based capture and control system is anticipated for the Port.

11. Port staff note that the "power meter readings at the time of shore power connection and disconnection" requested in Section 93130.8(e)(2)(C) of the Proposed Control Measure are typically not available within 7 calendar days of a vessel's departure, as anticipated by CARB. Power meter readings at the Port are typically available at the close of the calendar month and not sooner.

12. In Section 93130.1 of the Proposed Control Measure, the stated intent of the Proposed Control Measure is "to ensure that operators of ocean-going vessels reduce emissions using a California Air Resources Board (CARB) approved emission control strategy to reduce PM, NOx, and ROG emissions at berth without increasing overall GHG emissions from this Control Measure…" How will CARB monitor GHG emissions after

implementation of the Proposed Control Measure and what is the GHG emissions baseline?

Comments and Questions on the presentation from the May 14, 2019 and May 16, 2019 public workshops

13. On Slide 4 of the presentation for the May 14, 2019 and May 16, 2019, public workshops, CARB staff show OGV at-berth emissions for the entire state. Port staff request to see these emissions totals further tabulated both by port or marine terminal and by vessel type. This is especially important as, per Section 93130.7(g)(2) of the Proposed Control Measure, VIEs are specific to the Fleet-Port pairing they are granted to.

14. On Slides 5 and 29 of the presentation for the May 14, 2019 and May 16, 2019 public workshops, CARB staff show a table of cost effectiveness for this rulemaking. The Port provides specific comments on the cost estimates below. Port staff request to see the total cost estimates and cost effectiveness estimates further tabulated both by port and by vessel type.

Comments and Questions on the Cost Inputs and Assumptions in PDF format

15. In Table V. Auxiliary Engine Effective Power Values, CARB states that it is relying on "the same power values cited in Table 7 of the emission inventory methodology https://ww3.arb.ca.gov/msei/ordiesel/draft2019ogvinv.pdf. Values used in cost analysis for container/reefer and tanker vessels are calculated as one kW-average per vessel type, weighted by average vessel kW at each port/terminal and vessel visits to each port/terminal."

    As noted in the Port's February 15, 2019 letter to CARB regarding the emissions inventory, the emissions inventory relies on the assumption that container vessel effective power is a function of vessel size bin. Will this assumption in the emissions inventory be modified to align with the cost estimate?

16. In Table VI. Duration of Emission Control at Berth, CARB shows that it is estimating statewide emissions reductions based on average duration of emission control at berth per vessel visit. The Port requests an emissions and cost analysis specific to each port or marine terminal and each vessel type. The stated average Container/Reefer duration of emission control at berth of 38.8 hours is about twice the average time for shore power connections at the Port. The difference between Port data and the average shows that the statewide average is not meaningful for the Port, and the conclusions of the averaging analysis may not apply to the Port.

17. Table VIII. Electricity and Fuel Cost Inputs and the associated Cost Estimates in Excel format show that CARB expects 100% of any Low Carbon Fuel Standard ("LCFS") credits would be reinvested into shore power. It is not guaranteed that the credits would

all be reinvested into shore power. What assumptions did CARB staff make in projecting the LCFS credit value through 2032?

18. Related to the duration of emission control at berth in Table VI, Port staff would like to reiterate that shore power usage at the Port is billed based on hours of use, not kWh drawn. This affects the assumptions in Table VIII. Electricity and Fuel Cost Inputs, as well. While the cost of Pacific Gas & Electric electricity is relevant to the Matson Terminal and the overall discussion of electricity costs, the Port is the utility serving shore power at all but the Matson Terminal.

19. The growth assumptions in Table IX. Growth Factors overestimate actual TEU growth for the Port between 2016 and 2018 and continue to use a 3.9% compound annual TEU growth rate between 2018 and 2032. Port staff request that in addition to this high estimate of TEU growth, CARB prepare an estimate of emissions using a realistic growth estimate. For reference, the Port's CAGR between 2008 and 2018 was 0.4%. Port staff understand that the growth estimates CARB is using for emissions and costs for the Port will align with the vessel fleet projections (such as larger vessels each year) that are being used for the Ports of Long Beach and Los Angeles.

20. Port staff note that the cost of compliance with the existing At-Berth Regulation is high and requires frequent vessel retrofits. In 2018, the Port commissioned or re-commissioned nearly 100 vessels, or about 25% of the ever-commissioned vessel list. The ongoing costs of retrofitting vessels when the line rotation changes, maintaining vessel equipment, and commissioning vessels with the current At-Berth Regulation apply equally to comply with the Proposed Control Measure and should be included in the cost estimates as they are real and necessary costs of compliance with the Proposed Control Measure. The Proposed Control Measure is not additive and incremental to the At-Berth Regulation, but rather a replacement and as such the entire cost to comply with the Proposed Control Measure needs to be factored into the cost effectiveness.

Closing

Port staff appreciate the opportunity to review the Proposed Control Measure and attend the public workshop on May 14, 2019. We look forward to working with CARB on refinements to improve the Proposed Control Measure, emissions inventory, and associated analyses.

Please contact Catherine Mukai, P.E., Port Associate Environmental Planner/Scientist at cmukai@portoakland.com with any follow-up questions.

Sincerely,

Colleen Liang, Port Environmental Supervisor, for
Richard Sinkoff
Director of Environmental Programs and Planning

Enclosures: January 15, 2019 Port letter to ARB re: Comments on Preliminary Draft Health Risk Assessment ("HRA") for the Proposed Control Measure for Ocean-Going Vessels At Berth and At Anchor

February 15, 2019 Port letter to ARB re: Comments on *Draft 2018/2019 Update to Inventory for Ocean-Going Vessels: Methodology and Results* for the Proposed Control Measure for Ocean-Going Vessels At Berth and At Anchor

PORT OF OAKLAND

January 31, 2019

Angela Csondes
Manager, Marine Strategies Section
California Air Resources Board
P.O. Box 2815
Sacramento, CA 95812-2815
Submitted Via Electronic Comment Log

Subject: Comments on Preliminary Draft Health Risk Assessment ("HRA") for the Proposed Control Measure for Ocean-Going Vessels At Berth and At Anchor

Dear Ms. Csondes:

The Port of Oakland ("Port") appreciates the opportunity to comment on the Preliminary Draft HRA posted November 5, 2018, for the Proposed Control Measure for Ocean-Going Vessels At Berth and At Anchor ("Proposed Control Measure"). The Port understands that the California Air Resources Board ("CARB") is planning for the Proposed Control Measure to replace the current Airborne Toxic Control Measure ("ATCM") for Auxiliary Diesel Engines Operated on Ocean-Going Vessels At Berth in a California Port (the "At-Berth Regulation"), with the goal of taking the Proposed Control Measure to the CARB Governing Board in December 2019. CARB posted the text of the Proposed Control Measure on August 31, 2018. The November 5, 2018, Preliminary Draft HRA and associated air dispersion modeling files that CARB released December 14, 2018, were prepared in support of the Proposed Control Measure.

The Preliminary Health Analyses document contains two types of assessment, 1) an HRA using air dispersion modeling and impacts estimation guidance from the California Environmental Protection Agency Office of Environmental Health Hazard Assessment ("OEHHA") and 2) an Incidents per Ton ("IPT") analysis.

The Port supports CARB's ongoing efforts to reduce emissions from ocean-going vessels ("OGV") at berth and is working diligently to maximize the number of vessel visits using shore power. Port staff work collaboratively with shipping lines to provide education and resources about the shore power program. Port staff also track shore power usage in real time, collecting

530 Water Street • Jack London Square • P.O. Box 2064 • Oakland, California 94604-2064
Telephone: (510) 627-1100 • Facsimile: (510) 627-1826 • Web Page:
www.portofoakland.com

detailed information from marine terminal operators and posting that information on the Port's web site for public information purposes.[1]

The key input to the Preliminary Draft HRA is the estimated emissions from vessels at berth, which are not yet final. Emissions estimates need to be final and the Preliminary Draft HRA updated before the Preliminary Draft HRA results can be used.

CARB conducted two HRAs addressing only the Ports of Long Beach and Los Angeles together and the Richmond Complex. CARB's use of AERMOD and the 2015 OEHHA Risk Assessment Guidelines for HRAs represents current best practices. However, the robustness of the findings is limited by the emissions estimates. Emissions estimates are typically completed before the HRA but in this case are open for public comment and discussion through the end of February 2019, at which point they may be refined.

The air dispersion model AERMOD, which CARB selected for the Preliminary Draft HRA is the preferred model from the US Environmental Protection Agency. Required inputs to AERMOD include meteorological data, emissions information for each pollutant considered, and exhaust parameters for release points. Of these inputs, the estimated emissions are key, since emissions have a direct linear relationship with the estimated ambient concentrations and health impacts from each source.

On November 5, 2018, CARB posted the Preliminary Draft HRA. CARB then posted a hard-coded spreadsheet of "Draft At Berth Emissions Estimates" used in the Preliminary Draft HRA on November 9, 2018, and air dispersion modeling files in mid-December with a public comment period for the Preliminary Draft HRA closing January 31, 2019.

CARB also posted the "Draft: 2018/2019 Update to Inventory for Ocean-Going Vessels: Methodology and Results"—for the emissions that were entered into the Preliminary Draft HRA—on January 16, 2019, with a separate public comment period for the emissions methodology and results closing February 16, 2019.

Without greater understanding of the emissions used as data inputs to the air dispersion model and risk estimation calculations, the utility of the Preliminary Draft HRA is limited. Port staff are reviewing the emissions methodology released on January 16, 2019, and are comparing it with the spreadsheet posted November 9, 2018. Port staff look forward to discussing the emissions with CARB staff at the public workshop CARB scheduled for February 26, 2019. After that, Port staff anticipate the need for a revised HRA for the Proposed Control Measure that relies on emissions that have been reviewed and understood by all parties.

The AERMOD input and output files and risk estimation databases CARB provided on December 14, 2018, appear to carry out the methodology discussed in the Draft Preliminary HRA, but further review is not warranted until emissions are finalized. In addition to the

[1] https://www.oaklandseaport.com/development-programs/shore-power/

wharfinger information provided by the Port to CARB annually as required by grant funding obligations, Port staff are happy to work with CARB staff to refine assumptions made in the emissions estimates.

The role of the Preliminary Draft HRA posted November 5, 2018, in rulemaking for the Proposed Control Measure is not clear.

The Proposed Control Measure is not an ATCM, in fact its stated purpose is to reduce NOx, PM, and GHG but not the toxic air contaminant DPM—which is the focus of the Preliminary Draft HRA. The inclusion of an HRA for any of the ports in California is therefore not a fundamental driver of the Proposed Control Measure (leaving the CARB Governing Board direction, Mobile Source Strategy, and Sustainable Freight Action Plan as drivers). Thus, any reductions in risk shown in the Preliminary Draft HRA are purely informational. Indeed, CARB's elimination of the At-Berth Regulation ATCM by focusing on a Proposed Control Measure for NOx and PM but not DPM seems to imply that no further risk reductions are required.

The Preliminary Health Analyses report announces that the risk reductions of the Proposed Control Measure are "significant," a term defined in the California Environmental Quality Act ("CEQA") and used in CARB's Certified Regulatory Program, but not defined in the CARB rulemaking process. While CARB staff present the percentage of reduction in risk of the Proposed Control Measure over the current At-Berth Regulation, the total residual risk should be compared to that of other source categories to prioritize the need for the Proposed Control Measure.

Health impacts from Criteria Air Pollutants are managed through SIP Planning, which does not require a new Proposed Control Measure for the container fleet.

$PM_{2.5}$ is a criteria air pollutant, not a toxic air contaminant, and the California Ambient Air Quality Standards ("CAAQS") and National Ambient Air Quality Standards ("NAAQS") are the appropriate health-protective standards for $PM_{2.5}$. Regional ambient air concentrations of $PM_{2.5}$ are managed to levels below the CAAQS and NAAQS through SIP planning. Even so, CARB's Mobile Source Strategy calls for an evaluation of emissions reductions from currently unregulated fleets, not the already regulated container fleet which calls Oakland. Thus, SIP planning for $PM_{2.5}$ attainment does not mandate an amended At-Berth Regulation to reduce statewide emissions through an "every vessel, every visit" control strategy like CARB staff have proposed.

The Incidents Per Ton ("IPT") methodology presented for $PM_{2.5}$, a criteria air pollutant, is not a cost effectiveness metric.

The IPT methodology provides information on health effects assuming ambient $PM_{2.5}$ concentration is the sole contributor to adverse health effects, with a direct linear relationship. The IPT methodology is not, however, part of a cost-effectiveness evaluation. CARB released a "Preliminary Cost Information" document in August 2018 as part of this rulemaking effort,

which relies on the same assumptions as the emissions inventory (which, as discussed above, may need refinement). The preliminary costs data evaluated total costs of the Proposed Control Measure, but not cost effectiveness of proposed measures calculated in terms of cost per ton of emissions removed. CARB has also not yet prepared a socio-economic impact analysis of the proposed rule.

Closing

Port staff are interested in working with CARB to improve the current ATCM focused on DPM to allow for 100% compliance. We look forward to seeing enhanced supporting documentation for the CARB emissions estimates and a revised HRA and cost effectiveness analysis once the emissions are updated.

Please contact Catherine Mukai, P.E., Port Associate Environmental Planner/Scientist at cmukai@portoakland.com with any follow-up questions.

Sincerely,

Richard Sinkoff
Director of Environmental Programs and Planning

PORT OF OAKLAND

February 15, 2019

Angela Csondes
Manager, Marine Strategies Section
California Air Resources Board
P.O. Box 2815
Sacramento, CA 95812-2815
Submitted Via Electronic Comment Log

Subject: Comments on *Draft 2018/2019 Update to Inventory for Ocean-Going Vessels: Methodology and Results* for the Proposed Control Measure for Ocean-Going Vessels At Berth and At Anchor

Dear Ms. Csondes:

The Port of Oakland ("Port") appreciates the opportunity to comment on the *Draft 2018/2019 Update to Inventory for Ocean-Going Vessels: Methodology and Results* posted January 15, 2019, for the Proposed Control Measure for Ocean-Going Vessels At Berth and At Anchor ("Proposed Control Measure"). The Port understands that the California Air Resources Board ("CARB") is planning for the Proposed Control Measure to replace the current Airborne Toxic Control Measure ("ATCM") for Auxiliary Diesel Engines Operated on Ocean-Going Vessels At Berth in a California Port (the "At-Berth Regulation"), with the goal of taking the Proposed Control Measure to the CARB Governing Board in December 2019. CARB posted the text of the Proposed Control Measure on August 31, 2018. The *Draft 2018/2019 Update to Inventory for Ocean-Going Vessels: Methodology and Results* was prepared in support of the Proposed Control Measure.

The Port supports CARB's ongoing efforts to reduce emissions from ocean-going vessels ("OGVs") at berth and is working diligently to maximize the number of vessel visits using shore power. Port staff work collaboratively with shipping lines to provide education and resources about the shore power program. Port staff also track shore power usage in real time, collecting detailed information from marine terminal operators and posting that information on the Port's website for public information purposes.[1]

[1] https://www.oaklandseaport.com/development-programs/shore-power/

530 Water Street • Jack London Square • P.O. Box 2064 • Oakland, California 94604-2064
Telephone: (510) 627-1100 • Facsimile: (510) 627-1826 • Web Page:
www.portofoakland.com

The *Draft 2018/2019 Update to Inventory for Ocean-Going Vessels: Methodology and Results* document includes emissions from California ports and CARB-defined Marine Terminal Complexes ("MTCs"). The emissions for 2016 are tabulated in Appendix B, while emissions for other years are only represented graphically in figures in the document and in tables published by CARB on November 9, 2018.

Comments on the *Draft 2018/2019 Update to Inventory for Ocean-Going Vessels: Methodology and Results* are due to CARB February 15, 2019. CARB will then host a public workshop to discuss the emissions on February 26, 2019. After that, Port staff anticipate the need for a revised emissions inventory for the Proposed Control Measure that responds to public comments. The Port provides wharfinger information to CARB annually as required by grant funding obligations. In addition, Port staff request that CARB staff work with the Port to refine assumptions made in the emissions estimates.

Given the scheduling of the public workshop after the public comment period has closed, this letter includes comments and questions that may best be addressed in the workshop. Thus, the Port is providing a list of comments and questions on the draft emissions inventory and topics for discussion at the February 26 public workshop.

Comments and Questions on the *Draft 2018/2019 Update to Inventory for Ocean-Going Vessels: Methodology and Results*

1. Why was 2016 selected as the baseline calendar year for the emissions inventory? Does CARB plan to conduct in-depth emissions inventories for 2017 and 2018?

2. Table 4 of the *Draft 2018/2019 Update to Inventory for Ocean-Going Vessels: Methodology and Results* shows vessel visit counts to California ports and MTCs in 2016 only. However, current trends are for fewer calls by larger vessels for a given amount of containerized cargo. The discussion on page 25 of the draft clarifies that "vessel practice changes" are not considered, even as the total number of calls is dropping in real time. Since 2013, total annual calls to the Port have been decreasing. Container cargo throughput is thus decoupled from vessel call activity. CARB should expand the vessel growth forecasting for the baseline scenario to include the effects of larger vessels and fewer calls for the same amount of containerized cargo.

3. Table 7 of the *Draft 2018/2019 Update to Inventory for Ocean-Going Vessels: Methodology and Results* relies on the assumption that for all ports and MTCs, container vessel effective power will match that of the Ports of Los Angeles and Long Beach in 2016. The effective power does not appear to be a function of vessel size bin, so the level of detail with which the effective power is classified by CARB-defined size bin is not appropriate. In addition, given the variation between data from the Port of Los Angeles and the Port of Long Beach within the same CARB-defined size bin, the data may not be meaningful when averaged by CARB-defined size bin. CARB should use an average effective power for container vessels regardless of size.

4. The growth rates in the Freight Analysis Framework ("FAF") for ports and MTCs outside of the San Pedro Bay are at odds with current trends. The FAF assumption for container cargo at the Port of Oakland is a 5% year-over-year growth rate between 2016 and 2020. Actual growth rates between 2016 and 2018 have not kept pace, with current Oakland planning documents estimating about half the FAF compound annual growth rate.[2] CARB should adjust the FAF growth forecasting for the baseline scenario to align with actual trends.

5. Page 27 of the *Draft 2018/2019 Update to Inventory for Ocean-Going Vessels: Methodology and Results* discusses statistical significance in the context of the emission forecasting. If CARB staff have conducted an uncertainties analysis, it should be included in the methodology and results document.

6. Table 15 of the *Draft 2018/2019 Update to Inventory for Ocean-Going Vessels: Methodology and Results* does not treat all ports and vessel types equally when assuming "Projected 2020 and Later Time on Shorepower," without justifying the differences. For instance, CARB assumes container vessels at the Port of Hueneme spend 80% of their time on shore power after 2020, while CARB assumes at the Ports of Los Angeles and Long Beach container vessels spend only 65% of their time on shore power. Impossibly, CARB-defined size bins 7, 9, and 12 container vessels at the Port of Oakland are assumed to spend 100% of their time at berth on shore power.[3] Port staff request further justification for and synchronization of the assumptions for "Projected 2020 and Later Time on Shorepower."

7. In the discussion of the "static age distribution model" versus a survival and turnover model, CARB staff do not consider the abnormally high number of OGV keels laid in 2015. How did CARB decide that the spike in keels laid in 2015 was not material to estimating NOx emissions through 2050?

8. CARB should revise its assumption that sulfur content in fuel is 0.1% based on the results of enforcement analyses of in-use fuel sulfur. The sulfur content of in-use fuel as sampled by the CARB enforcement team in calendar years 2017 and 2018 is lower than 0.1% by 30% and almost 50%, respectively, presenting information that actual emissions are lower than those estimated by CARB. (As stated on page 12, information from CARB's enforcement team is already used to determine reduced emissions from reduced engine activity time.)

[2] https://www.portofoakland.com/community/environmental-stewardship/maritime-air-quality-improvement-plan/

[3] Vessels arriving at berth need time to tie lines and lower gangways before they can connect shore power and likewise vessels need time to disconnect from shore power when leaving the berth. With these bookends on each vessel call, a vessel cannot be plugged into shore power for 100% of the time at berth.

9. CARB should elaborate in the text on the Particulate Matter ("PM") emission factor for Marine Gas Oil ("MGO") at 0.1% sulfur. The 2007 Initial Statement of Reasons for At-Berth Regulation rulemaking used a value of 0.25 g/kW-hr for 0.1% S MGO. The *Draft 2018/2019 Update to Inventory for Ocean-Going Vessels: Methodology and Results* uses a PM emission factor of 0.18 g/kW-hr for the same fuel. The root source for OGV auxiliary engine emission factors is stated in both cases as the 2002 Entec study, with no description of why two different values of PM emission factors are used for the same fuel.

10. Please add References to the Table of Contents and to the document (Sources of emission factor information are only included at the end of Appendix A).

11. On page 42, should the last sentence read "it excludes emissions from boilers," not "it excludes emissions from auxiliary engines"?

Closing

Port staff look forward to working with CARB to support the updated emissions inventories referred to in the *Draft 2018/2019 Update to Inventory for Ocean-Going Vessels: Methodology and Results* after the workshop on February 26.

Please contact Catherine Mukai, P.E., Port Associate Environmental Planner/Scientist at cmukai@portoakland.com with any follow-up questions.

Sincerely,

Richard Sinkoff
Director of Environmental Programs and Planning

Preliminary Comments on Proposed At-Berth Amendments Cost Analysis, May 29, 2019

May 29, 2019

Bonnie Soriano
California Air Resources Board
1001 I Street
Sacramento, California 95812

Subject: Preliminary Comments on Proposed At-Berth Amendments Cost Analysis

Dear Ms. Soriano:

Thank you for the opportunity to provide preliminary comments on the cost analysis, inputs, and assumptions prepared for the revised regulatory concept for the At-Berth Regulation Amendments. The industry coalition appreciates that California Air Resources Board (CARB) staff has continued to revise the regulatory concepts in response to comments provided, and we look forward to continuing this dialogue with the CARB staff.

However, these comments represent only preliminary questions and reactions. The workshops introducing the cost analysis and revised concepts were scheduled in conflict with MEPC and the TRB Marine Board, so key vessel stakeholders were unable to attend and hear the presentations. And, in any event, two weeks, including a major holiday weekend, between the latest release of data concerning costs and the comment deadline gives stakeholders insufficient time to review and prepare substantive comments. We would request an allowance of additional time for the industry coalition to coordinate, review, and prepare data in response to the analysis provided. **Accordingly, the industry coalition requests that CARB staff continue to accept comments on the revised cost analysis through June 21, 2019.**

Due to the workshop schedules and time constraints, each of the associations of this industry coalition and their members reserve the right to revise and expand the questions and comments contained herein. Some initial comments and questions on the Cost Analysis follow:

Costs for Existing Fleet Are Not Addressed

The proposed rule dramatically re-writes the existing rule for the existing regulated fleet, but the Cost Analysis focuses only on a small number of currently unregulated vessels and an even smaller residual delta of landside costs associated with the currently unregulated fleet alone.

Given the lack of analysis of these costs, it is not possible to assess the scope, scale, and costs of the proposed rule's new operational requirements, duplication of compliance by existing fleets, shoreside

and alternative control technology infrastructure, and the impacts on the cost estimate of other new concepts. What is the CARB staff's justification for only including costs for newly regulated vessels in this cost analysis when the latest revision of the proposed rule imposes costs on all currently regulated vessels?

Checklist – 1-Hour Connect Requirement

While the new time allotted for connecting vessels to shore power is measured from a more reasonable "ready to work" time, one hour is not an adequate time for connections to be made, particularly for vessels that use cable reel management systems that have to be lifted on and off using a crane. We note that the cost analysis has not been updated to assess the cost impact for the proposed change in the connection times. Given the number of fleets that rely on "lift-on/lift-off" strategy, where is the analysis of the added cost of this provision for the existing fleet?

Vessel Shore Power Equipment

Shore power connections are located in proximity to electrical panels, therefore, cruise ships and cargo ships currently in the regulation are **not** typically equipped to connect from both Port and Starboard side. The current practice of assigning berths to accommodate the location of vessel shore power connections is essential for maximizing utilization of shore power. The draft regulatory language could be used to require that a vessel have shore power equipment on both the starboard and port side of a vessel, but most vessels in the current regulated fleet are not equipped with shore power equipment on both sides. Retrofitting ships to connect on both sides would double the cost of new retrofits, create new expenses for vessels in the currently regulated fleets, and be very difficult, since cabling would need to cross plumbing, electrical and communications lines. Why are the added cost of adding new shore power equipment to the existing regulated fleet, which will run into the tens if not hundreds of millions of dollars, not included in the cost assessment?

The cost analysis assumes that only a single barge-based capture and control systems is required for San Pedro Bay. It appears that this assumption was made for service to the currently unregulated fleet, given that there are already occurrences that the existing two systems in San Pedro Bay today are overbooked. In order to be ready for a more stringent regulatory framework which requires redundancy of control in the future, why aren't the costs of the many more new barges which would be needed to meet existing demand from the currently regulated fleet evaluated? Relatedly, why is there a cost associated with only one alternative control system predicted for LA/LB but none in other ports?

Thresholds for Regulating New Vessels

While the cost estimates include costs for controlling emissions from new classes of vessels, the estimates provide no information on CARB's threshold, on a cost per ton of emissions reduced basis, for including Ro-Ro and tanker vessels and excluding general cargo vessels from the expanded rules.

Ignores Costs Associated with the Dynamic Nature of Shipping

In addition, the analysis does not appear to account for disruptions that regularly occur in international trade (for various reasons) that would result in ships not normally serving California, and therefore not

retrofitted for shore power, arriving in California ports. At the end of the last year, San Pedro Bay had 34 "extra loaders", previously unscheduled vessel calls. What cost analysis is associated with having the necessary number of emission controls systems that would need to be evaluated for these circumstances? The fact that the cause was a one-off event should not discount the need for additional control systems as required by the proposal. While the causes of extra loaders being deployed are typically one-off, the result of extra loaders responding to such events is a regular occurrence. As a result, how are these costs anticipated and accounted for?

Costs of Alternative Controls Underestimated

Not even accounting for dynamic events in shipping like "extra loaders", the most recent analysis by the ports of Long Beach and Los Angeles in their letter to CARB on May 20, 2019, estimate that the San Pedro Bay alone would need 26 barge-based capture and control systems to meet the level of control required by the proposal, which at that time considered 5% TIE allowance. How does CARB account for the difference between its conclusion and that of the ports of Long Beach and Los Angeles?

In addition to concerns regarding the number for alternative control systems, the cost per control system is underestimated. The cost analysis has a capital cost for a barge-based system at less than $5,000,000. However, the most recent example of funding for similar equipment is the Bay Area Air Quality Management District award of funding for a barge-based system at a cost of $8.8 million[1]. This is consistent with previous funding efforts in the past. Each system is a unique build and there are no economies of scale that can be expected. The CARB analysis relies on "[c]laimed confidential data obtained from industry sources that requested non-attribution". However, there is public data available based on public funding for existing systems. Why does CARB rely on confidential data when publicly available data can be obtained?

The costs of barge-based alternative control technologies do not appear to account that under the CARB staff proposal additional barges would be necessary to meet peak demand, but that more alternative systems would result in lower utilization rates. Lower utilization rates can only be accounted for with a higher hourly rate. The ports of Long Beach and Los Angeles provide a discussion of this effect in their May 20, 2019 letter. Why does the analysis not appear to account for system utilization impacting hourly costs of barge-based systems?

Demand Charges Do Not Appear to Be Accounted

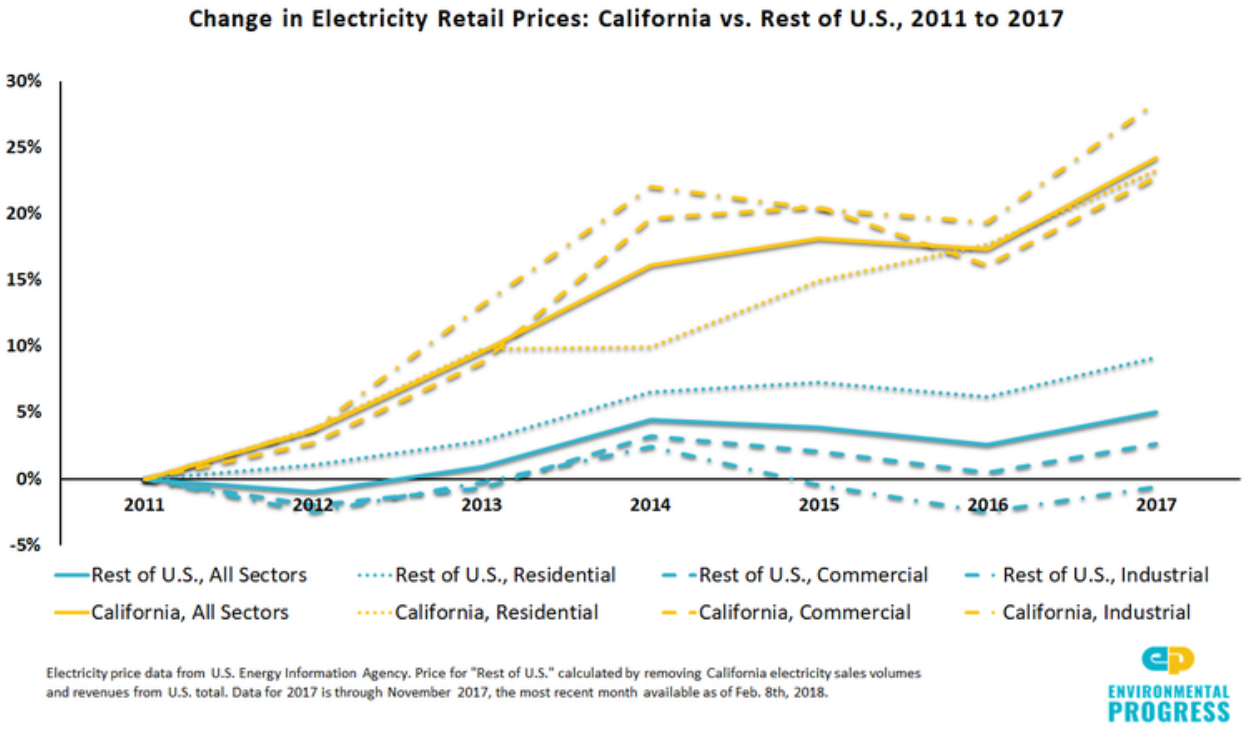
The cost analysis does not appear to account for electricity demand charges and only accounts for the average delivered cost of electricity. Shore power results in spikes in electricity demand. Utilities charge for that uneven electrical demand through a cost commonly termed a "demand charge." Given the high demand of shore power compared to a facility's base electrical demand, demand charges can impact the cost of electricity delivered during times when shore power is not in use. This will result in an overall increase in the cost of electricity. This happens only because of the need for shore power and demand charges should be reflected in the cost impact of the proposed regulation. This impact will be

[1] http://www.baaqmd.gov/~/media/files/strategic-incentives/goods-movement-docs/other-equipment/g14gmbs1_ships-at-berth_rankedlist_gmerp-draft-pdf.pdf?la=en

most pronounced at marine terminals that have generally low electricity needs like auto terminals. Also, added facilities charges, assessed by a utility when electrical infrastructure is added, also does not appear to be included in the cost assessment. What accounting exists in the cost analysis for electricity demand charges?

Wrongly Assume Electricity Costs Will Not Increase

The cost analysis appears to assume that California electricity rates will remain flat through 2032. That analysis ignores that California has some of the fastest accelerating electricity rates in the nation. In fact, for the period 2011-2017 California industrial electricity rates increased nearly 30% (see chart below). Since then, the California Legislature has imposed additional requirements for California's renewable portfolio that will by most accounts ensure an increase in costs. Is there a basis for the assumption that electricity rates will not increase for a decade?



Labor Costs

The cost analysis makes the following statement for land-based capture and control systems, "[C] According to Tri-Mer statements at 4/16/19 CARB meeting, no additional labor would be required to run capture-and-control system". This statement is problematic for multiple reasons. First, Tri-Mer does not employ labor on marine terminals and has no knowledge of the requirements of negotiated labor contracts. Second, CARB staff is fully aware that the level of manning of similar demonstration equipment as part of the Pasha Omni-Terminal Demonstration is the subject of discussions with the labor union. Third, CARB staff is also fully aware that labor considerations are part of the deployment sensitivities and limitations on other compliance methodologies, including certain cable-reel systems.

Lastly, it is just simply unrealistic that there would be no labor costs associated with any component to any application of any equipment on the waterfront no matter what. Given that there is no clear reason why there would be no added labor costs for such equipment, which metrics for labor costs will be included?

Maintenance Costs

Concern has been raised that all the costs submitted as part of CARB staff's surveys are not fully reflected in the assumptions document. For instance, Maintenance costs for shore power maintenance infrastructure show an average cost of $24,285 with a range of $4,000 to $44,571. However, it is understood that maintenance cost data has been submitted to CARB that exceeds the stated range in the assumptions document. How can stakeholders be confident that their data was incorporated into the analysis?

Planning Costs

Planning costs of appear to be underestimated. The proposed regulation requires significant changes for both the existing regulated and unregulated fleets. Even prior to conducting design planning, ocean carriers, terminal operators, and ports will have to do detailed preliminary planning to determine the most effective compliance mechanisms. Those decisions will be necessary to support planning submittals to CARB. Why has CARB accounted for $10,000 per plan or less when prior experience indicates that coordinated pre-planning between ports and terminals can costs millions?

Cost Analysis Uses Confusing Cost-effectiveness Criteria

The ISOR for the current regulation estimated cost-effectiveness values by attributing roughly half of the rules benefits to NOx emissions reductions and half to PM emissions reductions. In that ISOR, it was concluded that the "cost-effectiveness values using that method are $6,400 per ton of NOx reduced and $345,000 per ton of PM reduced." The preliminary estimates of the cots-effectiveness for this rule are weighted and considered together rather than segregated and evaluated. These conclusions are apples and oranges between the current rule and the proposed rule and don't allow for an evaluation of the costs of controls for achieving completely separate emissions goals. For instance, if this is a DPM control rule, versus a NOx control rule, or a GHG control rule, the relative cost-effectiveness of this versus pursuing other types of regulatory efforts is impossible to manage using a weighted cost-effectiveness factor. Moreover, it predicts fantastically large and unrealistic expectations for DPM emissions reductions, given that the weighting in the Moyer process is NO_x based at 20x $PM_{2.5}$. Will CARB evaluate NOx, PM and GHG emissions cost-effectiveness separately and provide a true benchmark against the cost-effectiveness of the current rules?

Ports of Los Angeles and Long Beach Analysis

During the May workshop, CARB staff revealed that the detailed analysis prepared by the ports of Long Beach and Los Angeles submitted in their letter dated February 6, 2019, was discounted in favor of conversations with terminal operators. The ports of Long Beach and Los Angeles and other port authorities throughout the State were responsible for installing existing shore power infrastructure and are well-placed to understand the needs and limitations of existing infrastructure. It is also understood

based on comments from the workshop that responses provided from the terminal operators were anecdotal and provided without the benefit of the most recent regulatory concept language. What aspects of the LA/LB analysis did CARB discount in developing its cost analysis?

Growth Overestimated

The cost and cost-effectiveness analysis rely on overly optimistic growth trends. This overestimated growth increases future emissions and reductions making the proposed concept appear more cost-effective than it is. In addition, growth in vessels does not match growth in cargo volumes. As vessels grow larger, more cargo can be handled without increasing the number of vessel calls. In fact, the number of vessel calls has declined over time due to this phenomenon. Why doesn't the analysis provide a more realistic lower bound to growth and properly reflect declining vessel calls?

Opportunity Cost of the Novel Regulatory Structure

The concept of a VIE is a new concept. Based on comments by CARB staff at the May workshops, VIEs would be granted to fleets based on the number of calls to a California port in the prior year. CARB staff confirmed that fleets not previously calling California ports would be ineligible to receive VIEs. This would appear to block new entrants from serving California ports by making them uncompetitive to fleets that have access to VIEs, particularly for vessels that may not have access to alternative controls like cruise ships. How has CARB assessed these opportunity costs to California marine terminals, ports, and the California economy due to this novel regulatory structure?

Sincerely,

California Association of Port Authorities
Cruise Lines International Association
Pacific Merchant Shipping Association
Western States Petroleum Association
World Shipping Council

Port of Los Angeles and Port of Long Beach Comments on February 22-23 Workshops for the “Control Measure for Ocean Going Vessels Operating At Berth and At Anchor”, May 20, 2019

SAN PEDRO BAY PORTS

CLEAN AIR ACTION PLAN

May 20, 2019

Bonnie Soriano
Chief, Freight Activity Branch
California Air Resources Board
1001 "I" Street
Sacramento, CA 95814

SUBJECT: PORT OF LOS ANGELES AND PORT OF LONG BEACH COMMENTS ON FEBRUARY 22-23 2019 WORKSHOPS FOR THE "CONTROL MEASURE FOR OCEAN-GOING VESSELS OPERATING AT BERTH AND AT ANCHOR"

Dear Ms. Soriano:

The Port of Long Beach and Port of Los Angeles (Ports) appreciate this opportunity to provide comments on the concepts and berth analyses presented at the California Air Resources Board (CARB) February 22-23, 2019 workshops regarding the, "Control Measure for Ocean-Going Vessels Operating At Berth and At Anchor".

We want to thank CARB for continuing to work with the Ports and our tenants during this regulatory process to obtain the best available data and to craft a regulation which achieves significant public health benefits.

The purpose of this comment letter is to respond to the Regulatory Concepts and Berth Analyses provided at the February workshops. In the appendices, CARB will find specific information and data relative to each Port.

The following summarizes the Ports'comments regarding the regulatory concepts presented at the February 2019 workshops:

- **We agree that 100% compliance cannot be met by vessels in any category**– We want to thank CARB staff for adjusting the concepts to reflect the impossible goal of 100% compliance. It remains unclear whether or not terminals and vessel operators can meet the new minimum of 95% compliance. We urge CARB to produce a feasibility assessment to better inform this regulation, described below.

- **The Proposed Implementation Timelines are Still Too Aggressive –** In the updated concepts, container terminals are still required to control ship emissions for every visit, with 5% flexibility for Terminal Incident Events (TIEs), by 2021. This timeline is unreasonable based on lack of infrastructure needed to support such a high level of plug-in so quickly. In addition, there is considerable doubt regarding the ability of terminal operators, and/or third party vendors to develop and deploy a sufficient number of alternative emission control devices on a stringent time line of one year.

- **A Technology Feasibility Assessment Process Is Needed** – The Ports still urge CARB to develop a technology feasibility assessment, which would look at the state of technology development and its readiness to be deployed in the marketplace to support efforts to achieve public health benefits. Through conversations with stakeholders, it is clear there are challenges associated with the technologies upon which this regulation depends that may be too costly, technologically and operationally infeasible in some cases, or unsafe to use. For example, the Los Angeles/Long Beach Harbor Safety Committee has many substantial concerns regarding the use of barge-based emission capture systems for tankers.

  This feasibility assessment should include an evaluation of: (i) state of technology for both shore power and alternative emission control devices and deployment readiness (ii) the requisite timeline for design, build, testing, and deployment of shore power and alternative control technologies for each California port to achieve at minimum 95% compliance, and identification of any associated constraints such as wharf space (iii) safety and navigation of harbor waters space due to applications of new technologies for unregulated vessel types (iv) number and types of alternative control technologies, which would be needed at each California port (v) and the cost of the various types of technologies and availability of incentives to encourage early demonstration of such technologies.

As stated in our previous letter, in order to accelerate the development and deployment of shore power and alternative control options, including infrastructure, for non-container terminals and vessels, the Ports would like to see CARB prioritize funding as they did for the currently regulated fleet through Proposition 1B in 2006. CARB has not prioritized funding for shore power in their latest Cap-and-Trade Auction Proceeds Third Investment Plan, posted in January 2019. We urge CARB to work cross-divisionally on finding opportunities to invest in the nascent technology required for tankers and RoRos.

- **The Berth-Level Analyses report too few ship calls, and do not accurately reflect the infrastructure needed at each port–** CARB provided berth—level analyses of the infrastructure which will be required for each terminal to meet the new proposed concepts at the February 2019 workshops. These analyses are founded upon Google Maps research, interviews with port tenants, and discussion with piloting companies. The analysis is not based on any engineering assessment of what it would take to expand shore power or to accommodate alternative capture and control technologies. Unfortunately, none of the analysis provided by POLB related to container terminal infrastructure was included in this berth-level analysis either. Subsequently to the February workshops, the POLB has updated and refined its estimate. The analysis utilizes costs from previous shore power projects, states the design requirements a terminal would need to maximize plug-in while ships are at-berth, and uses these metrics to quantify the anticipated costs to maximize connection at POLB container terminals. In this letter, POLB has provided more granular detail around the basis of the cost estimates, photographs which demarcate the existing shore power infrastructure, and improved vessel call data from the 2017 Wharfinger Report in Appendix B. In the Ports' previous letter to CARB POLA engineering staff had agreed with the POLB engineering analysis. Subsequently, POLA developed their own assessment of the infrastructure they will need, the associated cost and timeline, and additional edits to the CARB Berth-Level Analyses, which are included in Appendix A. In summary, the POLB and POLA estimates approximately $106 million and $147-$193 million respectively for additional electrical infrastructure. These estimates are rough orders of magnitude, with many exclusions and limitations, so the actual cost could be much higher. We are hopeful CARB will utilize this information, particularly in a feasibility assessment, as it is the most informed reflection of the current infrastructure at the POLA/POLB terminals today. The feasibility assessment should go into greater depth than the calculations provided herein.

CARB's Berth-Level Analyses as written today are not founded upon the requisite design and engineering expertise, and should therefore, not be used today to quantify the costs of

the newly proposed concepts. These costs can be more adequately captured through the process of a feasibility assessment.

- **Compliance may hinder CAAP efforts** – Lastly, the Ports are still concerned the cost of these proposed concepts will hinder the ability to meet their goals under the 2017 CAAP Update given the significant upfront costs of an At-Berth Infrastructure Program. In addition, the staff who are currently designing the near-zero and zero-emission terminal infrastructure for technology demonstration projects, and future full-scale deployments are the same staff members who would be responsible for designing the infrastructure to support the new At-Berth Regulation. This underscores the need for prioritizing programs and funding, as described in the Feasibility Assessment bullet above, in order to determine how to most effectively allocate our resources to participate in the development of your regulatory program.

The Ports thank CARB staff for hosting additional workshops, engaging with us directly, and their consideration of the comments contained in this letter as well as in the attached appendices.

We look forward to meeting with the CARB in the future to further discuss the proposed amendments to the At-Berth Regulation. Please feel free contact us with any questions or concerns regarding this letter.

Sincerely,

CHRISTOPHER CANNON
Director of Environmental Management

Port of Los Angeles

MATTHEW ARMS
Acting Director of Environmental Affairs and Planning
Port of Long Beach

Attachments: Appendix A, Appendix B

CC: CARB – Cynthia Marvin (Cynthia.Marvin@arb.ca.gov)
Angela Csondes (Angela.Csondes@arb.ca.gov)
Nicole Light (Nicole.Light@arb.ca.gov)
Kaylin Huang (Kaylin.Huang@arb.ca.gov)

THE PORT
OF LOS ANGELES

425 S. Palos Verdes Street Post Office Box 151 San Pedro, CA 90733-0151 TEL/TDD 310 SEA-PORT www.portoflosangeles.org

APPENDIX A

Port of Los Angeles
Response to CARB At Berth Regulation Berth Analysis Matrices

The Port of Los Angeles (POLA or Port) appreciates this opportunity to provide more detailed comments on the California Air Resources Board (CARB) Berth Analysis Matrices presented on February 22, 2019. Below are our comments on the various "CARB Staff Analysis of Potential Emission Reduction Strategies" for POLA.

Container and Refrigerated Cargo (Reefer) Vessels

POLA would like to reiterate that the timeline for container terminals is still too aggressive. The specific reasons why the deadline to meet 2021 is listed below.
The container shipping industry is going through tremendous changes including the consolidation of shipping lines and the emergence of new alliances, resulting in larger ships calling to POLA. The shore power vaults at the Port were designed for the average vessel size calling to POLA in the early 2000's, which were 10,000 to 12,000 TEU vessels. The vessels calling to POLA now are closer to 14,000 to 16,000 TEU. From our latest 2017 POLA Emissions Inventory, NOx emissions reduced from ocean-going vessels from 3,204 tons per year in 2016 to 3,061 tons per year, which is a 4% reduction in NOx. The number of TEUS increased by 5% from 2016 to 2017 (8,856,783 TEU vs. 9,343,193 TEU), but the number of container ship calls decreased by 8% from 2016 to 2017 (1,251 vs. 1,154). Our EI reports have shown that these larger container vessels have improved efficiency and helped to reduce emissions at POLA.

Unfortunately, the larger ships calling a terminal can limit the berth availability of shore power especially when multiple ships call the same terminal as the shore power cables are not lining up with the vault containing the shore power outlet. Cable management extension systems (cable reels) allow a vessel to plug into shore power without having the vessel's cables to be directly aligned to the vault. The cable reels currently available for purchase are 8 feet wide and the wharfs at five out of our seven container terminals only have 4-5 feet of space.

Fenix Marine Services and APM Terminals have a "vendor lane" which runs between the ship to shore cranes and the edge of the wharf, providing the necessary clearance to place a cable reel. At the moment, a narrower cable reel system is being designed for use on terminals without a vendor lane. However, there is currently no prototype and the system will require structural modifications to the wharf, the extent of which are unknown at this time. The cost for this narrower system is also unknown at this time. The current

cable reel system is estimated to cost $550,000. If a narrower system cannot be designed, then the wharfs will need to be extended.

Extending wharfs creates a host of issues. The Army Core of Engineers will not allow the wharfs at POLA to be extended any further into the water, as there would not be enough space to navigate the vessels in the water. This means that the wharfs have to be extend on the landside. The cranes and the cranes' rail management would need to be pushed back. Moving all the cranes back requires the crane arms to be extended in order to reach a vessel's cargo. Assuming funding is procured for the construction at a terminal, it would take at least 18 months to design the construction, 18-24 months for environmental assessment, 6 months to go to bid, and then 18 months to build. The total estimated time per a project would be 60 to 66 months or 5 to 5.5 years on average, but it may take longer as each terminal is unique. The estimated cost to extend one container berth could be between $35-40 million. In addition to all the construction, the terminal would not be able use of their berth during the construction. The terminal would be operating at a decreased capacity and would be losing revenue during the construction and diverting cargo to other ports outside of California.

The Port preliminary responsibilities as indicated by CARB is to "*install and maintain any necessary emissions control infrastructure and/or equipment needed for compliance with the regulation that is outside of a terminal's contractual ability to provide.*" In order to meet our responsibility outlined by CARB, POLA engineering staff has estimated that a vault would be needed every 200 feet apart per a berth with at least one 100-foot mobile cable reel at every berth. This is the same assessment as Port of Long Beach engineers had determined in the Ports' first joint letter to CARB. This would be a total of six vaults per a berth. The cost per a new vault is estimated to be $500,000. The cost to provide the necessary power to the terminals is approximately $2.5 million ($2 million for electrical equipment and $500,000 for installation). For purposes of POLA engineering assessment the cost of the cable reel system is estimated at $550,000 based on the currently available system. The cost for a narrower system for five of our terminals could be higher as the actual cost is unknown at this time.

Table 1 summarizes POLA engineering staff evaluation of just electrical infrastructure and costs for POLA to meet the Port's obligation under the current draft language for existing container terminal berths.

Table 1: POLA Container Terminal Electrical Infrastructure Evaluation

Tenant	Berth	# Existing Vaults	# New Vaults Needed	Total Cost of New Vaults	Cost of Equipment	Cost of Cable Reel	Total Overall Cost
WBCT - China Shipping	100	4	2	$1,000,000	$2,500,000	$550,000	$4,050,000
	102	4	2	$1,000,000	$2,500,000	$550,000	$4,050,000
WBCT – Yang Ming	121	2	4	$2,000,000	$2,500,000	$550,000	$5,050,000
	126	2	4	$2,000,000	$2,500,000	$550,000	$5,050,000
TraPac	136	2	4	$2,000,000	$2,500,000	$550,000	$5,050,000
	139	2	4	$2,000,000	$2,500,000	$550,000	$5,050,000
Yusen Terminals Inc.	212	2	4	$2,000,000	$2,500,000	$550,000	$5,050,000
	216	4	2	$1,000,000	$2,500,000	$550,000	$4,050,000
	220	4	2	$1,000,000	$2,500,000	$550,000	$4,050,000
Everport[1]	228	4	2	$1,000,000	$2,500,000	$550,000	$4,050,000
	230	4	2	$1,000,000	$2,500,000	$550,000	$4,050,000
Fenix Marine Services	302	4	2	$1,000,000	$2,500,000	$550,000	$4,050,000
	303	4	2	$1,000,000	$2,500,000	$550,000	$4,050,000
	304	4	2	$1,000,000	$2,500,000	$550,000	$4,050,000
	305	3	3	$1,500,000	$2,500,000	$550,000	$4,550,000
APM Terminals	401	4	2	$1,000,000	$2,500,000	$550,000	$4,050,000
	402	4	2	$1,000,000	$2,500,000	$550,000	$4,050,000
	403	4	2	$1,000,000	$2,500,000	$550,000	$4,050,000
	404	4	2	$1,000,000	$2,500,000	$550,000	$4,050,000
	405	4	2	$1,000,000	$2,500,000	$550,000	$4,050,000
						Subtotal =	$95,600,000
						20% Contingency =	$19,120,000
						Subtotal =	$14,720,000
						28% Soft Cost (Engineering & Construction) =	$32,121,600
						Total Cost =	**$146,841,600**

[1] As of 2019 there are only two vaults each at Berths 228 & 230. Two additional vaults at each berth have already being designed and construction is scheduled to begin within the next 18 months. This cost assessment only added two more vaults to Berths 228 & 230 in order to meet the Port's obligations estimated to be six vaults per a berth.

Table 2 summarizes POLA engineering staff evaluation of just electrical infrastructure and costs for POLA to meet the Port's obligation under the current draft language for berths that may be used as container terminals in the future.

Table 2: Future POLA Container Terminal Electrical Infrastructure Evaluation

Tenant	Berth	# Existing Vaults	# New Vaults Needed	Total Cost of New Vaults	Cost of Equipment	Cost of Cable Reel	Total Overall Cost
Fenix Marine Services	306	0	6	$3,000,000	$6,000,000	$550,000	$9,550,000
Unknown	206	0	6	$3,000,000	$7,000,000	$550,000	$10,550,000
Pasha	174	0	6	$3,000,000	$7,000,000	$550,000	$10,550,000
						Subtotal =	$30,650,000
						20% Contingency =	$6,130,000
						Subtotal =	$36,780,000
						28% Soft Cost (Engineering & Construction) =	$10,298,400
						Total Cost =	**$47,078,400**

Grand Total = **$193,920,000** for only electrical infrastructure costs.

As shown, the estimated cost for the Port to meet our obligations for our container terminals would be $147-$193 million. Similar to wharf extensions, the estimated time from start to finish for installing this infrastructure would be approximately 5-5.5 years per a project. Even if the Port could procure this funding and start working on providing electrical infrastructure at all our terminals instantly, the soonest that this undertaking would be completed is 2024-2025, well beyond CARB's proposed deadline of 2021. POLA does not have the resources to undertake that many projects at the same time, so some terminals' electrical infrastructure would not be completed before 2025.

Landside shore power electrical infrastructure life cycle appears to be 15-20 years with required updates, annual maintenance, and frequent cleaning of the equipment during this period. Currently Port staff costs are about $500,000 a year for maintenance and about $125,000 a year for recordkeeping for a total annual cost of approximately $625,000. This cost is so far for the currently regulated fleet of container, reefers, and cruise vessels. With the increased infrastructure, the staff cost for maintenance would increase to approximately $866,000 and recordkeeping would be around $135,000 for an estimated total staff cost of over $1 million.

Shipside infrastructure appears to have a much lower life cycle. Conversations with various shipping lines have found that the shipside electrical infrastructure life cycle is about five years with equipment needing to be fully replaced in the fifth year. The cost to install shore power onto container and reefer vessels is estimated to be $750,000 to $1 million. This five-year cost for shipping lines may cause them to see the alternative at berth emissions control technology as a more attractive option than having to invest close to $1 million every five years for shore power. This would be counterproductive to the regulation as shore power has been shown to have higher emissions reduction rate than use of the alternative emission control systems.

As for alternative emission control systems, there are currently only two certified barge based systems operating at both POLA and Port of Long Beach for container vessels. A land-based system is still being demonstrated at this time. There is serious doubt that more of these systems can be developed and deployed by 2021. The two San Pedro Bay Ports had solicited proposals for alternative emission control systems for ocean going vessels in 2018 as part of our Technology Advancement Program. In January 2019, the two Ports did not award any of the proposals as none met the requirements fo the solicitation satisfactorily. This highlights the need for a CARB feasibility assessment on these technologies and their use at each California port.

Passenger Vessels

POLA has on average about 110 cruise vessels call to our World Cruise Center on an annual basis. The assessment CARB has for passenger vessels is lower than our average number. POLA asks that CARB adjust the assessment with our annual average number of cruise vessels.

As cruise vessels increase in size, the amount of power drawn by these larger cruise vessels increase as well. The World Cruise Center underwent electrical upgrade construction to allow cruise vessels to draw 6.6 KV and 11 KV of power when at berth from June 2017 to April 2018. This upgrade took about three years to complete from initial planning to completion of the construction. Cruise vessels could not plug into both berths during the construction period. No new vaults were added to the berths for this upgrade. The cost of the upgrade was about $11 million. Table 3 lists the number of vaults currently at the World Cruise Center.

Table 3: POLA World Cruise Center Electrical Infrastructure

World Cruise Center (Berths 90-93)	# of Vaults	Power Provided
Berth 92	2	11 kV (2)
Berth 93A	4	6.6 kV (2); 11 kV (2)

After the electrical upgrade, the Port has seen an increase in the use of shore power by cruise vessels that call to our World Cruise Center. POLA Engineers have determined that Berth 92 would need an additional two vaults and a cable reel system to ensure the Port meets our infrastructure obligations per the current draft regulation. The cable reel for the cruise vessel is estimated to cost more than one for containers, as it will need to be able to operate at both 6.6 kV and 11 kV. Table 4 is an estimate of the cost for the added electrical infrastructure at Berth 92.

Table 4: Estimated Additional Infrastructure Cost at Berth 92

Berth	# of Existing Vaults	# New Vaults Needed	Total Cost of New Vaults	Cost of Equipment	Cost of Cable Reel	Total Overall Cost
92	2	2	$1,400,000	$5,000,000	$1,000,000	$7,400,000
					20% Contingency =	$1,480,000
					Subtotal =	$8,880,000
					28% Soft Cost (Engineering & Construction) =	$2,486,400
					Total Cost =	**$11,366,400**

The cost to install shore power onto a cruise vessel is estimated to be between $1 to $1.5 million. The cost of maintaining and recordkeeping for Port staff was included in the container/reefer section above. Construction for this project would probably take between 3-5 years.

Auto/Ro-Ro Vessels

POLA only has one automotive terminal, Wllenius Wilhelmsen Solutions (WWS) Vehicle Services America (Berths 195-199). Automotive carriers/Ro-Ros mainly call to berths 197-199. Table 5 shows vessel activity at WWS for the last 3 years.

Table 5: Vessel Activity at WWS 2016-2018

Berth #	# Auto & Ro-Ro Calls 2016	# Auto & Ro-Ro Calls 2017	# Auto & Ro-Ro Calls 2018
195	0	0	0
196	0	0	0
197	4	4	0
198	80	101	71
199	20	17	2
Total =	104	122	73

As shown by Table 5, the number of calls to WWS vary year by year. There is no real set average as the number of vessels is dependent on the market demand for automotive vehicles. Very few of the vessels calling are what CARB would define as "frequent" visitors (calling to the terminal four or more times in a calendar year) from year to year. A vessel may be in the string for a couple years, and then pulled from rotation if there is not enough demand or it is sent to a different string. For example, the "Pearl Ace" had five calls to WWS in 2016, one call in 2017, and no calls in 2018. Another example is the "Viking Sea." The "Viking Sea" had called WWS six times in 2016, three calls in 2017, and no calls in 2018.

Due to the infrequency of the automotive and Ro-Ro vessels to the Port, it is unlikely that the automotive shipping lines will invest the time and money to install shore power onboard their vessels. However, POLA engineers have calculated the cost of installing the necessary infrastructure for shore power at WWS if our tenant and the shipping lines it serves decides to use shore power, see Table 6. POLA assumes only one berth would require electrical infrastructure installed. Estimated time of completion is again approximately five years. The cost of these vaults are estimated to be slightly less at $400,000 per a vault due to the lower power needs of these types of vessels.

Table 6: POLA Engineering Electrical Infrastructure Costs at WWS

Terminal	# New Vaults Needed	Total Cost of New Vaults	Cost of Equipment	Cost of Cable Reel	Total Overall Cost
WWS (Berths 195-199)	4	$1,600,000	$9,000,000	$500,000	$11,100,000
				20% Contingency =	$2,220,000
				Subtotal =	$13,320,000
				28% Soft Cost (Engineering & Construction) =	$3,729,600
				Total Cost =	**$17,049,600**

This leaves the use of an alternative emissions capture and control system. Currently there is no certified alternative emissions capture and control system for automotive or

Ro-Ro vessels. As stated in the joint cover letter, POLA believes a feasibility study of this technology's utilization, including potential increased greenhouse gas emissions generated by this technology, is needed.

Port Engineers have determined the berths at WWS would likely be structurally sound enough to hold the weight of a land-based control system. In addition, there is likely enough room on the dock for a land-based control system. This is solely based on the currently demonstrating land-based control system at our Pasha terminal. As there is currently no certified system for use on automotive/Ro-Ro vessels, this assessment may change in the future if a land-based system is significantly different from the current land-based system being tested on Pasha's container steamships. The current cost to build the land-based system at Pasha is approximately $5 million. This does not include any labor or maintenance costs. These costs are hard to determine at this time, as there are still negotiations on the type of labor that will be used to operate and maintain the equipment.

POLA Port Pilots have determined it would be best to avoid a barge-based system for vessels that call to WWS. Ro-Ro vessels fuel when calling to WWS via a bunker barge. For safety reasons, the current barge-based system cannot be connected to a container vessel when the container vessel is fueling or bunkering. Similar safety concerns would prevent barge-based systems to connect to an automotive/Ro-Ro vessel when the vessel is fueling or bunkering. Automotive/Ro-Ro vessels are at WWS for less than 24 hours. A disconnected barge system may not have enough time to reconnect to the vessel before it is ready for departure.

On rare occasions, there are two vessels dock at WWS at the same time. When that happens, Port Pilots sometimes are required to sail a vessel around the one forward of the departing vessel. The Port Pilots require the offshore side of the forward vessel to be clear of any obstructions. A barge-based system connected to the forward vessel would have to be disconnected and moved in order for the Port Pilots to move the other vessel. Again, there may not be enough time for a disconnected barge system to reconnect to the vessel prior to its departure.

Tanker Vessels

The CARB Tanker Berth Analysis listed six liquid bulk terminals. POLA currently has seven liquid bulk terminals. Kinder Morgan is expected to leave Berths 118-119 by 2024. Table 7 is a list of POLA liquid bulk terminals with vessel calls for the last three years.

Table 7: Vessel Activity at POLA Liquid Bulk Terminals 2016-2018

Terminal	Berths	# Tanker Calls 2016	# Tanker Calls 2017	# Tanker Calls 2018
Kinder Morgan	Berths 118-119	38	34	37
NuStar Energy LP	Berth 163	4	6	13
PBF Energy	Berths 238-240C	30	46	33
Phillips 66	Berths 148-151	30	49	41
Shell Oil Products	Berths 167-169	45	60	34
Valero	Berths 164	28	40	27
Vopak Terminals	Berths 187-190	111	118	111

Wharfs for tanker terminals are currently being redesigned to meet California State Lands Commission requirements, Marine Oil Terminal Engineering and Maintenance Standards (MOTEMS). The new terminal design will be a pier that goes out into the water. The platform at the end of the pier will be only large enough to hold the necessary equipment for pumping tanker product in/out of the tanker. The tanker will be moored by tying up at nearby dolphin moors. POLA has already provided an example engineering drawing of the new terminal design in prior communications with CARB. There would not be any space to place shore power or a land based alternative system on these new piers.

Below is a list of future plans for the marine oil terminals at POLA.

- Berth 118-119 – Kinder Morgan Terminal – Berths are scheduled for demolition in the next few years.

- Berths 148-149 – Phillips 66 Terminal – This berth will cease operations as a marine oil terminal when the new berth at 150-151 is completed

- Berths 150-151 – Phillips 66 Terminal – This berth will be demolished and reconstructed as a typical modern marine oil terminal, with a minimal unloading platform and independent mooring and berthing dolphins connected by catwalks. A land-based emissions capture system will not be feasible. A barge-mounted emissions capture system could be used, but may be difficult due to the terminal's location on one of the main turning basins for the Port. The tenant will be required to conduct a feasibility study for a barge-based system as a condition of their environmental document, which is currently underway.

- Berth 163 – Nustar Terminal – This berth will be demolished and reconstructed as a typical modern marine oil terminal, with a minimal unloading platform and independent mooring and berthing dolphins connected by catwalks. A land-based emissions capture system will not be feasible. A barge-mounted emissions capture system could be used, and would be largely free of impacts from large passing vessels. The tenant will be required to conduct a feasibility study for a

barge-based system as a condition of their environmental document, which is currently underway.

- Berth 164 – Valero Terminal – This berth will be demolished and reconstructed as a typical modern marine oil terminal, with a minimal unloading platform and independent mooring and berthing dolphins connected by catwalks. A land-based emissions capture system will not be feasible. A barge-mounted emissions capture system could be used, but would be impacted by the narrow channel and vessels entering and exiting Berth 163. The tenant will be required to conduct a feasibility study for a barge-based system as a condition of their environmental document, which is currently underway.

- Berths 167-169 – Shell Terminal – This berth will be demolished and reconstructed as a typical modern marine oil terminal, with a minimal unloading platform and independent mooring and berthing dolphins connected by catwalks the tenant is required to conduct a feasibility study for a barge-based system as a condition of their environmental document, which is complete.

  As was stated in our email to CARB dated on March 8, 2019, our Port Pilots had determined that if the barge-based system is employed at Shell Berth 167 for a panamax size vessel (228M x 32M) or larger and there is a bulk vessel at Berths 154-155, access to the northern berths in the slip (Berths 165, 164, 163, & 161) will be restricted. Tugs and barges may be able to get by; however, if a barge-based system is also placed alongside a vessel at Berths 154-155 or the tanker at Berths 167-169 then access to the northern berths may not be adequate for a ship to pass.

  This would be a hindrance to three of our tenants' terminal operations past Shell: US Borax (Berth 165) that does dry bulk, Valero (Berth 164) that does tanker operations, and Nustar (Berth 163) that does tanker operations. This gives other terminals that would not be effected by this restriction an economic competitive edge over these terminals. In addition, our Construction and Maintenance (C&M) division is located at Berth 161. C&M does maintenance of the docks and wharfs for the Port and could be hindered as well. Our C&M division needs to have unrestricted access to enter and leave Berth 161 to conduct any emergency repairs that may arise at any time at the Port.

- Berths 187-189 – Vopak Terminal – This terminal consists of a full width, full length wharf that will be upgraded to comply with MOTEMS standards instead of being reconstructed. The tenant has chosen this option, and will be performing the design and construction themselves, in order to minimize impacts to ongoing operations. However, the existing timber wharf has deteriorated vertical load carrying capacity, which will not be fully restored by the planned upgrade. Upgrading the capacity of the wharf to HS-20 (highway) capacity would cost approximately $8.8 million. This cost estimate is based on the restoration of a very

similar wharf at Berths 196-199 that was completed in 2018. The project cost for this wharf, including contingency, was approximately $5,300 per lineal feet. The wharf at Berths 187-189 is approximately 1660 lineal feet. The tenant is required to conduct a feasibility study for a capture and control system as a condition of their environmental document, which has not yet commenced.

POLA Port Pilots have determined that if a barge based system is placed alongside a panamax or larger size tanker at Vopak Berth 189 it will restrict ship access to Berth 187 for the duration of the vessel's stay alongside Berth 189. Tug and barge traffic will be able to continue; however, there will not be enough room in the slip (Slip #5) for a ship of any size to access Berth 187. This would limit Vopak's operational capability and lower its economic competitiveness with other tanker terminals.

- Berths 238-239 – PBF Terminal – This berth will be demolished and reconstructed as a typical modern marine oil terminal, with a minimal unloading platform and independent mooring and berthing dolphins connected by catwalks. A barge-mounted emissions capture system is feasible, as the terminal is on the wide Main Channel of the Port. The tenant is required to conduct a feasibility study for a barge-based system as a condition of their environmental document, which is complete.

We again stress the need for a CARB technology feasibility assessment on the state of alternative emission control technology. POLA is requiring our marine oil terminals to conduct feasibility studies on the use of alternative emission control systems. However, these feasibility studies will be terminal specific and could not be used by other terminals to determine the feasibility of the technology for their purposes.

An email from CARB staff dated March 28, 2019 requested information on the cost estimate and duration for routing the tanker vessel auxiliary engine and boiler emissions to a land based emissions control system. This question should be asked to the tanker ship manufacturers and the alternative emissions control system companies. The Port does not have expertise in this field. We are unable to provide a cost estimate, but we can provide CARB with general information about what this project could entail.

Many of the tanker vessels that call to POLA would not be defined by CARB as a "frequent" visitor (calling to the terminal four or more times in a calendar year). Due to this infrequency, it is unlikely that shipping lines with tankers would spend the time and money to change an existing tanker's exhaust system to be able to be treated in this fashion. If a shipping line did decide to undergo this type of project, the tanker would have to be taken out of service and dry docked. The Port does not have the knowledge to provide an estimate of how long the retrofitting would take. It would be more cost effective to design and build a new tanker to have this feature rather than try to retrofit an existing tanker.

The Port thank CARB staff for the consideration of our comments. We look forward to meeting with the CARB in the future to further discuss the proposed amendments to the At-Berth Regulation.

APPENDIX B
Port of Long Beach
Response to CARB's February 22-23rd, 2019 Workshops and
Additional Cost Estimate Detail

Background

February 22-23rd, 2019, the California Air Resources Board (CARB) held workshops for the Control Measure for Ocean Going Vessels At Berth and At Anchor Regulation (At-Berth Regulation). In the newly proposed regulatory concepts, CARB would require control of auxiliary engine emissions from container, passenger, and refrigerated cargo vessels for every vessel visit to the Port of Long Beach beginning in 2021. Each terminal would have an allocated number of acceptable Terminal Incident Events (TIEs) to provide flexibility. These TIEs equate to 5% of total container vessel visits received during the previous year. Roll-on roll-off (RoRo) vessels will need to reduce auxiliary engine emissions for every vessel visit beginning January 1, 2025, with TIEs flexibility, calculated as 10% of the vessel calls of the previous year. Beginning January 1, 2027, acceptable TIEs for RoRos drop to 5%. Tanker vessels must control auxiliary engine emissions through a CARB approved technology beginning January 1, 2027, with the equivalent TIEs allocation calculation as the RoRos (10% of the previous year's calls). In 2029, tanker acceptable TIEs will drop to 5%. Tanker vessels with steam driven product pumps are no longer required to reduce their tanker auxiliary boiler emissions. Lastly, CARB provided stakeholders with berth analyses of the necessary infrastructure for each vessel type to meet these proposed requirements.

About This Response

The Port of Long Beach (Port) is providing supplementary information per CARB request on the estimates provided in the joint comment letter the Ports of Los Angeles and Long Beach, "Potential Strategies and Costs to Address the At-Berth Regulation", submitted on February 6th, 2019. Importantly, these cost estimates were developed using data from previous shore power installations, such as progress payments, bid analyses, and maps of the shore power infrastructure at the container terminals. Those documents are provided in the attachments to this appendix. The attachments also provide vessel call data as reported in the 2017 Wharfinger Reports to better inform the berth analyses CARB distributed at the February workshops. The estimated hours of control required and operational costs for both container and non-container vessels visits should alternative compliance strategies such as barge and land-based emission control technologies be utilized has been revised. Lastly, this appendix provides documentation of the costs associated with the Prop 1B shore power installations – specifically at Piers A, G, T, and G. Under the Prop 1B program, the Port was required to tease out hard costs from the progress payments. These hard costs have been provided to help inform future CARB analyses of infrastructure costs. It's important to note that these costs are in 2012 dollars, and future estimates should account for escalation.

Shore Power Outlets Calculation & Locations

The proposed concepts explained in the February 2019 workshops are written in such a way that terminals would need to make a reasonable effort to control emissions for every vessel visit. The Port would like to highlight that terminals would not plan a compliance strategy, which meets a

95% control criteria, as TIEs can occur due to reasons out of their control. They would plan to meet 100% emission control while ships are at berth, knowing unforeseen circumstances will hinder their success, hopefully, within the 5% threshold.

To maximize shore power connection at the container terminals, Port staff established design criteria, which requires shore power outlets (SPOs) every 200 feet, combined with a 100-foot cable reel system. This design criteria was used to calculate the minimum number of SPOs required at each pier. As demonstrated in Table 1, staff divided the wharf length for each berth by 200 feet, providing the optimal number of SPOs given 200-foot spacing. Staff then subtracted the existing number of SPOs at each berth to determine the additional shore power outlets required.

Table 1.

Location	Existing SPOs	Number of Berths	Length of Wharf (ft)	SPO @200'	Additional SPOs required for 200' spacing given current infrastructure	Number of Cable Reel Management Systems Required
Pier A Berths A88-A96	9	3	3556	18	9	3
Pier C SSA Terminals	8	2	1797	9	1	2
Pier E	15	3	4369	22	7	3
Pier G						
Berth G232	5	2	1337	7	2	2
Berth G236	6	2	1290	6	0	2
Berths G234, G235	1	1	1243	6	5	1
Pier J						
Berth J245-J247	9	2	2019	10	1	2
Berth J266-J270	11	3	2694	13	2	3
Pier T	11	4	5022	25	14	4
Total	75	22			42	22

The total count of functional SPOs today is 75, however, Pier E will be installing 5 SPOs as part of Phase 3 of the Middle Harbor Project at Long Beach Container Terminal. These SPOs are included in the Pier E calculation above. SPOs which have been abandoned or de-energized are not included in the calculation in Table 1. As far as cable-reel management systems, staff made an assumption that each berth would require one, 100-foot cable reel management system. Because the Port has 22 berths, it is assumed 22 cable reel management systems are required.

Cost Estimates & Timeline

The updated estimate for all six piers is approximately $107 million. To prepare this estimate, Port staff analyzed three previous shore power installation projects at Pier A, Pier J, and Pier T,

initiated in 2012, in order to develop a combined average cost per shore power outlet (SPO). Staff calculated the average SPO cost at each pier using progress payment documentation and tracked staff hours specific to these projects, and then averaged the average SPO cost of each project in order to get the combined average SPO cost. The total cost estimate is based on the average SPO cost multiplied by the number of new SPOs in Table 1, plus one cable reel per berth. The narrative describing the average SPO cost calculation is provided in ATTACHMENT A, Supporting Documentation for Container Terminal Cost Estimates.

The timeline to complete each pier is approximately 5.25 to 5.75 years, which includes 15 to 18 months to do preliminary design and environmental clearances, 15 to 18 months for design, 7 months for bid and award of a construction contract, and 26 months for construction and commissioning.

Exclusions and Limitations

The various existing wharves were built at different times and have different configurations and structural limitations. Wharf modifications may be necessary to accommodate the density of SPOs, which is not included in the cost estimate.

The estimated total number of additional SPOs does not account for the exact location of the current SPOs, so additional SPOs may be necessary to meet the functional requirement.

Many wharves do not have sufficient space at the edge of the wharf to accommodate the current cable reel design. It is unclear if a narrow cable reel can be designed to fit the specific space constraints at each pier, and wharf modifications may still be necessary to be able to safely use cable reel in the narrow space. If that is not possible, more extensive wharf modifications would be required. The cost estimate does not include any wharf modifications to accommodate the cable reel, and assumes a narrow cable reel is roughly the same cost as the current design.

The combined average cost per SPO does not include transformer costs nor any contingency. Staff removed the transformer costs from the bids on the previous SPO projects used to calculate the average SPO cost, making an assumption each container terminal has enough power today. If any terminal requires additional power, the total cost for additional shore power at the Port could increase on the scale of millions of dollars.

POLB resources, both money and staff, are finite, and the POLB is in the midst of a significant capital improvement program. There is not sufficient staff to complete all piers simultaneously within the existing capital program, and there may not be financial capacity to accommodate all of the additional capital expense within the timeframe. Therefore, it is highly likely some of the piers would take longer to complete, resulting in additional cost escalation not included in the current estimate.

Updated Alternative Emission Control Hours

The Port has updated the additional emission control time required if container, passenger, refrigerated cargo, RoRo, and tanker ships must control emissions for every visit. Updates

include refined detail on which berths received Prop 1B funding, and thus are subject to higher shore power connection requirements earlier and consideration of the minimum and maximum number of additional applicable ships that will require emission control technology on a given day. The findings utilize the 2017 Ports of Los Angeles and Long Beach Emissions Inventory data and are as follows:

1) There will need to be at least 26 barge-based systems online in the San Pedro Bay to meet the 2029 requirements (95% of calls must be controlled with an exception of 5% TIEs for all regulated ship types) - assuming vessel traffic remains at 2017 levels. At the Port of Long Beach, the maximum number of applicable ships that are not using shore power is 14 per day, the average is 8, and the minimum is 2 ships. In 2017, 147 days occurred where the number of barges needed if the proposed regulation were in place exceeded the average. Looking at the San Pedro Bay Complex, the average number of applicable ships which would require a barge-based system is 15 per day, with a maximum of 26, and a minimum of 4 ships per day. The Ports would be required to have 26 barge-based systems to meet the requisite emission control requirement from ships on a peak day.
2) An additional 40k-52k hours per year of emissions will need to be controlled via alternative capture and control technology to meet the every vessel, every visit requirement for the proposed ship types.[1][2]
4) To keep a fleet of at least 26 barges "viable" the operational cost per hour will have to double to at least $2,000 per hour. This is due to the costs associated with both active and inactive barges. The operational cost is estimated to be $81-$105 million dollars per year[3].

These estimates assume that a barge-based system will be used for ships, which do not utilize shore power. It is, however, more likely that tankers will strongly consider land-based systems. Given the Port has not demonstrated land-based alternative control technologies for the proposed vessel types, and the potential steep costs associated with a land-based device (wharf upgrades, increased power consumption, etc.) the Port decided assuming the use of the barge-based system provides a more conservative estimate of the costs associated with this regulation. It is also important to note that accommodating a fleet of 26 barge-based emission capture and control systems would require significant berthing space at both ports, which have limited wharf availability.

Attachment A - Supporting Documentation for Container Terminal Shore Power Infrastructure Cost Estimates
Attachment B – Prop 1B Shore Power Infrastructure Costs
Attachment C – Maps of Container Terminal Shore Power Infrastructure
Attachment D – Port of Long Beach Vessel Visits by Berth

---

[1] The lower additional emission control hours reflect a scenario in which all currently unregulated ship calls which will be subject to the new At-Berth Regulation are controlled via barge-based systems and all currently controlled ship-types are handled by additional shore power infrastructure. The higher emission control value reflects a scenario in which all currently unregulated and regulated ship types will be controlled by a barge-based system, and no additional shore power infrastructure will be installed.
[2]These estimates assume a requirement of 1.5 hours per arrival and departure for connecting and disconnecting times where there will be no emission reductions.
[3] This cost does not include costs related to barge movements, anchorages, lay berths, etc.

ATTACHMENT A
Supporting Documentation for
Container Terminal Shore Power Infrastructure Cost Estimates

Average Cost per Shore Power Outlet (SPO) Calculation Narrative

- Staff used the actual contract bid and change order prices from three separate Port construction contracts to install SPOs in 2012. The contracts were for Pier J, Pier T, and Pier A.
- For each contract, the cost of providing and installing transformers was deducted from the total contract amount. This assumes that if SPOs are added in the future, there is already adequate capacity at the terminals for additional SPOs. Therefore, the cost of transformers should not be included in the average cost of future SPOs. If there is not adequate capacity, the cost per SPO would increase.
- The cost of installing SPOs includes all design, permit, and management costs (as referred to as soft costs). The costs for each project are tracked in the City's cost accounting system (also known as FAMIS or EZFAMIS). The EZFAMIS report for each project was run to acquire the soft costs for each project.
- The total project cost (construction contract plus soft costs, less transformer costs) was then escalated using 2.5% per year from the construction contract award date (2012) to the midpoint of earliest possible future SPO construction contract award (2022).
    - The earliest possible future SPO construction contract date is based on a January 1, 2020 regulation start date, and includes the time necessary to do design, bid, and award.
    - If the regulation date is pushed out, the cost per SPO would increase to reflect the additional cost escalation.
    - The 2.5% is a relatively low average cost escalation, and is much lower than what we have seen in the local market the last 2-3 years. The average cost per SPO would increase if the cost escalation is higher than 2.5%.
- The escalated total project cost was then divided by the number of SPOs installed, providing an average escalated cost per SPO per project.
- We averaged the combination of each projects' average cost per SPO to get the combined average cost per SPO in 2022 of $2,272,609.

Pier J Shore to Ship Power Project

- The work under the Pier J project included retrofitting of four berths of the existing north wharfs (J245-J247) and south wharfs (J266-J270), including the installation of twenty (20) shore power outlet vaults on the wharf face, all associated conduit, electrical cables and connections, and four electrical substations to supply power to each individual berth. (SPO location Exhibit attached)
- The original construction contract amount awarded to Helix Electric Inc. was $25,200,000 (Analysis of Bids Exhibit dated February 7, 2012 attached)
- Transformer costs are from Bid Items 22, 23, 24, and 25 (Progress Payment#27) and are excluded from the SPO cost calculations.
- Project soft cost included planning, design and construction management costs (EZFAMIS Report of Work Order HA1316) and are incorporated in the SPO cost calculation.

- Costs related to SCE work to bring the power to Pier J, installation of 66KV Substation and Site Preparation for the substation (Griffith Contract) is excluded from the cost calculations (SCE related cost items were highlighted in orange in the attached EZFAMIS Report).
- Average cost per SPO is calculated based on 20 SPO Vaults.

Pier T Shore to Ship Power Project

- The work under the Pier T project included retrofitting four berths of the existing south wharfs (T132-T140), including the installation of eleven (11) shore power outlet vaults on the wharf face, all associated conduit, electrical cables and connections, and four electrical substations to supply power to each individual berth. (SPO location Exhibit attached).
- The original construction contract amount awarded to The Ryan Company is $20,559,112 (Analysis of Bids Exhibit dated February 14, 2012 attached)
- Transformer costs are from Bid Items 18, 19, 20, and 21 (Progress Payment#19) and were not included in this calculation.
- Project soft costs included planning, design and construction management costs (EZFAMIS Report of Work Order HA1317 attached)
- Costs related to SCE work is excluded from the cost calculations.
- Average cost per SPO is calculated based on 11 SPO Vaults.

Pier A Shore to Ship Power Project

- The work under the Pier A project included retrofitting of four berths of the existing south wharfs (A88-A96), the installation of nine (9) shore power outlet vaults on the wharf face, all associated conduit, electrical cables and connections, and two electrical substations to supply power to each individual berth. Substation A provides power to Berth A94-96 and Substation B provides power to berths (A88-A90) and (A92-A94), respectively. (SPO location Exhibit attached)
- The original construction contract amount awarded to Schimmick Construction Company is $11,513,850 (Analysis of Bids Exhibit dated January 31, 2012 attached)
- Transformer costs are from Bid Items 20, 21 and 22 (Progress Payment#15 attached)
- Project soft cost included planning, design and construction management costs (EZFAMIS Report of Work Order HA1314 attached)
- Costs related to SCE work is excluded from the cost calculations.
- Average cost per SPO is calculated based on 9 SPO Vaults.

Summary of the Average SPO Costs (2022)

.

	Average $/SPO (2022)
Pier J	$ 2,221,185.36
Pier T	$ 2,303,100.04
Pier A	$ 2,293,541.56
Combined Average Cost Per SPO	**$ 2,272,608.98**

The cost of the 100-foot cable reel management system is expected to be $500,000 each. The Port estimated that each berth would require one 100-foot cable reel management system. Today there are 22 berths. The estimated total cost for cable reel management systems $11,000,000.

Cost Estimate for Six Piers to Install Additional Required SPOs
$2,272,608.98 x 42 SPOs +$11,000,000 = **$106,449,577.16.**

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Shore to Ship Power Retrofit at Pier J, Berths J245-J247 and J266-J270

NO. HD-S2341

DATE OPENED: February 7, 2012

		Helix Electric, Inc. 8260 Camino Santa Fe #A San Diego, CA 92121 Phone: (858) 535-0505 Fax: (858) 535-0738		Shimmick Construction Company 8201 Edgewater Drive Oakland, CA 92618 Phone: (949) 333-1500 Fax: (949) 333-1510		Sully-Miller Contracting Company 135 E. State College Blvd #400 Brea, CA 92821 Phone: (714) 578-9600 Fax: (714) 449-8775		The Ryan Company 15 Commerce Way Norton, MA 02766 Phone: (508) 742-2500 Fax: (508) 742-2540		Griffith/Rosendin JV 12200 Bloomfield Avenue Santa Fe Springs, CA 90670 Phone: (562) 929-1128 Fax: (562) 864-7938	
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 1 - Progress Schedules: Furnish all labor, materials, tools, equipment, and incidentals necessary to prepare, furnish, update, revise and maintain the cost and resource loaded scheduling... for the lump sum price (minimum amount of $25,000) of -	Lump Sum	100,000.00	100,000.00	25,000.00	25,000.00	33,460.00	33,460.00	138,415.00	138,415.00	25,000.00	25,000.00
ITEM NO. 2 - Site Specific Safety Plan: Furnish all labor, materials, tools, equipment, and incidentals necessary to develop, submit, implement and maintain a Site Specific Safety Plan, including... for the lump sum price (minimum amount of $30,000) of -	Lump Sum	150,000.00	150,000.00	30,000.00	30,000.00	35,535.00	35,535.00	107,658.00	107,658.00	30,000.00	30,000.00
ITEM NO. 3 - Furnish and Place Temporary K-Rail and Chain Link Fence: Furnish all labor, materials, tools, equipment, and incidentals necessary to furnish, place, move, relocate, store, remove and dispose of temporary K-Rail... for the lump sum price of -	Lump Sum	1,400,000.00	1,400,000.00	600,000.00	600,000.00	686,711.00	686,711.00	661,212.00	661,212.00	1,500,000.00	1,500,000.00
ITEM NO. 4 - Mobilization/Demobilization: Furnish all labor, materials, tools, equipment, and incidentals necessary for Mobilization and Demobilization as specified and shown for the lump sum price (fixed amount of $1,200) of -	Lump Sum	1,200,000.00	1,200,000.00	1,200,000.00	1,200,000.00	1,200,000.00	1,200,000.00	1,200,000.00	1,200,000.00	1,200,000.00	1,200,000.00
ITEM NO. 5 - Interim Demobilization/Remobilization: Furnish all labor, materials, tools, equipment and incidentals necessary to temporarily demobilize from the above-wharf work area, including temporary... for the unit price per each combined event of -	Unit Price	9,000.00	135,000.00	1,000.00	15,000.00	3,554.00	53,310.00	5,775.15	86,627.25	4,380.00	65,700.00
TOTAL:											
CERTIFIED CHECK OR BOND:											

Helix Electric, Inc.	483309/Exp.11/30/2013	$25,200,000.00	
LOWEST RESPONSIBLE BIDDER	LICENSE NUMBER	AMOUNT	AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Shore to Ship Power Retrofit at Pier J, Berths J245-J247 and J266-J270

NO. HD-S2341

DATE OPENED: February 7, 2012

		Helix Electric, Inc. 8250 Camino Santa Fe #A San Diego, CA 92121 Phone: (858) 535-0505 Fax: (858) 535-0738		Shimmick Construction Company 8201 Edgewater Drive Oakland, CA 92618 Phone: (949) 333-1500 Fax: (949) 333-1510		Sully-Miller Contracting Company 135 E. State College Blvd #400 Brea, CA 92821 Phone: (714) 578-9600 Fax: (714) 449-8775		The Ryan Company 15 Commerce Way Norton, MA 02766 Phone: (508) 742-2500 Fax: (508) 742-2540		Griffith/Rosendin JV 12200 Bloomfield Avenue Santa Fe Springs, CA 90670 Phone: (562) 929-1128 Fax: (562) 864-7938	
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 6 - Storm Water Pollution Prevention Plan(s) (SWPPP) Development and Compliance: Furnish all labor, materials, tools, equipment, and incidentals necessary to develop, provide, monitor... for the lump sum price (minimum amount of $150,000) of -	Lump Sum	300,000.00	300,000.00	150,000.00	150,000.00	289,563.00	289,563.00	184,554.00	184,554.00	150,000.00	150,000.00
ITEM NO. 7 - City Ordinance Construction Waste Management Plan: Furnish all labor, material, tools, equipment, logistics, forms, and incidentals necessary... (exclusive of the maximum $50,000 deposit) for the lump sum price (minimum amount of $5,000) of -	Lump Sum	10,000.00	10,000.00	5,000.00	5,000.00	6,186.00	6,186.00	6,275.00	6,275.00	5,000.00	5,000.00
ITEM NO. 8 - Soil Handling and Disposal, Non-Hazardous Waste: Furnish all labor, materials, tools, equipment, and incidentals necessary to excavate, stockpile... approximately seventeen-thousand six-hundred (17,600) tons... for the unit price per ton of -	Unit Price	12.00	100,800.00	12.00	100,800.00	21.00	176,400.00	40.97	344,148.00	7.90	66,360.00
ITEM NO. 9 - Shoring for Excavations: Furnish all labor, materials, tools, equipment, and incidentals necessary to design, place, maintain, move, and remove excavation shoring adequate for worker... for the lump sum price (minimum amount of $30,000) of -	Lump Sum	150,000.00	150,000.00	300,000.00	300,000.00	105,445.00	105,445.00	106,682.00	106,682.00	150,000.00	150,000.00
ITEM NO. 10 - Import Soil: Furnish all labor, materials, tools, equipment, and incidentals necessary to test, certify, load, transport, stockpile, place... approximately six thousand eight hundred ten (6,810) tons... for the unit price per ton of -	Unit Price	26.00	177,060.00	42.00	286,020.00	40.30	274,443.00	14.56	99,153.60	36.00	245,160.00
TOTAL:											
CERTIFIED CHECK OR BOND:											

Helix Electric, Inc.
LOWEST RESPONSIBLE BIDDER

483309/Exp.11/30/2013
LICENSE NUMBER

$25,200,000.00
AMOUNT

AUTHORIZED SIGNATURE

File: Bid Analysis HD-S2341 Bendalmeior (acp)[BID ANALYSIS] 2/7/2012 1:23 PM

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Shore to Ship Power Retrofit at Pier J, Berths J246-J247 and J266-J270

NO. HD-S2341

DATE OPENED: February 7, 2012

ITEM	ESTIMATED QUANTITIES	Helix Electric, Inc. 8260 Camino Santa Fe #A San Diego, CA 92121 Phone: (858) 535-0505 Fax: (858) 535-0738		Shimmick Construction Company 8201 Edgewater Drive Oakland, CA 92618 Phone: (949) 333-1500 Fax: (949) 333-1510		Sully-Miller Contracting Company 135 E. State College Blvd #400 Brea, CA 92821 Phone: (714) 578-9600 Fax: (714) 449-8775		The Ryan Company 15 Commerce Way Norton, MA 02766 Phone: (508) 742-2500 Fax: (508) 742-2540		Griffith/Rosendin JV 12200 Bloomfield Avenue Santa Fe Springs, CA 90670 Phone: (562) 929-1128 Fax: (562) 864-7938	
		RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 11 - 3/4-inch Crushed Rock: Furnish all labor, materials, tools, equipment, and incidentals necessary to load, transport, stockpile, place, compact and grade approximately two thousand five hundred (2,500) tons... for the unit price per ton of -	Unit Price	25.00	62,500.00	40.00	100,000.00	50.20	125,500.00	25.50	63,750.00	27.00	67,500.00
ITEM NO. 12 - Disposal of Non-Hazardous Waste: Furnish all labor, materials, tools, equipment, and incidentals necessary to profile, load, transport... approximately thirteen thousand four hundred (13,400) tons... for the unit price per ton of -	Unit Price	10.00	134,000.00	45.00	603,000.00	26.75	358,450.00	45.80	613,720.00	42.50	569,500.00
ITEM NO. 13 - Crushed Miscellaneous Base from Port Crusher Site: Furnish all labor, materials, tools, equipment, and incidentals necessary to load, weigh... approximately five thousand six hundred eighty (5,680) tons... for the unit price per ton of -	Unit Price	40.00	227,200.00	18.00	102,240.00	37.50	213,000.00	24.10	136,888.00	30.80	174,944.00
ITEM NO. 14 - Furnish and Place Pavement Striping: Furnish all labor, materials, tools, equipment, and incidentals necessary to furnish and place 4-inch wide pavement striping complete as specified, for the unit price per linear foot of -	Unit Price	2.00	12,000.00	1.00	6,000.00	0.86	5,160.00	1.21	7,260.00	0.80	4,800.00
ITEM NO. 15 - Furnish and Place Pavement Markings: Furnish all labor, materials, tools, equipment, and incidentals necessary to furnish and place pavement markings, complete as specified, for the unit price per square foot of -	Unit Price	6.00	36,000.00	3.00	18,000.00	2.58	15,480.00	3.02	18,120.00	2.40	14,400.00
TOTAL:											
CERTIFIED CHECK OR BOND:											

Helix Electric, Inc.
LOWEST RESPONSIBLE BIDDER

483309/Exp.11/30/2013
LICENSE NUMBER

$25,200,000.00
AMOUNT

AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Shore to Ship Power Retrofit at Pier J, Berths J245-J247 and J266-J270 | **NO. HD-S2341** | **DATE OPENED: February 7, 2012**

		Helix Electric, Inc. 8250 Camino Santa Fe #A San Diego, CA 92121 Phone: (858) 535-0505 Fax: (858) 535-0738		Shimmick Construction Company 6201 Edgewater Drive Oakland, CA 92618 Phone: (949) 333-1500 Fax: (949) 333-1510		Sully-Miller Contracting Company 135 E. State College Blvd #400 Brea, CA 92821 Phone: (714) 578-9600 Fax: (714) 449-8775		The Ryan Company 15 Commerce Way Norton, MA 02766 Phone: (508) 742-2500 Fax: (508) 742-2540		Griffith/Rosendin JV 12200 Bloomfield Avenue Santa Fe Springs, CA 90670 Phone: (562) 929-1128 Fax: (562) 864-7938	
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 16 - Furnish and Place Chain Link Fence and Gates: Furnish all labor, materials, tools, equipment, and incidentals necessary to furnish and place permanent chain link fence and gates including all footings, chain... for the lump sum price of -	Lump Sum	60,000.00	60,000.00	35,000.00	35,000.00	292,631.00	292,631.00	72,300.00	72,300.00	35,000.00	35,000.00
ITEM NO. 17 - Steel Guard Posts: Furnish all labor, materials, tools, equipment, and incidentals necessary to furnish and install ninety-five (95) steel guard posts, fixed and removable, including concrete footings... for the unit price per each of -	Unit Price	1,400.00	133,000.00	1,200.00	114,000.00	1,785.00	169,575.00	1,566.35	148,803.25	1,470.00	139,650.00
ITEM NO. 18 - Shore Power Outlet Vaults for Berth J245 (SPO 1, SPO 2, SPO 3, SPO 4, SPO 5): Provide all labor, material, equipment, and incidentals necessary to perform demolition and construction of shore to ship power... for the lump sum price of -	Lump Sum	400,000.00	400,000.00	550,000.00	550,000.00	616,045.00	616,045.00	248,506.00	248,506.00	645,000.00	645,000.00
ITEM NO. 19 - Shore Power Outlet Vaults for Berth J247 (SPO 6, SPO 7, SPO 8, SPO 9): Provide all labor, material, equipment, and incidentals necessary to perform demolition and construction of shore to ship power... for the lump sum price of -	Lump Sum	500,000.00	500,000.00	450,000.00	450,000.00	496,426.00	496,426.00	85,546.00	85,546.00	516,000.00	516,000.00
ITEM NO. 20 - Shore Power Outlet Vaults for Berth J266 (SPO 10, SPO 11, SPO 12, SPO 13, SPO 14, SPO 15): Provide all labor, material, equipment, and incidentals necessary to perform demolition and construction of shore to... for the lump sum price of -	Lump Sum	580,000.00	580,000.00	750,000.00	750,000.00	969,828.00	969,828.00	283,167.00	283,167.00	750,000.00	750,000.00
TOTAL:											
CERTIFIED CHECK OR BOND:											

Helix Electric, Inc.
LOWEST RESPONSIBLE BIDDER

483309/Exp.11/30/2013
LICENSE NUMBER

$25,200,000.00
AMOUNT

AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Shore to Ship Power Retrofit at Pier J, Berths J245-J247 and J266-J270

NO. HD-S2341

DATE OPENED: February 7, 2012

ITEM	ESTIMATED QUANTITIES	Helix Electric, Inc. 8260 Camino Santa Fe #A San Diego, CA 92121 Phone: (858) 535-0505 Fax: (858) 535-0738 RATE	AMOUNT	Shimmick Construction Company 8201 Edgewater Drive Oakland, CA 92618 Phone: (949) 333-1500 Fax: (949) 333-1510 RATE	AMOUNT	Sully-Miller Contracting Company 135 E. State College Blvd #400 Brea, CA 92821 Phone: (714) 578-9600 Fax: (714) 449-8775 RATE	AMOUNT	The Ryan Company 15 Commerce Way Norton, MA 02766 Phone: (508) 742-2500 Fax: (508) 742-2540 RATE	AMOUNT	Griffith/Rosendin JV 12200 Bloomfield Avenue Santa Fe Springs, CA 90670 Phone: (562) 929-1128 Fax: (562) 864-7938 RATE	AMOUNT
ITEM NO. 21 - Shore Power Outlet Vaults for Berth J270 (SPO 16, SPO 17, SPO 18, SPO 19, SPO 20): Provide all labor, material, equipment, and incidentals necessary to perform demolition and construction of shore to ship power... for the lump sum price of -	Lump Sum	550,000.00	550,000.00	600,000.00	600,000.00	681,001.00	681,001.00	218,699.00	218,699.00	630,000.00	630,000.00
ITEM NO. 22 - Transformer(s) for Berth J245 (SPO 1, SPO 2, SPO 3, SPO 4, SPO 5): Provide all labor, material, equipment, and incidentals required to furnish, install, and test the transformer(s) as part of a complete system... for the lump sum price of -	Lump Sum	600,000.00	600,000.00	600,000.00	600,000.00	617,070.00	617,070.00	641,584.00	641,584.00	595,348.00	595,348.00
ITEM NO. 23 - Transformer(s) for Berth J247 (SPO 6, SPO 7, SPO 8, SPO 9): Provide all labor, material, equipment, and incidentals required to furnish, install, and test the transformer(s) as part of a complete system... for the lump sum price of -	Lump Sum	600,000.00	600,000.00	800,000.00	800,000.00	617,070.00	617,070.00	641,584.00	641,584.00	595,348.00	595,348.00
ITEM NO. 24 - Transformer(s) for Berth J266 (SPO 10, SPO 11, SPO 12, SPO 13, SPO 14, SPO 15): Provide all labor, material, equipment, and incidentals required to furnish, install, and test the transformer(s) as part of a... for the lump sum price of -	Lump Sum	600,000.00	600,000.00	600,000.00	600,000.00	617,070.00	617,070.00	641,584.00	641,584.00	595,348.00	595,348.00
ITEM NO. 25 - Transformers for Berth J270 (SPO 16, SPO 17, SPO 18, SPO 19, SPO 20): Provide all labor, material, equipment, and incidentals required to furnish, install, and test the transformer(s) as part of a complete... for the lump sum price of -	Lump Sum	600,000.00	600,000.00	900,000.00	900,000.00	617,070.00	617,070.00	641,584.00	641,584.00	595,348.00	595,348.00
TOTAL:											
CERTIFIED CHECK OR BOND:											

Helix Electric, Inc.	483309/Exp.11/30/2013	$25,200,000.00	
LOWEST RESPONSIBLE BIDDER	LICENSE NUMBER	AMOUNT	AUTHORIZED SIGNATURE

Port of LONG BEACH The Green Port

ANALYSIS OF BIDS

CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Shore to Ship Power Retrofit at Pier J, Berths J245-J247 and J266-J270 | **NO. HD-S2341** | **DATE OPENED: February 7, 2012**

		Helix Electric, Inc. 8260 Camino Santa Fe #A San Diego, CA 92121 Phone: (858) 535-0505 Fax: (858) 535-0738		Shimmick Construction Company 8201 Edgewater Drive Oakland, CA 92618 Phone: (949) 333-1500 Fax: (949) 333-1510		Sully-Miller Contracting Company 135 E. State College Blvd #400 Brea, CA 92821 Phone: (714) 578-9600 Fax: (714) 449-6775		The Ryan Company 15 Commerce Way Norton, MA 02766 Phone: (508) 742-2500 Fax: (508) 742-2540		Griffith/Rosendin JV 12200 Bloomfield Avenue Santa Fe Springs, CA 90670 Phone: (562) 929-1128 Fax: (562) 864-7938	
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 26 - Switchgear Assembly(s) for Berth J245 (SPO 1, SPO 2, SPO 3, SPO 4, SPO 5): Provide all labor, material, equipment, and incidentals required to furnish, install, and test the switchgear assembly as part of a... for the lump sum price of -	Lump Sum	1,112,440.00	1,112,440.00	1,950,000.00	1,950,000.00	2,257,118.00	2,257,118.00	1,983,333.00	1,983,333.00	1,803,184.00	1,803,184.00
ITEM NO. 27 - Switchgear Assembly(s) for Berth J247 (SPO 6, SPO 7, SPO 8, SPO 9): Provide all labor, material, equipment, and incidentals required to furnish, install, and test the switchgear assembly as part of a complete... for the lump sum price of -	Lump Sum	1,000,000.00	1,000,000.00	2,000,000.00	2,000,000.00	2,180,872.00	2,180,872.00	1,983,333.00	1,983,333.00	1,839,865.00	1,839,865.00
ITEM NO. 28 - Switchgear Assembly(s) for Berth J266 (SPO 10, SPO 11, SPO 12, SPO 13, SPO 14, SPO 15): Provide all labor, material, equipment, and incidentals required to furnish, install, and test the switchgear assembly as... for the lump sum price of -	Lump Sum	2,000,000.00	2,000,000.00	2,000,000.00	2,000,000.00	2,313,947.00	2,313,947.00	1,983,333.00	1,983,333.00	1,852,170.00	1,852,170.00
ITEM NO. 29 - Switchgear Assembly(s) for Berth J270 (SPO 16, SPO 17, SPO 18, SPO 19, SPO 20): Provide all labor, material, equipment, and incidentals required to furnish, install, and test the switchgear assembly as part of a... for the lump sum price of -	Lump Sum	2,200,000.00	2,200,000.00	2,190,000.00	2,190,000.00	2,390,042.00	2,390,042.00	1,983,333.00	1,983,333.00	2,026,687.00	2,026,687.00
ITEM NO. 30 - Ductbank and Raceways for Berth J245 (SPO 1, SPO 2, SPO 3, SPO 4, SPO 5): Provide all labor, material, equipment, and incidentals required to furnish, install and test the ductbanks and raceways as part of a... for the lump sum price of -	Lump Sum	1,500,000.00	1,500,000.00	2,000,000.00	2,000,000.00	1,014,160.00	1,014,160.00	1,146,620.00	1,146,620.00	1,150,000.00	1,150,000.00
TOTAL:											
CERTIFIED CHECK OR BOND:											

Helix Electric, Inc.	483309/Exp.11/30/2013	$25,200,000.00	[signature]
LOWEST RESPONSIBLE BIDDER	LICENSE NUMBER	AMOUNT	AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Shore to Ship Power Retrofit at Pier J, Berths J245-J247 and J286-J270

NO. HD-S2341

DATE OPENED: February 7, 2012

		Helix Electric, Inc. 8250 Camino Santa Fe #A San Diego, CA 92121 Phone: (858) 535-0505 Fax: (858) 535-0738		Shimmick Construction Company 6201 Edgewater Drive Oakland, CA 92618 Phone: (949) 333-1500 Fax: (949) 333-1510		Sully-Miller Contracting Company 135 E. State College Blvd #400 Brea, CA 92821 Phone: (714) 578-9600 Fax: (714) 449-8775		The Ryan Company 15 Commerce Way Norton, MA 02766 Phone: (508) 742-2500 Fax: (508) 742-2540		Griffith/Rosendin JV 12200 Bloomfield Avenue Santa Fe Springs, CA 90670 Phone: (562) 929-1128 Fax: (562) 864-7938	
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 31 - Ductbank and Raceways for Berth J247 (SPO 6, SPO 7, SPO 8, SPO 9): Provide all labor, material, equipment, and incidentals required to furnish, install, and test the ductbanks and raceways as part of a complete... for the lump sum price of -	Lump Sum	1,500,000.00	1,500,000.00	1,000,000.00	1,000,000.00	814,440.00	814,440.00	928,874.00	928,874.00	1,150,000.00	1,150,000.00
ITEM NO. 32 - Ductbank and Raceways for Berth J286 (SPO 10, SPO 11, SPO 12, SPO 13, SPO 14, SPO 15): Provide all labor, material, equipment, and incidentals required to furnish, install, and test the ductbanks and raceways as... for the lump sum price of -	Lump Sum	2,000,000.00	2,000,000.00	1,800,000.00	1,800,000.00	1,278,178.00	1,278,178.00	1,835,453.00	1,835,453.00	1,320,000.00	1,320,000.00
ITEM NO. 33 - Ductbank and Raceways for Berth J270 (SO 16, SPO 17, SPO 18, SPO 19, SPO 20): Provide all labor, material, equipment, and incidentals required to furnish, install, and test the ductbanks and raceways as part of... for the lump sum price of -	Lump Sum	1,500,000.00	1,500,000.00	1,300,000.00	1,300,000.00	1,176,073.00	1,176,073.00	1,066,532.00	1,066,532.00	1,330,000.00	1,330,000.00
ITEM NO. 34 - Conductors for Berth J245 (SPO 1, SPO 2, SPO 3, SPO 4, SPO 5): Provide all labor, material, equipment, and incidentals required to furnish, install, and test the conductor(s) as part of a complete system as... for the lump sum price of -	Lump Sum	400,000.00	400,000.00	550,000.00	550,000.00	637,918.00	637,918.00	556,501.00	556,501.00	604,784.00	604,784.00
ITEM NO. 35 - Conductors for Berth J247 (SPO 6, SPO 7, SPO 8, SPO 9): Provide all labor, material, equipment, and incidentals required to furnish, install, and test the conductor(s) as part of a complete system as specified... for the lump sum price of -	Lump Sum	200,000.00	200,000.00	400,000.00	400,000.00	451,610.00	451,610.00	400,827.00	400,827.00	457,211.00	457,211.00
TOTAL:											
CERTIFIED CHECK OR BOND:											

Helix Electric, Inc.
LOWEST RESPONSIBLE BIDDER

483309/Exp.11/30/2013
LICENSE NUMBER

$25,200,000.00
AMOUNT

AUTHORIZED SIGNATURE

File: Bid Analysis HD-S2341 Bandermeaur (scp)[BID ANALYSIS] 2/7/2012 1:23 PM

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Shore to Ship Power Retrofit at Pier J, Berths J245-J247 and J266-J270 | **NO.** HD-S2341 | **DATE OPENED:** February 7, 2012

		Helix Electric, Inc. 8260 Camino Santa Fe #A San Diego, CA 92121 Phone: (858) 535-0505 Fax: (858) 535-0738		Shimmick Construction Company 8201 Edgewater Drive Oakland, CA 92618 Phone: (949) 333-1500 Fax: (949) 333-1510		Sully-Miller Contracting Company 135 E. State College Blvd #400 Brea, CA 92821 Phone: (714) 578-9600 Fax: (714) 449-8775		The Ryan Company 15 Commerce Way Norton, MA 02766 Phone: (508) 742-2500 Fax: (508) 742-2540		Griffith/Rosendin JV 12200 Bloomfield Avenue Santa Fe Springs, CA 90670 Phone: (562) 928-1128 Fax: (562) 864-7938	
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 36 - Conductors for Berth J266 (SPO 10, SPO 11, SPO 12, SPO 13, SPO 14, SPO 15): Provide all labor, material, equipment, and incidentals required to furnish, install, and test the conductor(s) as part of a complete... for the lump sum price of -	Lump Sum	500,000.00	500,000.00	800,000.00	800,000.00	887,968.00	887,968.00	813,159.00	813,159.00	756,811.00	756,811.00
ITEM NO. 37 - Conductors for Berth J270 (SPO 16, SPO 17, SPO 18, SPO 19, SPO 20): Provide all labor, material, equipment, and incidentals required to furnish, install, and test the conductor(s) as part of a complete system... for the lump sum price of -	Lump Sum	400,000.00	400,000.00	650,000.00	650,000.00	852,670.00	852,670.00	798,445.00	798,445.00	631,086.00	631,086.00
ITEM NO. 38 - SPO Assemblies for Berth J245 (SPO 1, SPO 2, SPO 3, SPO 4, SPO 5): Provide all labor, material, equipment, and incidentals required to furnish, install, and test the SPO assemblies as part of a complete system... for the lump sum price of -	Lump Sum	150,000.00	150,000.00	175,000.00	175,000.00	138,722.00	138,722.00	442,719.00	442,719.00	390,978.00	390,978.00
ITEM NO. 39 - SPO Assemblies for Berth J247 (SPO 6, SPO 7, SPO 8, SPO 9): Provide all labor, material, equipment, and incidentals required to furnish, install, and test the SPO assemblies as part of a complete system as... for the lump sum price of -	Lump Sum	100,000.00	100,000.00	175,000.00	175,000.00	173,403.00	173,403.00	354,175.00	354,175.00	475,401.00	475,401.00
ITEM NO. 40 - SPO Assemblies for Berth J266 (SPO 10, SPO 11, SPO 12, SPO 13, SPO 14, SPO 15): Provide all labor, material, equipment, and incidentals required to furnish, install, and test the SPO assemblies as part of a... for the lump sum price of -	Lump Sum	170,000.00	170,000.00	175,000.00	175,000.00	208,083.00	208,083.00	531,262.00	531,262.00	559,717.00	559,717.00
TOTAL:											
CERTIFIED CHECK OR BOND:											

Helix Electric, Inc.
LOWEST RESPONSIBLE BIDDER

483309/Exp.11/30/2013
LICENSE NUMBER

$25,200,000.00
AMOUNT

AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Shore to Ship Power Retrofit at Pier J, Berths J245-J247 and J266-J270

NO. HD-S2341

DATE OPENED: February 7, 2012

ITEM	ESTIMATED QUANTITIES	Helix Electric, Inc. 5250 Camino Santa Fe #A San Diego, CA 92121 Phone: (858) 535-0505 Fax: (858) 535-0738		Shimmick Construction Company 8201 Edgewater Drive Oakland, CA 92518 Phone: (949) 333-1500 Fax: (949) 333-1510		Sully-Miller Contracting Company 135 E. State College Blvd #400 Brea, CA 92821 Phone: (714) 578-9600 Fax: (714) 449-8775		The Ryan Company 15 Commerce Way Norton, MA 02766 Phone: (508) 742-2500 Fax: (508) 742-2540		Griffith/Rosendin JV 12200 Bloomfield Avenue Santa Fe Springs, CA 90670 Phone: (562) 929-1128 Fax: (562) 864-7938	
		RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 41 - SPO Assemblies for Berth J270 (SPO 16, SPO 17, SPO 18, SPO 19, SPO 20): Provide all labor, material, equipment, and incidentals required to furnish, install, and test the SPO assemblies as part of a complete... for the lump sum price of -	Lump Sum	150,000.00	150,000.00	175,000.00	175,000.00	173,403.00	173,403.00	442,719.00	442,719.00	475,401.00	475,401.00
ITEM NO. 42 - All Other Electrical Work for Berth J245 (SPO 1, SPO 2, SPO 3, SPO 4, SPO 5): Provide all labor, material, equipment, and incidentals required to furnish, install, and test all other electrical work for Berth... for the lump sum price of -	Lump Sum	150,000.00	150,000.00	300,000.00	300,000.00	197,589.00	197,589.00	127,695.00	127,695.00	1.00	1.00
ITEM NO. 43 - All Other Electrical Work for Berth J247 (SPO 6, SPO 7, SPO 8, SPO 9): Provide all labor, material, equipment, and incidentals required to furnish, install, and test all other electrical work for Berth J247 as... for the lump sum price of -	Lump Sum	150,000.00	150,000.00	250,000.00	250,000.00	167,008.00	167,008.00	220,414.00	220,414.00	1.00	1.00
ITEM NO. 44 - All Other Electrical Work for Berth J266 (SPO 10, SPO 11, SPO 12, SPO 13, SPO 14, SPO 15): Provide all labor, material, equipment, and incidentals required to furnish, install, and test all other electrical work... for the lump sum price of -	Lump Sum	150,000.00	150,000.00	275,000.00	275,000.00	195,201.00	195,201.00	247,649.00	247,649.00	1.00	1.00
ITEM NO. 45 - All Other Electrical Work for Berth J270 (SPO 16, SPO 17, SPO 18, SPO 19, SPO 20): Provide all labor, material, equipment, and incidentals required to furnish, install, and test all other electrical work for... for the lump sum price of -	Lump Sum	150,000.00	150,000.00	250,000.00	250,000.00	167,008.00	167,008.00	127,695.00	127,695.00	1.00	1.00
TOTAL:											
CERTIFIED CHECK OR BOND:											

Helix Electric, Inc.
LOWEST RESPONSIBLE BIDDER

483309/Exp.11/30/2013
LICENSE NUMBER

$25,200,000.00
AMOUNT

AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Shore to Ship Power Retrofit at Pier J, Berths J245-J247 and J266-J270

NO. HD-S2341

DATE OPENED: February 7, 2012

		Helix Electric, Inc. 8260 Camino Santa Fe #A San Diego, CA 92121 Phone: (858) 535-0505 Fax: (858) 535-0738		Shimmick Construction Company 8201 Edgewater Drive Oakland, CA 92618 Phone: (949) 333-1500 Fax: (949) 333-1510		Sully-Miller Contracting Company 135 E. State College Blvd #400 Brea, CA 92821 Phone: (714) 578-9600 Fax: (714) 449-8775		The Ryan Company 15 Commerce Way Norton, MA 02766 Phone: (508) 742-2500 Fax: (508) 742-2540		Griffith/Rosendin JV 12200 Bloomfield Avenue Santa Fe Springs, CA 90670 Phone: (562) 929-1128 Fax: (562) 864-7938	
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 46 - All Other Work: Furnish all labor, materials, tools, equipment, and incidentals necessary to perform all other work not included in the other Bid items as indicated in Paragraph SC-22 of the Special Conditions for the lump sum price of -	Lump Sum	200,000.00	200,000.00	0	0	530,999.00	530,999.00	3,142,993.00	3,142,993.00	4,310,000.00	4,310,000.00
ITEM NO. 47 - Extended Contractor Overhead: Furnish all labor, material, tools, equipment, and incidentals necessary to complete the work beyond the Initial Contract Time due to Excusable Compensable Delays as indicated... for the unit price per day of -	Unit Price	1,000.00	60,000.00	1,500.00	90,000.00	144.00	8,640.00	3,137.70	188,262.00	1,145.00	68,700.00
ITEM NO. 48 - Standby Time: Period of time during which work is interrupted and the Contractor shall hold Contractor's labor personnel and equipment in a state of readiness as indicated in Paragraph SC-30 of the... for the unit price per man hour of -	Unit Price	60.00	240,000.00	60.00	240,000.00	172.00	688,000.00	80.50	322,000.00	72.50	290,000.00
ITEM NO. 49 - Commissioning for Berths J245-J247: Furnish all labor, materials, tools, equipment, and incidentals necessary to commission Berths J245-J247 complete as specified in Section 16999 "Commissioning" for the unit price per man hour of -	Unit Price	200.00	200,000.00	400.00	400,000.00	358.00	358,000.00	132.54	132,540.00	237.91	237,910.00
ITEM NO. 50 - Commissioning for Berths J266-J270: Furnish all labor, materials, tools, equipment, and incidentals necessary to commission Berths J266-J270 complete as specified in Section 16999 "Commissioning" for the unit price per man hour of -	Unit Price	200.00	200,000.00	400.00	400,000.00	358.00	358,000.00	132.54	132,540.00	237.91	237,910.00
TOTAL:		$25,200,000.00		$28,485,050.00		$28,891,481.00		$29,290,225.10		$31,333,185.00	
CERTIFIED CHECK OR BOND:		10% Bond		10% Bond		10% Bond		10% Bond		10% Bond	

Helix Electric, Inc.
LOWEST RESPONSIBLE BIDDER

483309/Exp.11/30/2013
LICENSE NUMBER

$25,200,000.00
AMOUNT

AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Shore to Ship Power Retrofit at Pier J, Berths J245–J247 and J266–J270

NO. HD-S2341

DATE OPENED: February 7, 2012

ITEM	ESTIMATED QUANTITIES	Dynalectric 4462 Corporate Center Drive Los Alamitos, CA 90720 Phone: (714) 828-7000 Fax: (714) 484-2385 RATE	AMOUNT	Comet Electric, Inc. 7760 Deering Avenue Canoga Park, CA 91304 Phone: (818) 340-0965 Fax: (818) 340-4033 RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 1 - Progress Schedules: Furnish all labor, materials, tools, equipment, and incidentals necessary to prepare, furnish, update, revise and maintain the cost and resource loaded scheduling... for the lump sum price (minimum amount of $25,000) of -	Lump Sum	192,500.00	192,500.00	93,324.00	93,324.00						
ITEM NO. 2 - Site Specific Safety Plan: Furnish all labor, materials, tools, equipment, and incidentals necessary to develop, submit, implement and maintain a Site Specific Safety Plan, including... for the lump sum price (minimum amount of $30,000) of -	Lump Sum	34,000.00	34,000.00	33,330.00	33,330.00						
ITEM NO. 3 - Furnish and Place Temporary K-Rail and Chain Link Fence: Furnish all labor, materials, tools, equipment, and incidentals necessary to furnish, place, move, relocate, store, remove and dispose of temporary K-Rail... for the lump sum price of -	Lump Sum	309,500.00	309,500.00	77,770.00	77,770.00						
ITEM NO. 4 - Mobilization/Demobilization: Furnish all labor, materials, tools, equipment, and incidentals necessary for Mobilization and Debmobilization as specified and shown for the lump sum price (fixed amount of $1,200) of -	Lump Sum	1,200,000.00	1,200,000.00	1,200,000.00	1,200,000.00						
ITEM NO. 5 - Interim Demobilization/Remobilization: Furnish all labor, materials, tools, equipment and incidentals necessary to temporarily demobilize from the above-wharf work area, including temporary... for the unit price per each combined event of -	Unit Price	5,000.00	75,000.00	15,000.00	225,000.00						
TOTAL:											
CERTIFIED CHECK OR BOND:											

Helix Electric, Inc.
LOWEST RESPONSIBLE BIDDER

483309/Exp.11/30/2013
LICENSE NUMBER

$25,200,000.00
AMOUNT

[signature]
AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Shore to Ship Power Retrofit at Pier J, Berths J245-J247 and J266-J270

NO. HD-S2341

DATE OPENED: February 7, 2012

		Dynalectric 4462 Corporate Center Drive Los Alamitos, CA 90720 Phone: (714) 828-7000 Fax: (714) 484-2365		Comet Electric, Inc. 7760 Deering Avenue Canoga Park, CA 91304 Phone: (818) 340-0965 Fax: (818) 340-4033							
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 6 - Storm Water Pollution Prevention Plan(s) (SWPPP) Development and Compliance: Furnish all labor, materials, tools, equipment, and incidentals necessary to develop, provide, monitor... for the lump sum price (minimum amount of $150,000) of -	Lump Sum	316,300.00	316,300.00	166,650.00	166,650.00						
ITEM NO. 7 - City Ordinance Construction Waste Management Plan: Furnish all labor, material, tools, equipment, logistics, forms, and incidentals necessary... (exclusive of the maximum $50,000 deposit) for the lump sum price (minimum amount of $5,000) of -	Lump Sum	5,700.00	5,700.00	72,215.00	72,215.00						
ITEM NO. 8 - Soil Handling and Disposal,Non-Hazardous Waste: Furnish all labor, materials, tools, equipment, and incidentals necessary to excavate, stockpile... approximately seventeen-thousand six-hundred (17,600) tons... for the unit price per ton of -	Unit Price	28.15	236,460.00	28.33	237,972.00						
ITEM NO. 9 - Shoring for Excavations: Furnish all labor, materials, tools, equipment, and incidentals necessary to design, place, maintain, move, and remove excavation shoring adequate for worker... for the lump sum price (minimum amount of $30,000) of -	Lump Sum	287,000.00	287,000.00	122,390.00	122,390.00						
ITEM NO. 10 - Import Soil : Furnish all labor, materials, tools, equipment, and incidentals necessary to test, certify, load, transport, stockpile, place... approximately six thousand eight hundred ten (6,810) tons... for the unit price per ton of -	Unit Price	42.78	291,331.80	45.33	308,697.30						
TOTAL:											
CERTIFIED CHECK OR BOND:											

Helix Electric, Inc.
LOWEST RESPONSIBLE BIDDER

483309/Exp.11/30/2013
LICENSE NUMBER

$25,200,000.00
AMOUNT

AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Shore to Ship Power Retrofit at Pier J, Berths J245-J247 and J266-J270

NO. HD-S2341

DATE OPENED: February 7, 2012

		Dynalectric 4462 Corporate Center Drive Los Alamitos, CA 90720 Phone: (714) 826-7000 Fax: (714) 484-2385		Comet Electric, Inc. 7760 Deering Avenue Canoga Park, CA 91304 Phone: (818) 340-0965 Fax: (818) 340-4033							
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 11 - 3/4-inch Crushed Rock: Furnish all labor, materials, tools, equipment, and incidentals necessary to load, transport, stockpile, place, compact and grade approximately two thousand five hundred (2,500) tons... for the unit price per ton of -	Unit Price	90.06	225,150.00	28.33	70,825.00						
ITEM NO. 12 - Disposal of Non-Hazardous Waste: Furnish all labor, materials, tools, equipment, and incidentals necessary to profile, load, transport... approximately thirteen thousand four hundred (13,400) tons... for the unit price per ton of -	Unit Price	93.48	1,252,632.00	65.73	880,782.00						
ITEM NO. 13 - Crushed Miscellaneous Base from Port Crusher Site: Furnish all labor, materials, tools, equipment, and incidentals necessary to load, weigh... approximately five thousand six hundred eighty (5,680) tons.... for the unit price per ton of -	Unit Price	31.51	178,976.80	47.60	270,368.00						
ITEM NO. 14 - Furnish and Place Pavement Striping: Furnish all labor, materials, tools, equipment, and incidentals necessary to furnish and place 4-inch wide pavement striping complete as specified, for the unit price per linear foot of -	Unit Price	3.38	20,280.00	0.57	3,420.00						
ITEM NO. 16 - Furnish and Place Pavement Markings: Furnish all labor, materials, tools, equipment, and incidentals necessary to furnish and place pavement markings, complete as specified, for the unit price per square foot of -	Unit Price	4.50	27,000.00	3.31	19,860.00						
TOTAL:											
CERTIFIED CHECK OR BOND:											

Helix Electric, Inc.
LOWEST RESPONSIBLE BIDDER

483309/Exp.11/30/2013
LICENSE NUMBER

$25,200,000.00
AMOUNT

AUTHORIZED SIGNATURE

File: Bid Analysis HD-S2341 Bandanmaur (acp)[BID ANALYSIS] 2/7/2012 1:23 PM

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Shore to Ship Power Retrofit at Pier J, Berths J245-J247 and J266-J270

NO. HD-S2341

DATE OPENED: February 7, 2012

		Dynalectric 4462 Corporate Center Drive Los Alamitos, CA 90720 Phone: (714) 828-7000 Fax: (714) 484-2385		Comet Electric, Inc. 7750 Deering Avenue Canoga Park, CA 91304 Phone: (818) 340-0965 Fax: (818) 340-4033							
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 16 - Furnish and Place Chain Link Fence and Gates: Furnish all labor, materials, tools, equipment, and incidentals necessary to furnish and place permanent chain link fence and gates including all footings, chain... for the lump sum price of -	Lump Sum	29,720.00	29,720.00	31,413.00	31,413.00						
ITEM NO. 17 - Steel Guard Posts: Furnish all labor, materials, tools, equipment, and incidentals necessary to furnish and install ninety-five (95) steel guard posts, fixed and removable, including concrete footings... for the unit price per each of -	Unit Price	1,687.47	160,309.65	1,784.82	169,557.90						
ITEM NO. 18 - Shore Power Outlet Vaults for Berth J245 (SPO 1, SPO 2, SPO 3, SPO 4, SPO 5): Provide all labor, material, equipment, and incidentals necessary to perform demolition and construction of shore to ship power... for the lump sum price of -	Lump Sum	557,250.00	557,250.00	879,322.00	879,322.00						
ITEM NO. 19 - Shore Power Outlet Vaults for Berth J247 (SPO 6, SPO 7, SPO 8, SPO 9): Provide all labor, material, equipment, and incidentals necessary to perform demolition and construction of shore to ship power... for the lump sum price of -	Lump Sum	467,200.00	467,200.00	704,410.00	704,410.00						
ITEM NO. 20 - Shore Power Outlet Vaults for Berth J266 (SPO 10, SPO 11, SPO 12, SPO 13, SPO 14, SPO 15): Provide all labor, material, equipment, and incidentals necessary to perform demolition and construction of shore to... for the lump sum price of -	Lump Sum	666,700.00	666,700.00	1,187,501.00	1,187,501.00						
TOTAL:											
CERTIFIED CHECK OR BOND:											

Helix Electric, Inc.
LOWEST RESPONSIBLE BIDDER

483309/Exp.11/30/2013
LICENSE NUMBER

$25,200,000.00
AMOUNT

AUTHORIZED SIGNATURE

File: Bid Analysis HD-S2341 Bandstmakur (ecp)[BID ANALYSIS] 2/7/2012 1:23 PM

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Shore to Ship Power Retrofit at Pier J, Berths J245-J247 and J256-J270

NO. HD-S2341

DATE OPENED: February 7, 2012

		Dynalectric 4462 Corporate Center Drive Los Alamitos, CA 90720 Phone: (714) 828-7000 Fax: (714) 484-2385		Comet Electric, Inc. 7780 Deering Avenue Canoga Park, CA 91304 Phone: (818) 340-0965 Fax: (818) 340-4033							
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 21 - Shore Power Outlet Vaults for Berth J270 (SPO 16, SPO 17, SPO 18, SPO 19, SPO 20): Provide all labor, material, equipment, and incidentals necessary to perform demolition and construction of shore to ship power... for the lump sum price of -	Lump Sum	580,000.00	580,000.00	994,741.00	994,741.00						
ITEM NO. 22 - Transformer(s) for Berth J245 (SPO 1, SPO 2, SPO 3, SPO 4, SPO 5): Provide all labor, material, equipment, and incidentals required to furnish, install, and test the transformer(s) as part of a complete system... for the lump sum price of -	Lump Sum	650,000.00	650,000.00	630,000.00	630,000.00						
ITEM NO. 23 - Transformer(s) for Berth J247 (SPO 6, SPO 7, SPO 8, SPO 9): Provide all labor, material, equipment, and incidentals required to furnish, install, and test the transformer(s) as part of a complete system... for the lump sum price of -	Lump Sum	650,000.00	650,000.00	630,000.00	630,000.00						
ITEM NO. 24 - Transformer(s) for Berth J256 (SPO 10, SPO 11, SPO 12, SPO 13, SPO 14, SPO 15): Provide all labor, material, equipment, and incidentals required to furnish, install, and test the transformer(s) as part of a... for the lump sum price of -	Lump Sum	650,000.00	650,000.00	630,000.00	630,000.00						
ITEM NO. 25 - Transformers for Berth J270 (SPO 16, SPO 17, SPO 18, SPO 19, SPO 20): Provide all labor, material, equipment, and incidentals required to furnish, install, and test the transformer(s) as part of a complete... for the lump sum price of -	Lump Sum	650,000.00	650,000.00	630,000.00	630,000.00						
TOTAL:											
CERTIFIED CHECK OR BOND:											

Helix Electric, Inc.
LOWEST RESPONSIBLE BIDDER

483309/Exp.11/30/2013
LICENSE NUMBER

$25,200,000.00
AMOUNT

AUTHORIZED SIGNATURE

File: Bid Analysis HD-S2341 Bandelmaier (acp)[BID ANALYSIS] 2/7/2012 1:23 PM

Port of LONG BEACH The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Shore to Ship Power Retrofit at Pier J, Berths J245-J247 and J266-J270

NO. HD-S2341

DATE OPENED: February 7, 2012

		Dynalectric 4462 Corporate Center Drive Los Alamitos, CA 90720 Phone: (714) 828-7000 Fax: (714) 484-2385		Comet Electric, Inc. 7760 Deering Avenue Canoga Park, CA 91304 Phone: (818) 340-0965 Fax: (818) 340-4033							
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 26 - Switchgear Assembly(s) for Berth J245 (SPO 1, SPO 2, SPO 3, SPO 4, SPO 5): Provide all labor, material, equipment, and incidentals required to furnish, install, and test the switchgear assembly as part of a... for the lump sum price of -	Lump Sum	1,992,000.00	1,992,000.00	2,150,000.00	2,150,000.00						
ITEM NO. 27 - Switchgear Assembly(s) for Berth J247 (SPO 6, SPO 7, SPO 8, SPO 9): Provide all labor, material, equipment, and incidentals required to furnish, install, and test the switchgear assembly as part of a complete... for the lump sum price of -	Lump Sum	2,032,000.00	2,032,000.00	2,193,000.00	2,193,000.00						
ITEM NO. 28 - Switchgear Assembly(s) for Berth J266 (SPO 10, SPO 11, SPO 12, SPO 13, SPO 14, SPO 15): Provide all labor, material, equipment, and incidentals required to furnish, install, and test the switchgear assembly as... for the lump sum price of -	Lump Sum	2,045,300.00	2,045,300.00	2,244,000.00	2,244,000.00						
ITEM NO. 29 - Switchgear Assembly(s) for Berth J270 (SPO 16, SPO 17, SPO 18, SPO 19, SPO 20): Provide all labor, material, equipment, and incidentals required to furnish, install, and test the switchgear assembly as part of a... for the lump sum price of -	Lump Sum	2,235,400.00	2,235,400.00	2,519,000.00	2,519,000.00						
ITEM NO. 30 - Ductbank and Raceways for Berth J245 (SPO 1, SPO 2, SPO 3, SPO 4, SPO 5): Provide all labor, material, equipment, and incidentals required to furnish, install and test the ductbanks and raceways as part of a... for the lump sum price of -	Lump Sum	1,920,500.00	1,920,500.00	1,929,000.00	1,929,000.00						
TOTAL:											
CERTIFIED CHECK OR BOND:											

Helix Electric, Inc.
LOWEST RESPONSIBLE BIDDER

483309/Exp.11/30/2013
LICENSE NUMBER

$25,200,000.00
AMOUNT

AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Shore to Ship Power Retrofit
at Pier J, Berths J245-J247 and J266-J270

NO. HD-S2341

DATE OPENED: February 7, 2012

ITEM	ESTIMATED QUANTITIES	Dynalectric 4462 Corporate Center Drive Los Alamitos, CA 90720 Phone: (714) 828-7000 Fax: (714) 484-2385 RATE	AMOUNT	Comet Electric, Inc. 7760 Deering Avenue Canoga Park, CA 91304 Phone: (818) 340-0965 Fax: (818) 340-4033 RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 31 - Ductbank and Raceways for Berth J247 (SPO 6, SPO 7, SPO 8, SPO 9): Provide all labor, material, equipment, and incidentals required to furnish, install, and test the ductbanks and raceways as part of a complete,... for the lump sum price of -	Lump Sum	774,500.00	774,500.00	1,723,000.00	1,723,000.00						
ITEM NO. 32 - Ductbank and Raceways for Berth J266 (SPO 10, SPO 11, SPO 12, SPO 13, SPO 14, SPO 15): Provide all labor, material, equipment, and incidentals required to furnish, install, and test the ductbanks and raceways as... for the lump sum price of -	Lump Sum	2,657,600.00	2,657,600.00	3,006,000.00	3,006,000.00						
ITEM NO. 33 - Ductbank and Raceways for Berth J270 (SO 16, SPO 17, SPO 18, SPO 19, SPO 20): Provide all labor, material, equipment, and incidentals required to furnish, install, and test the ductbanks and raceways as part of... for the lump sum price of -	Lump Sum	1,234,500.00	1,234,500.00	2,897,000.00	2,897,000.00						
ITEM NO. 34 - Conductors for Berth J245 (SPO 1, SPO 2, SPO 3, SPO 4, SPO 5): Provide all labor, material, equipment, and incidentals required to furnish, install, and test the conductor(s) as part of a complete system as... for the lump sum price of -	Lump Sum	619,250.00	619,250.00	627,000.00	627,000.00						
ITEM NO. 35 - Conductors for Berth J247 (SPO 6, SPO 7, SPO 8, SPO 9): Provide all labor, material, equipment, and incidentals required to furnish, install, and test the conductor(s) as part of a complete system as specified... for the lump sum price of -	Lump Sum	371,200.00	371,200.00	460,000.00	460,000.00						
TOTAL:											
CERTIFIED CHECK OR BOND:											

Helix Electric, Inc.
LOWEST RESPONSIBLE BIDDER

483309/Exp.11/30/2013
LICENSE NUMBER

$25,200,000.00
AMOUNT

AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Shore to Ship Power Retrofit at Pier J, Berths J245-J247 and J266-J270 | NO. HD-S2341 | DATE OPENED: February 7, 2012

		Dynalectric 4462 Corporate Center Drive Los Alamitos, CA 90720 Phone: (714) 828-7000 Fax: (714) 484-2385		Comet Electric, Inc. 7760 Deering Avenue Canoga Park, CA 91304 Phone: (818) 340-0965 Fax: (818) 340-4033							
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 36 - Conductors for Berth J266 (SPO 10, SPO 11, SPO 12, SPO 13, SPO 14, SPO 15): Provide all labor, material, equipment, and incidentals required to furnish, install, and test the conductor(s) as part of a complete... for the lump sum price of -	Lump Sum	766,400.00	766,400.00	977,000.00	977,000.00						
ITEM NO. 37 - Conductors for Berth J270 (SPO 16, SPO 17, SPO 18, SPO 19, SPO 20): Provide all labor, material, equipment, and incidentals required to furnish, install, and test the conductor(s) as part of a complete system... for the lump sum price of -	Lump Sum	633,725.00	633,725.00	822,000.00	822,000.00						
ITEM NO. 38 - SPO Assemblies for Berth J245 (SPO 1, SPO 2, SPO 3, SPO 4, SPO 5): Provide all labor, material, equipment, and incidentals required to furnish, install, and test the SPO assemblies as part of a complete system... for the lump sum price of -	Lump Sum	188,200.00	188,200.00	638,000.00	638,000.00						
ITEM NO. 39 - SPO Assemblies for Berth J247 (SPO 6, SPO 7, SPO 8, SPO 9): Provide all labor, material, equipment, and incidentals required to furnish, install, and test the SPO assemblies as part of a complete system as... for the lump sum price of -	Lump Sum	150,600.00	150,600.00	392,000.00	392,000.00						
ITEM NO. 40 - SPO Assemblies for Berth J266 (SPO 10, SPO 11, SPO 12, SPO 13, SPO 14, SPO 15): Provide all labor, material, equipment, and incidentals required to furnish, install, and test the SPO assemblies as part of a... for the lump sum price of -	Lump Sum	230,800.00	230,800.00	586,000.00	586,000.00						
TOTAL:											
CERTIFIED CHECK OR BOND:											

Helix Electric, Inc.
LOWEST RESPONSIBLE BIDDER

483309/Exp.11/30/2013
LICENSE NUMBER

$25,200,000.00
AMOUNT

[signature]
AUTHORIZED SIGNATURE

File: Bid Analysis HD-S2341 Sandstrom (scp)(BID ANALYSIS) 2/7/2012 1:23 PM

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Shore to Ship Power Retrofit at Pier J, Berths J245-J247 and J266-J270

NO. HD-S2341

DATE OPENED: February 7, 2012

		Dynalectric 4452 Corporate Center Drive Los Alamitos, CA 90720 Phone: (714) 828-7000 Fax: (714) 484-2385		Comet Electric, Inc. 7760 Deering Avenue Canoga Park, CA 91304 Phone: (818) 340-0955 Fax: (818) 340-4033							
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 41 - SPO Assemblies for Berth J270 (SPO 16, SPO 17, SPO 18, SPO 19, SPO 20): Provide all labor, material, equipment, and incidentals required to furnish, install, and test the SPO assemblies as part of a complete... for the lump sum price of -	Lump Sum	192,400.00	192,400.00	489,000.00	489,000.00						
ITEM NO. 42 - All Other Electrical Work for Berth J245 (SPO 1, SPO 2, SPO 3, SPO 4, SPO 5): Provide all labor, material, equipment, and incidentals required to furnish, install, and test all other electrical work for Berth... for the lump sum price of -	Lump Sum	265,250.00	265,250.00	162,000.00	162,000.00						
ITEM NO. 43 - All Other Electrical Work for Berth J247 (SPO 6, SPO 7, SPO 8, SPO 9): Provide all labor, material, equipment, and incidentals required to furnish, install, and test all other electrical work for Berth J247 as... for the lump sum price of -	Lump Sum	151,050.00	151,050.00	162,000.00	162,000.00						
ITEM NO. 44 - All Other Electrical Work for Berth J266 (SPO 10, SPO 11, SPO 12, SPO 13, SPO 14, SPO 15): Provide all labor, material, equipment, and incidentals required to furnish, install, and test all other electrical work... for the lump sum price of -	Lump Sum	183,000.00	183,000.00	194,000.00	194,000.00						
ITEM NO. 45 - All Other Electrical Work for Berth J270 (SPO 16, SPO 17, SPO 18, SPO 19, SPO 20): Provide all labor, material, equipment, and incidentals required to furnish, install, and test all other electrical work for... for the lump sum price of -	Lump Sum	158,000.00	158,000.00	176,000.00	176,000.00						
TOTAL:											
CERTIFIED CHECK OR BOND:											

Helix Electric, Inc.
LOWEST RESPONSIBLE BIDDER

483309/Exp.11/30/2013
LICENSE NUMBER

$25,200,000.00
AMOUNT

AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Shore to Ship Power Retrofit at Pier J, Berths J245-J247 and J266-J270

NO. HD-S2341

DATE OPENED: February 7, 2012

		Dynaelectric 4462 Corporate Center Drive Los Alamitos, CA 90720 Phone: (714) 828-7000 Fax: (714) 484-2385		Comet Electric, Inc. 7760 Deering Avenue Canoga Park, CA 91304 Phone: (818) 340-0965 Fax: (818) 340-4033							
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 46 - All Other Work: Furnish all labor, materials, tools, equipment, and incidentals necessary to perform all other work not included in the other Bid Items as indicated in Paragraph SC-22 of the Special Conditions for the lump sum price of -	Lump Sum	2,928,804.00	2,928,804.00	12,533.00	12,533.00						
ITEM NO. 47 - Extended Contractor Overhead: Furnish all labor, material, tools, equipment, and incidentals necessary to complete the work beyond the initial Contract Time due to Excusable Compensable Delays as indicated... for the unit price per day of -	Unit Price	1,125.67	67,600.20	5,743.00	404,580.00						
ITEM NO. 48 - Standby Time: Period of time during which work is interrupted and the Contractor shall hold Contractor's labor personnel and equipment in a state of readiness as indicated in Paragraph SC-30 of the... for the unit price per man hour of -	Unit Price	305.79	1,227,160.00	800.00	3,200,000.00						
ITEM NO. 49 - Commissioning for Berths J245-J247: Furnish all labor, materials, tools, equipment, and incidentals necessary to commission Berths J245-J247 complete as specified in Section 16999 "Commissioning" for the unit price per man hour of -	Unit Price	268.50	268,500.00	269.00	269,000.00						
ITEM NO. 50 - Commissioning for Berths J266-J270: Furnish all labor, materials, tools, equipment, and incidentals necessary to commission Berths J266-J270 complete as specified in Section 16999 "Commissioning" for the unit price per man hour of -	Unit Price	268.50	268,500.00	269.00	269,000.00						
TOTAL:		$33,295,249.45		$38,770,551.20							
CERTIFIED CHECK OR BOND:		10% Bond		10% Bond							

Helix Electric, Inc.
LOWEST RESPONSIBLE BIDDER

483309/Exp.11/30/2013
LICENSE NUMBER

$25,200,000.00
AMOUNT

AUTHORIZED SIGNATURE

File: Bid Analysis HD-S2341 Bandazmeiur (rep)[BID ANALYSIS] 2/7/2012 1:23 PM

Progress Payment No. 27
Period Ending: 1/15/2015
PAYMENT DUE: 5/6/15
Specification: HD-S2341 - Shore to Ship Power Retrofit at Pier J, Berths J245-J247 and J266 - J270.
Contractor: Helix Electric, Inc.

LBHD Contract No: HD-7972
Original Bid Amt: $25,200,000

Item No.	Item	Unit	Est. Qty.	Unit Price	Bid Amount	Qty This Month	J245 $ Amount This Month	J247 $ Amount This Month	J266 $ Amount This Month	J270 $ Amount This Month	Previous Qty or %	Total % of Item Comp	TOTAL $ Amount to Date
TOTALS	TOTALCHANGE ORDERS			3,103,766.75	25,200,000.00	0%	$ 3,407.00	$ 3,407.00	$ 43,592.73	$ 43,592.73	99.67%	100.00%	$ 28,303,766.75
	NEW CONTRACT AMOUNT			28,303,766.75		WITHOLDS	-	-	-	-	-		
						RETENTION							

THIS IS TO CERTIFY THAT FUNDS ARE APPROVED BY BOARD OF HARBOR COMMISSIONERS.

MB Deepen P. Upadhyay 4/7/15
CM Initials Deepen Upadhyay, Project Manger — Date

4/9/15
Suzanne C. Plezia, P.E., Director of Construction Management — Date

Gross Earnings:	$ 28,303,766.75
Previous Payments:	$ 28,129,694.69
Previous Retention:	$ (80,072.61)
Earned This Period:	$ 93,999.45
Less Retention: E	$ (4,699.97)
AMOUNT DUE THIS ESTIMATE:	$ 89,299.48

DPHA15003141
DPHA15003145 escrow

BPO No.	INDEX CODE	PROJ	PROJ DET			Subobject Code	Amount	Retention	Pay Amount
RPHA12000174	HACACMCN	HA1316	1H2341			210009	$ 93,999.45	$ (4,699.97)	$ 89,299.48

RECEIVED BY DEEPEN UPADHYAY ON 4/6/15.

RECEIVED
P.O.L.B. FINANCE
15 APR 22 AM 11:23
ACCTS PAYABLE

Progress Payment No. 27
Period Ending: 1/15/2015
PAYMENT DUE: 5/6/15
Specification: HD-S2341 - Shore to Ship Power Retrofit at Pier J, Berths J245-J247 and J266 - J270.
Contractor: Helix Electric, Inc.

LBHD Contract No: HD-7972
Original Bid Amt: $25,200,000

Item No.	Item	Unit	Est. Qty.	Unit Price	Bid Amount	Qty This Month	J245 $ Amount This Month	J247 $ Amount This Month	J265 $ Amount This Month	J270 $ Amount This Month	Previous Qty or %	Total % of Item Comp	TOTAL $ Amount to Date
1	Progress Schedules	Lump Sum	1	100,000.00	100,000.00	0%	-	-	-	-	100%	100%	100,000.00
2	Site Specific Safety Plan	Lump Sum	1	150,000.00	150,000.00	0%	-	-	-	-	100%	100%	150,000.00
3	Furnish and Place Temporary K-Rail and Chain Link Fence	Lump Sum	1	1,400,000.00	1,400,000.00	0%	-	-	-	-	100%	100%	1,400,000.00
4	Mobilization/Demobilization	Lump Sum	1	1,200,000.00	1,200,000.00	0%	-	-	-	-	100%	100%	1,200,000.00
5	Interim Demobilization/Remobilization	Unit Price	15	9,000.00	135,000.00	0%	-	-	-	-	100%	100%	135,000.00
6	Storm Water Pollution Prevention Plan(s) (SWPPP) Development and Compliance	Lump Sum	1	300,000.00	300,000.00	0%	-	-	-	-	100%	100%	300,000.00
7	City Ordinance Construction Waste Management Plan	Lump Sum	1	10,000.00	10,000.00	0%	-	-	-	-	100%	100%	10,000.00
8	Soil Handling and Disposal, Non-Hazardous Waste	Unit Price	8,400	12.00	100,800.00	-	-	-	-	-	100%	100%	100,800.00
9	Shoring for Excavations	Lump Sum	1	150,000.00	150,000.00	0%	-	-	-	-	100%	100%	150,000.00
10	Import Soil	Unit Price	6,810	26.00	177,060.00		-	-	-	-	100%	100%	177,060.00
11	3/4-Inch Crushed Rock	Unit Price	2,500	25.00	62,500.00	-	-	-	-	-	100%	100%	62,500.00
12	Disposal of Non-Hazardous Waste	Unit Price	13,400	10.00	134,000.00	-	-	-	-	-	100%	100%	134,000.00
13	Crushed Miscellaneous Base from Port Crusher Site	Unit Price	5,680	40.00	227,200.00	-	-	-	-	-	100%	100%	227,200.00
14	Furnish and Place Pavement Striping	Unit Price	6000	2.00	12,000.00	-	-	-	-	-	100%	100%	12,000.00
15	Furnish and Place Pavement Markings	Unit Price	6000	6.00	36,000.00	-	-	-	-	-	100%	100%	36,000.00
16	Furnish and Place Chain Link Fence and Gates	Lump Sum	1	60,000.00	60,000.00	0%	-	-	-	-	100%	100%	60,000.00
17	Steel Guard Posts	Unit Price	95	1,400.00	133,000.00	-	-	-	-	-	100%	100%	133,000.00
18	Shore Power Outlet Vaults for Berth J245 (SPO 1, SPO 2, SPO 3, SPO 4, SPO 5)	Lump Sum	1	400,000.00	400,000.00	0%	-	N/A	N/A	N/A	100%	100%	400,000.00
19	Shore Power Outlet Vaults for Berth J247 (SPO 6, SPO 7, SPO 8, SPO 9)	Lump Sum	1	500,000.00	500,000.00	0%	N/A	-	N/A	N/A	100%	100%	500,000.00
20	Shore Power Outlet Vaults for Berth J266 (SPO 10, SPO 11, SPO 12, SPO 13, SPO 14, SPO 15)	Lump Sum	1	580,000.00	580,000.00	0%	N/A	N/A	-	N/A	100%	100%	580,000.00
21	Shore Power Outlet Vaults for Berth J270 (SPO 16, SPO 17, SPO 18, SPO 19, SPO 20)	Lump Sum	1	550,000.00	550,000.00	0%	N/A	N/A	N/A	-	100%	100%	550,000.00
22	Transformer(s) for Berth J245 (SPO 1, SPO 2, SPO 3, SPO 4, SPO 5)	Lump Sum	1	600,000.00	600,000.00	0%	-	N/A	N/A	N/A	100%	100%	600,000.00
23	Transformer(s) for Berth J247 (SPO 6, SPO 7, SPO 8, SPO 9)	Lump Sum	1	600,000.00	600,000.00	0%	N/A	-	N/A	N/A	100%	100%	600,000.00

Progress Payment No. 27
Period Ending: 1/15/2015
PAYMENT DUE: 5/6/15
Specification: HD-S2341 - Shore to Ship Power Retrofit at Pier J, Berths J245-J247 and J266 - J270.
Contractor: Helix Electric, Inc.

LBHD Contract No: HD-7972
Original Bid Amt: $25,200,000

Item No.	Item	Unit	Est. Qty.	Unit Price	Bid Amount	Qty This Month	J245 $ Amount This Month	J247 $ Amount This Month	J266 $ Amount This Month	J270 $ Amount This Month	Previous Qty or %	Total % of Item Comp	TOTAL $ Amount to Date
24	Transformer(s) for Berth J266 (SPO 10, SPO 11, SPO 12, SPO 13, SPO 14, SPO 15)	Lump Sum	1	600,000.00	600,000.00	0%	N/A	N/A	-	N/A	100%	100%	600,000.00
25	Transformers for Berth J270 (SPO 16, SPO 17, SPO 18, SPO 19, SPO 20)	Lump Sum	1	600,000.00	600,000.00	0%	N/A	N/A	N/A	-	100%	100%	600,000.00
26	Switchgear Assembly(s) for Berth J245 (SPO 1, SPO 2, SPO 3, SPO 4, SPO 5)	Lump Sum	1	1,112,440.00	1,112,440.00	0%	-	N/A	N/A	N/A	100%	100%	1,112,440.00
27	Switchgear Assembly(s) for Berth J247 (SPO 6, SPO 7, SPO 8, SPO 9)	Lump Sum	1	1,000,000.00	1,000,000.00	0%	N/A	-	N/A	N/A	100%	100%	1,000,000.00
28	Switchgear Assembly(s) for Berth J266 (SPO 10, SPO 11, SPO 12, SPO 13, SPO 14, SPO 15)	Lump Sum	1	2,000,000.00	2,000,000.00	0%	N/A	N/A	-	N/A	100%	100%	2,000,000.00
29	Switchgear Assembly(s) for Berth J270 (SPO 16, SPO 17, SPO 18, SPO 19, SPO 20)	Lump Sum	1	2,200,000.00	2,200,000.00	0%	N/A	N/A	N/A	-	100%	100%	2,200,000.00
30	Ductbank and Raceways for Berth J245 (SPO 1, SPO 2, SPO 3, SPO 4, SPO 5)	Lump Sum	1	1,500,000.00	1,500,000.00	0%	-	N/A	N/A	N/A	100%	100%	1,500,000.00
31	Ductbank and Raceways for Berth J247 (SPO 6, SPO 7, SPO 8, SPO 9)	Lump Sum	1	1,500,000.00	1,500,000.00	0%	N/A	-	N/A	N/A	100%	100%	1,500,000.00
32	Ductbank and Raceways for Berth J266 (SPO 10, SPO 11, SPO 12, SPO 13, SPO 14, SPO 15)	Lump Sum	1	2,000,000.00	2,000,000.00	0%	N/A	N/A	-	N/A	100%	100%	2,000,000.00
33	Ductbank and Raceways for Berth J270 (SO 16, SPO 17, SPO 18, SPO 19, SPO 20)	Lump Sum	1	1,500,000.00	1,500,000.00	0%	N/A	N/A	N/A	-	100%	100%	1,500,000.00
34	Conductors for Berth J245 (SPO 1, SPO 2, SPO 3, SPO 4, SPO 5)	Lump Sum	1	400,000.00	400,000.00	0%	-	N/A	N/A	N/A	100%	100%	400,000.00
35	Conductors for Berth J247 (SPO 6, SPO 7, SPO 8, SPO 9)	Lump Sum	1	200,000.00	200,000.00	0%	N/A	-	N/A	N/A	100%	100%	200,000.00
36	Conductors for Berth J266 (SPO 10, SPO 11, SPO 12, SPO 13, SPO 14, SPO 15)	Lump Sum	1	500,000.00	500,000.00	0%	N/A	N/A	-	N/A	100%	100%	500,000.00
37	Conductors for Berth J270 (SPO 16, SPO 17, SPO 18, SPO 19, SPO 20)	Lump Sum	1	400,000.00	400,000.00	0%	N/A	N/A	-	-	100%	100%	400,000.00
38	SPO Assemblies for Berth J245 (SPO 1, SPO 2, SPO 3, SPO 4, SPO 5)	Lump Sum	1	150,000.00	150,000.00	0%	-	N/A	N/A	N/A	100%	100%	150,000.00
39	SPO Assemblies for Berth J247 (SPO 6, SPO 7, SPO 8, SPO 9)	Lump Sum	1	100,000.00	100,000.00	0%	N/A	-	N/A	N/A	100%	100%	100,000.00
40	SPO Assemblies for Berth J266 (SPO 10, SPO 11, SPO 12, SPO 13, SPO 14, SPO 15)	Lump Sum	1	170,000.00	170,000.00	0%	N/A	N/A	-	N/A	100%	100%	170,000.00
41	SPO Assemblies for Berth J270 (SPO 16, SPO 17, SPO 18, SPO 19, SPO 20)	Lump Sum	1	150,000.00	150,000.00	0%	N/A	N/A	N/A	-	100%	100%	150,000.00
42	All Other Electrical Work for Berth J245 (SPO 1, SPO 2, SPO 3, SPO 4, SPO 5)	Lump Sum	1	150,000.00	150,000.00	0%	-	N/A	N/A	N/A	100%	100%	150,000.00
43	All Other Electrical Work for Berth J247 (SPO 6, SPO 7, SPO 8, SPO 9)	Lump Sum	1	150,000.00	150,000.00	0%	N/A	-	N/A	N/A	100%	100%	150,000.00
44	All Other Electrical Work for Berth J266 (SPO 10, SPO 11, SPO 12, SPO 13, SPO 14, SPO 15)	Lump Sum	1	150,000.00	150,000.00	0%	N/A	N/A	-	N/A	100%	100%	150,000.00
45	All Other Electrical Work for Berth J270 (SPO 16, SPO 17, SPO 18, SPO 19, SPO 20)	Lump Sum	1	150,000.00	150,000.00	0%	N/A	N/A	N/A	-	100%	100%	150,000.00

Progress Payment No. 27
Period Ending: 1/15/2015
PAYMENT DUE: 5/6/15
Specification: HD-S2341 - Shore to Ship Power Retrofit at Pier J, Berths J245-J247 and J266 - J270.
Contractor: Helix Electric, Inc.

LBHD Contract No: HD-7972
Original Bid Amt: $25,200,000

Item No.	Item	Unit	Est. Qty.	Unit Price	Bid Amount	Qty This Month	J245 $ Amount This Month	J247 $ Amount This Month	J266 $ Amount This Month	J270 $ Amount This Month	Previous Qty or %	Total % of Item Comp	TOTAL $ Amount to Date
46	All Other Work	Lump Sum	1	200,000.00	200,000.00	0%	-	-	-	-	100%	100%	200,000.00
47	Extended Contractor Overhead	Unit Price	60	1,000.00	60,000.00	-	-	-	-	-	100%	100%	60,000.00
48	Standby Time	Unit Price	4000	60.00	240,000.00	-	-	-	-	-	100%	100%	240,000.00
49	Commissioning for Berths J245-J247	Unit Price	1000	200.00	200,000.00	-	88,850.00	88,850.00	N/A	N/A	100%	100%	200,000.00
50	Commissioning for Berths J266-J270	Unit Price	1000	200.00	200,000.00	843	N/A	N/A	84,300.00	84,300.00	100%	100%	200,000.00
	CHANGE ORDER #1 - TIME EXT												
	CHANGE ORDER #2- R14A - ACCELERATION	Lump Sum	1	60,000.00		0%	-	-	-	-	100%	100%	60,000.00
	CHANGE ORDER # 2 - SCE GROUNDING	Lump Sum	1	10,427.00		0%	-	-	-	-	100%	100%	10,427.00
	CHANGE ORDER # 3	Lump Sum	1	61,497.00		0%	-	-	-	-	100%	100%	61,497.00
	CHANGE ORDER # 4	Lump Sum	1	1,371,684.00		0%	-	-	-	-	100%	100%	1,371,684.00
	CHANGE ORDER #5	Lump Sum	1	(11,053.00)		0%	-	-	-	-	100%	100%	(11,053.00)
	CHANGE ORDER # 6	Lump Sum	1	75,000.00		0%	-	-	-	-	100%	100%	75,000.00
	CHANGE ORDER # 7	Lump Sum	1	88,932.00		0%	N/A	N/A	-	-	100%	100%	88,932.00
	CHANGE ORDER # 8	Lump Sum	1	58,720.00		0%			N/A	N/A	100%	100%	58,719.98
	CHANGE ORDER # 9	Lump Sum	1	59,147.00		0%	-	-	-	-	100%	100%	59,147.00
	CHANGE ORDER # 10	Lump Sum	1	57,179.00		0%	-	-	-	-	100%	100%	57,179.00
	CHANGE ORDER #11	Lump Sum	1	24,752.00		0%	-	-	-	-	100%	100%	24,752.00
	CHANGE ORDER #12	Lump Sum	1	1,621,113.00		5%	-		40,185.73	40,185.73	95%	100%	1,621,113.06
	CHANGE ORDER #13	Lump Sum	1	(38,959.25)		0%	-	-		-	100%	100%	(38,959.29)
	CHANGE ORDER #14	Lump Sum	1	(332,672.00)		100%	(85,443.00)	(85,443.00)	(80,893.00)	(80,893.00)	100%	100%	(332,672.00)

Project & Grant Revenue/Expenditure Financial Summary

Criteria: As Of = 3/21/2019 (47% of Year Elapsed)

Vendor	Title	ITD Adjusted Budget	Month-To-Date Actual Activity	Quarter-To-Date Actual Activity	ITD Actual	ITD Encumbrance Incl Pre-Encumb	ITD Adjusted Budget - Actuals	ITD % Actuals to Adjusted Budget
Project HA1316 - CLOSED- NCK-PIER J 243-270 SHORE TO SHIP								
1B2341 -- 1B2341/ENV PLANNING/SHORE TO SHIP PWR								
(None)	(None)	755.27	0.00	0.00	239.31	0.00	515.96	31.7%
V046804	SOUTH COAST AIR QUALITY MANAGEMENT	0.00	0.00	0.00	515.96	0.00	(515.96)	0.0%
Total Project Detail 1B2341/ENV PLANNING/SHORE TO SHIP PWR		755.27	0.00	0.00	755.27	0.00	0.00	100.0%
1C2341 -- 1C2341/DESIGN/SHORE TO SHIP POWER								
(None)	(None)	5,780,229.59	0.00	0.00	597,829.78	0.00	5,182,399.81	10.3%
V051095	AMERICAN REPROGRAPHICS COMPANY	0.00	0.00	0.00	4,141.89	0.00	(4,141.89)	0.0%
V054954	BIGGS CARDOSA ASSOCIATES INC	0.00	0.00	0.00	50,735.00	0.00	(50,735.00)	0.0%
V054853	C BELOW INC	0.00	0.00	0.00	5,500.00	0.00	(5,500.00)	0.0%
V005746	CADSTAR INC	0.00	0.00	0.00	6,820.00	0.00	(6,820.00)	0.0%
V047448	EASTERN GROUP PUBLICATION INC	0.00	0.00	0.00	1,168.50	0.00	(1,168.50)	0.0%
V046782	JOHNSON-FRANK & ASSOC INC	0.00	0.00	0.00	26,604.56	0.00	(26,604.56)	0.0%
V041706	KPFF CONSULTING ENGINEERS	0.00	0.00	0.00	97,429.59	0.00	(97,429.59)	0.0%
V021514	LONG BEACH PUBLISHING COMPANY	0.00	0.00	0.00	2,945.70	0.00	(2,945.70)	0.0%
V002113	LONG BEACH TIMES NEWSPAPER INC	0.00	0.00	0.00	4,286.08	0.00	(4,286.08)	0.0%
V030466	OUR WEEKLY LLC	0.00	0.00	0.00	1,000.00	0.00	(1,000.00)	0.0%
V025229	P2S INC	0.00	0.00	0.00	4,306,690.08	0.00	(4,306,690.08)	0.0%
V012651	PIRNIE, MALCOLM INC	0.00	0.00	0.00	72,104.52	0.00	(72,104.52)	0.0%
V025943	SAF-R-DIG UTILITY SURVEYS, INC	0.00	0.00	0.00	37,823.08	0.00	(37,823.08)	0.0%
V045271	TMAD TAYLOR & GAINES ENGINEERS	0.00	0.00	0.00	106,154.00	0.00	(106,154.00)	0.0%
V043513	URS CORPORATION	0.00	0.00	0.00	461,953.91	0.00	(461,953.91)	0.0%
Total Project Detail 1C2341/DESIGN/SHORE TO SHIP POWER		5,780,229.59	0.00	0.00	5,783,186.69	0.00	(2,957.10)	100.1%
1H2341 -- FUNDING FOR S.C.E.								
(None)	(None)	43,929,507.56	0.00	0.00	1,768,774.28	0.00	42,160,733.28	4.0%
V051095	AMERICAN REPROGRAPHICS COMPANY	0.00	0.00	0.00	23,325.95	0.00	(23,325.95)	0.0%
V035098	ARCADIS US INC	0.00	0.00	0.00	1,015.00	0.00	(1,015.00)	0.0%
V054954	BIGGS CARDOSA ASSOCIATES INC	0.00	0.00	0.00	7,000.00	0.00	(7,000.00)	0.0%
V046257	BUBALO, STEVE CONSTRUCTION COMPANY	0.00	0.00	0.00	77,220.84	0.00	(77,220.84)	0.0%
V050028	COMPUTER 1 PRODUCTS OF AMERICA INC	0.00	0.00	0.00	4,087.90	0.00	(4,087.90)	0.0%
V060783	CRISP ENTERPRISES	0.00	0.00	0.00	81.75	0.00	(81.75)	0.0%
V042936	CUTTING EDGE CONCRETE SERVICES INC	0.00	0.00	0.00	1,598.94	0.00	(1,598.94)	0.0%
V037752	D WOOLLEY & ASSOCIATES INC	0.00	0.00	0.00	9,577.50	0.00	(9,577.50)	0.0%
V045696	EDISON ESI	0.00	0.00	0.00	7,490,000.00	0.00	(7,490,000.00)	0.0%
V044431	GRIFFITH COMPANY	0.00	0.00	0.00	516,058.52	0.00	(516,058.52)	0.0%
V024035	HELIX ELECTRIC INC	0.00	0.00	0.00	28,303,766.78	0.00	(28,303,766.78)	0.0%
V006703	IMPREST - HA ADMIN CKG ACCT	0.00	0.00	0.00	138.84	0.00	(138.84)	0.0%
V062479	KCEI CONSTRUCTION INC	0.00	0.00	0.00	90,000.00	0.00	(90,000.00)	0.0%
V025942	KOURY ENGINEERING & TESTING INC	0.00	0.00	0.00	180,342.50	0.00	(180,342.50)	0.0%
V024652	LOVCO CONSTRUCTION INC	0.00	0.00	0.00	227.69	0.00	(227.69)	0.0%
V053486	NETWORK INTEGRATION COMPANY PARTNERS	0.00	0.00	0.00	372.14	0.00	(372.14)	0.0%
V025229	P2S INC	0.00	0.00	0.00	1,061,424.53	0.00	(1,061,424.53)	0.0%
V039001	PACIFIC EH&S SERVICES INC	0.00	0.00	0.00	30,293.78	0.00	(30,293.78)	0.0%

Criteria: Revenue/Expenditure = E; Project = HA1316; Project Detail = !90

Run: 3/21/2019 11:26 AM Includes transactions posted through: 3/20/2019

Project & Grant Revenue/Expenditure Financial Summary

Criteria: As Of = 3/21/2019 (47% of Year Elapsed)

Vendor	Title	ITD Adjusted Budget	Month-To-Date Actual Activity	Quarter-To-Date Actual Activity	ITD Actual	ITD Encumbrance incl Pre-Encumb	ITD Adjusted Budget - Actuals	ITD % Actuals to Adjusted Budget
Project HA1316 - CLOSED- NCK-PIER J 243-270 SHORE TO SHIP								
1H2341 -- FUNDING FOR S.C.E.								
V053796	PACIFIC PRODUCTS & SERVICES INC	0.00	0.00	0.00	1,075.06	0.00	(1,075.06)	0.0%
V048468	PC SPECIALISTS INC	0.00	0.00	0.00	4,804.59	0.00	(4,804.59)	0.0%
V021557	SHI INTERNATIONAL CORPORATION	0.00	0.00	0.00	222.08	0.00	(222.08)	0.0%
V026541	SIMPLUS MANAGEMENT COMPANY, LLC	0.00	0.00	0.00	52,852.80	0.00	(52,852.80)	0.0%
V044553	SMITH EMERY CORP	0.00	0.00	0.00	1,923.40	0.00	(1,923.40)	0.0%
V046804	SOUTH COAST AIR QUALITY MANAGEMENT	0.00	0.00	0.00	1,058.94	0.00	(1,058.94)	0.0%
V044555	SOUTHERN CALIFORNIA EDISON COMPANY	0.00	0.00	0.00	1,500,000.00	0.00	(1,500,000.00)	0.0%
V045074	TWINING INC	0.00	0.00	0.00	5,527.50	0.00	(5,527.50)	0.0%
V043513	URS CORPORATION	0.00	0.00	0.00	4,893.75	0.00	(4,893.75)	0.0%
V047884	VANIR CONSTRUCTION MANAGEMENT INC	0.00	0.00	0.00	2,788,885.09	0.00	(2,788,885.09)	0.0%
V012285	WSP USA INC	0.00	0.00	0.00	3,062.60	0.00	(3,062.60)	0.0%
Total Project Detail FUNDING FOR S.C.E.		43,929,507.56	0.00	0.00	43,929,612.75	0.00	(105.19)	100.0%
Total Project HA1316		49,710,492.42	0.00	0.00	49,713,554.71	0.00	(3,062.29)	100.0%
Total		49,710,492.42	0.00	0.00	49,713,554.71	0.00	(3,062.29)	100.0%

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Shore to Ship Power Project at Pier T, Berths T132-T140

NO. HD-S2348

DATE OPENED: February 14, 2012

		The Ryan Company 15 Commerce Way Norton, MA 02766 Phone: (508) 742-2500 Fax: (508) 742-2540		Minako dba Minco Construction 522 E. Airline Way Gardena, CA 90248 Phone: (310) 516-8100 Fax: (310) 516-7404		Vellutini Corp dba Royal Electric 8481 Carbide Ct Sacramento, CA 95828 Phone: (916) 226-2100 Fax: (916) 226-2150		KDC, Inc. dba Dynalectric 4462 Corporate Center Drive Los Alamitos, CA 90720 Phone: (714) 828-7000 Fax: (714) 484-2384		Sully-Miller Contracting Company 135 S. State College Blvd #400 Brea, CA 92821 Phone: (714) 578-9600 Fax: (714) 449-8775	
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 1 - Mobilization and Demobilization: Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to perform mobilization and demobilization, as shown and specified (including, but... for the lump sum price of -	Lump Sum	1,161,050.43	1,161,050.43	70,000.00	70,000.00	320,000.00	320,000.00	600,000.00	600,000.00	663,864.00	663,864.00
ITEM NO. 2 - Excavation Support Systems: Per Section 6707 of the California Labor Code, furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to provide bracing... for the lump sum price of (not less than $10,000)	Lump Sum	18,240.49	18,240.49	15,000.00	15,000.00	52,000.00	52,000.00	11,000.00	11,000.00	106,001.00	106,001.00
ITEM NO. 3 - SWPPP Development and Compliance: Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to develop the Stormwater Pollution Prevention Plan and... for the lump sum price of (not less than $10,000)	Lump Sum	16,772.86	16,772.86	50,000.00	50,000.00	68,000.00	68,000.00	60,000.00	60,000.00	12,878.00	12,878.00
ITEM NO. 4 - Demolition of Chain Link Fence and Gates, Bollards, and Paving: Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to remove existing 8-foot chain link fence and... for the lump sum price of -	Lump Sum	33,632.23	33,632.23	177,000.00	177,000.00	66,000.00	66,000.00	187,000.00	187,000.00	179,589.00	179,589.00
ITEM NO. 5 - Soil Handling and Disposal, Non-Hazardous Waste: Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to handle and dispose of approximately the estimated... for the unit price per ton of -	Unit Price	40.26	106,085.10	50.00	131,750.00	48.00	126,480.00	83.61	220,312.35	28.60	75,361.00
TOTAL:											
CERTIFIED CHECK OR BOND:											

The Ryan Company
LOWEST RESPONSIBLE BIDDER

774698/Exp. 02/28/2014
LICENSE NUMBER

$20,559,112.22
AMOUNT

AUTHORIZED SIGNATURE

File: Bid Analysis HD-S2348 Gordon[BID ANALYSIS] 2/14/2012 12:48 PM

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Shore to Ship Power Project at Pier T, Berths T132-T140

NO. HD-S2348

DATE OPENED: February 14, 2012

		The Ryan Company 15 Commerce Way Norton, MA 02766 Phone: (508) 742-2500 Fax: (508) 742-2540		Minako dba Minco Construction 522 E. Airline Way Gardena, CA 90248 Phone: (310) 516-8100 Fax: (310) 516-7404		Vellutini Corp dba Royal Electric 8481 Carbide Ct Sacramento, CA 95828 Phone: (916) 226-2100 Fax: (916) 226-2150		KDC, Inc. dba Dynalectric 4462 Corporate Center Drive Los Alamitos, CA 90720 Phone: (714) 828-7000 Fax: (714) 484-2384		Sully-Miller Contracting Company 135 S. State College Blvd #400 Brea, CA 92821 Phone: (714) 578-9600 Fax: (714) 449-8775	
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 6 - Soil Handling and Reuse, Fill Material: Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to handle and dispose as backfill approximately the... for the unit price per cubic yard of -	Unit Price	22.36	136,843.20	50.00	306,000.00	44.00	269,280.00	45.66	279,439.20	45.20	276,624.00
ITEM NO. 7 - Import Material: Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to load, haul, place and compact as backfill approximately the estimated quantity of import... for the unit price per ton of -	Unit Price	15.66	9,396.00	20.00	12,000.00	29.00	17,400.00	38.51	23,106.00	39.16	23,496.00
ITEM NO. 8 - 8-Foot Chain Link Fence with Barbed Wire: Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to furnish and install approximately the estimated quantity of... for unit price per linear foot of -	Unit Price	44.73	33,547.50	100.00	75,000.00	50.00	37,500.00	55.01	41,257.50	49.20	36,900.00
ITEM NO. 9 - Chain Link Single Gate with Barbed Wire: Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to provide and install approximately the estimated quantity of chain... for the unit price per each of -	Unit Price	670.92	7,380.12	1,000.00	11,000.00	930.00	10,230.00	990.18	10,891.98	1,455.00	16,005.00
ITEM NO. 10 - Chain Link Double Gates with Barbed Wire: Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to provide and install approximately the estimated quantity of chain... for the unit price per each of -	Unit Price	1,677.29	6,709.16	1,000.00	4,000.00	2,130.00	8,520.00	2,750.50	11,002.00	2,909.00	11,636.00
TOTAL:											
CERTIFIED CHECK OR BOND:											

The Ryan Company	774698/Exp. 02/28/2014	$20,559,112.22	
LOWEST RESPONSIBLE BIDDER	LICENSE NUMBER	AMOUNT	AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Shore to Ship Power Project at Pier T, Berths T132-T140

NO. HD-S2348

DATE OPENED: February 14, 2012

		The Ryan Company 15 Commerce Way Norton, MA 02766 Phone: (508) 742-2500 Fax: (508) 742-2540		Minako dba Minco Construction 522 E. Airline Way Gardena, CA 90248 Phone: (310) 516-8100 Fax: (310) 516-7404		Vellutini Corp dba Royal Electric 8481 Carbide Ct Sacramento, CA 95828 Phone: (916) 226-2100 Fax: (916) 226-2150		KDC, Inc. dba Dynalectric 4452 Corporate Center Drive Los Alamitos, CA 90720 Phone: (714) 828-7000 Fax: (714) 484-2384		Sully-Miller Contracting Company 135 S. State College Blvd #400 Brea, CA 92821 Phone: (714) 578-9600 Fax: (714) 449-8775	
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 11 - Pipe Bollards, 12-Inch: Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to provide and install approximately the estimated quantity of 12-inch diameter pipe... for the unit price per each of -	Unit Price	1,341.83	183,630.71	1,770.00	242,490.00	1,570.00	215,090.00	2,090.31	286,372.47	2,338.00	320,306.00
ITEM NO. 12 - Removable Pipe Bollards, 12-Inch: Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to provide and install approximately the estimated quantity of 12-inch... for the unit price per each of -	Unit Price	1,677.29	41,932.25	3,700.00	92,500.00	1,410.00	35,250.00	3,502.52	87,563.00	3,435.00	85,875.00
ITEM NO. 13 - Shallow Pipe Bollards, 12-Inch: Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to provide and install approximately the estimated quantity of 12-inch... for the unit price per each of -	Unit Price	1,341.83	42,938.56	1,770.00	56,640.00	1,570.00	50,240.00	3,190.47	102,095.04	3,172.00	101,504.00
ITEM NO. 14 - New Pavement Striping and Markings: Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to install new paint striping and markings, complete as shown and specified and... for the lump sum price of -	Lump Sum	8,386.43	8,386.43	7,000.00	7,000.00	6,600.00	6,600.00	14,000.00	14,000.00	3,133.00	3,133.00
ITEM NO. 15 - Replacement of Existing Pavement Striping: Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to replace approximately the estimated quantity of existing... for the unit price per linear foot of -	Unit Price	0.95	3,325.00	1.00	3,500.00	0.85	2,975.00	1.10	3,850.00	0.73	2,555.00
TOTAL:											
CERTIFIED CHECK OR BOND:											

The Ryan Company
LOWEST RESPONSIBLE BIDDER

774698/Exp. 02/28/2014
LICENSE NUMBER

$20,559,112.22
AMOUNT

AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Shore to Ship Power Project at Pier T, Berths T132-T140

NO. HD-S2348

DATE OPENED: February 14, 2012

		The Ryan Company 15 Commerce Way Norton, MA 02766 Phone: (508) 742-2500 Fax: (508) 742-2540		Minako dba Minco Construction 522 E. Airline Way Gardena, CA 90248 Phone: (310) 516-8100 Fax: (310) 516-7404		Vellutini Corp dba Royal Electric 8481 Carbide Ct Sacramento, CA 95828 Phone: (916) 226-2100 Fax: (916) 226-2150		KDC, Inc. dba Dynalectric 4462 Corporate Center Drive Los Alamitos, CA 90720 Phone: (714) 828-7000 Fax: (714) 484-2384		Sully-Miller Contracting Company 135 S. State College Blvd #400 Brea, CA 92821 Phone: (714) 578-9600 Fax: (714) 449-8775	
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 16 - Removal of Existing Pavement Striping: Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to replace and remove approximately the estimated quantity of... for the unit price per linear foot of -	Unit Price	9.51	1,141.20	10.00	1,200.00	8.90	1,068.00	55.01	6,601.20	16.80	2,016.00
ITEM NO. 17 - Relocation of Water Lines and Power/Telephone/Water ("PTW") Vaults: Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to relocate water lines and PTW vaults... for the lump sum price of -	Lump Sum	26,836.58	26,836.58	70,000.00	70,000.00	76,000.00	76,000.00	48,000.00	48,000.00	81,692.00	81,692.00
ITEM NO. 18 - Transformers (for Berth 140 as noted in Special Condition SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to provide, install and connect one (1) medium... for the lump sum price of -	Lump Sum	709,593.23	709,593.23	677,000.00	677,000.00	680,000.00	680,000.00	694,000.00	694,000.00	728,653.00	728,653.00
ITEM NO. 19 - Transformers (for Berth 138 as noted in Special Condition SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to provide, install and connect one (1) medium... for the lump sum price of -	Lump Sum	709,593.23	709,593.23	677,000.00	677,000.00	680,000.00	680,000.00	694,000.00	694,000.00	728,653.00	728,653.00
ITEM NO. 20 - Transformers (for Berth 136 as noted in Special Condition SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to provide, install and connect one (1) medium... for the lump sum price of -	Lump Sum	709,593.23	709,593.23	677,000.00	677,000.00	680,000.00	680,000.00	694,000.00	694,000.00	728,653.00	728,653.00
TOTAL:											
CERTIFIED CHECK OR BOND:											

The Ryan Company
LOWEST RESPONSIBLE BIDDER

774698/Exp. 02/28/2014
LICENSE NUMBER

$20,559,112.22
AMOUNT

AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Shore to Ship Power Project at Pier T, Berths T132-T140

NO. HD-S2348

DATE OPENED: February 14, 2012

		The Ryan Company 15 Commerce Way Norton, MA 02766 Phone: (508) 742-2500 Fax: (508) 742-2540		Minako dba Minco Construction 522 E. Airline Way Gardena, CA 90248 Phone: (310) 516-8100 Fax: (310) 516-7404		Vellutini Corp dba Royal Electric 8481 Carbide Ct Sacramento, CA 95828 Phone: (916) 226-2100 Fax: (916) 226-2150		KDC, Inc. dba Dynalectric 4462 Corporate Center Drive Los Alamitos, CA 90720 Phone: (714) 828-7000 Fax: (714) 484-2384		Sully-Miller Contracting Company 135 S. State College Blvd #400 Brea, CA 92821 Phone: (714) 578-9600 Fax: (714) 449-8775	
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 21 - Transformers (for Berth 132-134 as noted in Special Condition SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to provide, install and connect one (1)... for the lump sum price of -	Lump Sum	709,593.23	709,593.23	677,000.00	677,000.00	680,000.00	680,000.00	694,000.00	694,000.00	728,653.00	728,653.00
ITEM NO. 22 - Switchgear Assembly(s) (for Berth 140 as noted in Special Condition SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to provide, install and connect two (2)... for the lump sum price of -	Lump Sum	3,939,255.79	3,939,255.79	3,777,000.00	3,777,000.00	4,125,000.00	4,125,000.00	3,876,000.00	3,876,000.00	3,975,075.00	3,975,075.00
ITEM NO. 23 - Switchgear Assembly(s) (for Berth 138 as noted in Special Condition SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to provide, install and connect one (1)... for the lump sum price of -	Lump Sum	1,921,221.76	1,921,221.76	2,077,700.00	2,077,700.00	1,830,000.00	1,830,000.00	1,890,000.00	1,890,000.00	2,019,779.00	2,019,779.00
ITEM NO. 24 - Switchgear Assembly(s) (for Berth 136 as noted in Special Condition SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to provide, install and connect one (1)... for the lump sum price of -	Lump Sum	1,779,834.87	1,779,834.87	1,777,000.00	1,777,000.00	1,694,000.00	1,694,000.00	1,750,000.00	1,750,000.00	1,851,000.00	1,851,000.00
ITEM NO. 25 - Switchgear Assembly(s) (for Berth 132-134 as noted in Special Condition SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to provide, install and connect one... for the lump sum price of -	Lump Sum	2,105,417.86	2,105,417.86	2,100,000.00	2,100,000.00	2,007,000.00	2,007,000.00	2,073,220.00	2,073,220.00	2,202,840.00	2,202,840.00
TOTAL:											
CERTIFIED CHECK OR BOND:											

The Ryan Company
LOWEST RESPONSIBLE BIDDER

774698/Exp. 02/28/2014
LICENSE NUMBER

$20,559,112.22
AMOUNT

AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Shore to Ship Power Project at Pier T, Berths T132-T140

NO. HD-S2348

DATE OPENED: February 14, 2012

		The Ryan Company 15 Commerce Way Norton, MA 02766 Phone: (508) 742-2500 Fax: (508) 742-2540		Minako dba Minco Construction 522 E. Airline Way Gardena, CA 90248 Phone: (310) 516-8100 Fax: (310) 516-7404		Vellutini Corp dba Royal Electric 8481 Carbide Ct Sacramento, CA 95828 Phone: (916) 226-2100 Fax: (916) 226-2150		KDC, Inc. dba Dynalectric 4462 Corporate Center Drive Los Alamitos, CA 90720 Phone: (714) 828-7000 Fax: (714) 484-2384		Sully-Miller Contracting Company 135 S. State College Blvd #400 Brea, CA 92821 Phone: (714) 578-9600 Fax: (714) 449-8775	
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 26 - Ductbanks and Raceways (for Berth 140 as noted in Special Condition SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to construct a complete and functioning... for the lump sum price of -	Lump Sum	349,501.65	349,501.65	717,000.00	717,000.00	645,000.00	645,000.00	621,000.00	621,000.00	491,569.00	491,569.00
ITEM NO. 27 - Ductbanks and Raceways (for Berth 138 as noted in Special Condition SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to construct a complete and functioning... for the lump sum price of -	Lump Sum	599,461.62	599,461.62	337,000.00	337,000.00	710,000.00	710,000.00	590,000.00	590,000.00	707,185.00	707,185.00
ITEM NO. 28 - Ductbanks and Raceways (for Berth 136 as noted in Special Condition SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to construct a complete and functioning... for the lump sum price of -	Lump Sum	394,105.50	394,105.50	437,000.00	437,000.00	492,000.00	492,000.00	471,000.00	471,000.00	532,209.00	532,209.00
ITEM NO. 29 - Ductbanks and Raceways (for Berth 132-134 as noted in Special Condition SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to construct a complete and... for the lump sum price of -	Lump Sum	765,573.51	765,573.51	737,000.00	737,000.00	833,000.00	833,000.00	845,621.00	845,621.00	999,980.00	999,980.00
ITEM NO. 30 - Conductors (for Berth 140 as noted in Special Condition SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to provide, install and connect all conductors and... for the lump sum price of -	Lump Sum	413,138.96	413,138.96	277,000.00	277,000.00	1,312,000.00	1,312,000.00	1,045,000.00	1,045,000.00	769,437.00	769,437.00
TOTAL:											
CERTIFIED CHECK OR BOND:											

The Ryan Company
LOWEST RESPONSIBLE BIDDER

774698/Exp. 02/28/2014
LICENSE NUMBER

$20,559,112.22
AMOUNT

AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Shore to Ship Power Project at Pier T, Berths T132-T140

NO. HD-S2348

DATE OPENED: February 14, 2012

		The Ryan Company 15 Commerce Way Norton, MA 02766 Phone: (508) 742-2500 Fax: (508) 742-2540		Minako dba Minco Construction 522 E. Airline Way Gardena, CA 90248 Phone: (310) 516-8100 Fax: (310) 516-7404		Vellutini Corp dba Royal Electric 8481 Carbide Ct Sacramento, CA 95828 Phone: (916) 226-2100 Fax: (916) 226-2150		KDC, Inc. dba Dynalectric 4462 Corporate Center Drive Los Alamitos, CA 90720 Phone: (714) 828-7000 Fax: (714) 484-2384		Sully-Miller Contracting Company 135 S. State College Blvd #400 Brea, CA 92821 Phone: (714) 578-9600 Fax: (714) 449-8775	
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 31 - Conductors (for Berth 138 as noted in Special Condition SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to provide, install and connect all conductors and... for the lump sum price of -	Lump Sum	518,338.89	518,338.89	777,000.00	777,000.00	324,000.00	324,000.00	450,000.00	450,000.00	378,954.00	378,954.00
ITEM NO. 32 - Conductors (for Berth 136 as noted in Special Condition SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to provide, install and connect all conductors and... for the lump sum price of -	Lump Sum	471,591.80	471,591.80	277,000.00	277,000.00	247,000.00	247,000.00	300,000.00	300,000.00	555,850.00	555,850.00
ITEM NO. 33 - Conductors (for Berth 132-134 as noted in Special Condition SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to provide, install and connect all conductors... for the lump sum price of -	Lump Sum	692,948.22	692,948.22	277,000.00	277,000.00	507,000.00	507,000.00	610,000.00	610,000.00	708,920.00	708,920.00
ITEM NO. 34 - SPO Receptacles (for Berth 140 as noted in Special Condition SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to perform demolition and construction of two... for the lump sum price of -	Lump Sum	226,959.75	226,959.75	477,000.00	477,000.00	238,000.00	238,000.00	300,000.00	300,000.00	191,099.00	191,099.00
ITEM NO. 35 - SPO Receptacles (for Berth 138 as noted in Special Conditon SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to perform demolition and construction of three... for the lump sum price of -	Lump Sum	340,439.63	340,439.63	637,000.00	637,000.00	356,000.00	356,000.00	475,000.00	475,000.00	317,068.00	317,068.00
TOTAL:											
CERTIFIED CHECK OR BOND:											

The Ryan Company
LOWEST RESPONSIBLE BIDDER

774698/Exp. 02/28/2014
LICENSE NUMBER

$20,559,112.22
AMOUNT

AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Shore to Ship Power Project at Pier T, Berths T132-T140

NO. HD-S2348

DATE OPENED: February 14, 2012

		The Ryan Company 15 Commerce Way Norton, MA 02766 Phone: (508) 742-2500 Fax: (508) 742-2540		Minako dba Minco Construction 522 E. Airline Way Gardena, CA 90248 Phone: (310) 516-8100 Fax: (310) 516-7404		Vellutini Corp dba Royal Electric 8481 Carbide Ct Sacramento, CA 95828 Phone: (916) 226-2100 Fax: (916) 226-2150		KDC, Inc. dba Dynalectric 4462 Corporate Center Drive Los Alamitos, CA 90720 Phone: (714) 828-7000 Fax: (714) 484-2384		Sully-Miller Contracting Company 135 S. State College Blvd #400 Brea, CA 92821 Phone: (714) 578-9500 Fax: (714) 449-8775	
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 36 - SPO Receptacles (for Berth 136 as noted in Special Conditions SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to perform demolition and construction of two... for the lump sum price of -	Lump Sum	226,959.75	226,959.75	477,000.00	477,000.00	238,000.00	238,000.00	300,000.00	300,000.00	191,099.00	191,099.00
ITEM NO. 37 - SPO Receptacles (for Berth 132-134 as noted in Special Condition SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to perform demolition and construction of... for the lump sum price of -	Lump Sum	453,919.50	453,919.50	877,000.00	877,000.00	475,000.00	475,000.00	550,000.00	550,000.00	443,067.00	443,067.00
ITEM NO. 38 - All Other Electrical Work (for Berth 140 as noted in Special Condition SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to construct reinforced concrete... for the lump sum price of -	Lump Sum	86,714.11	86,714.11	177,000.00	177,000.00	313,000.00	313,000.00	200,000.00	200,000.00	100,715.00	100,715.00
ITEM NO. 39 - All Other Electrical Work (for Berth 138 as noted in Special Condition SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to construct reinforced concrete... for the lump sum price of -	Lump Sum	81,156.80	81,156.80	77,000.00	77,000.00	76,000.00	76,000.00	102,002.00	102,002.00	50,865.00	50,865.00
ITEM NO. 40 - All Other Electrical Work (for Berth 136 as noted in Special Condition SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to construct reinforced concrete... for the lump sum price of -	Lump Sum	79,665.13	79,665.13	77,000.00	77,000.00	77,000.00	77,000.00	95,000.00	95,000.00	48,770.00	48,770.00
TOTAL:											
CERTIFIED CHECK OR BOND:											

The Ryan Company
LOWEST RESPONSIBLE BIDDER

774698/Exp. 02/28/2014
LICENSE NUMBER

$20,559,112.22
AMOUNT

AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Shore to Ship Power Project at Pier T, Berths T132-T140 | **NO. HD-S2348** | **DATE OPENED: February 14, 2012**

		The Ryan Company 15 Commerce Way Norton, MA 02766 Phone: (508) 742-2500 Fax: (508) 742-2540		Minako dba Minco Construction 522 E. Airline Way Gardena, CA 90248 Phone: (310) 516-8100 Fax: (310) 516-7404		Vellutini Corp dba Royal Electric 8481 Carbide Ct Sacramento, CA 95828 Phone: (916) 226-2100 Fax: (916) 226-2150		KDC, Inc. dba Dynalectric 4462 Corporate Center Drive Los Alamitos, CA 90720 Phone: (714) 828-7000 Fax: (714) 484-2384		Sully-Miller Contracting Company 135 S. State College Blvd #400 Brea, CA 92821 Phone: (714) 578-9600 Fax: (714) 449-8775	
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 41 - All Other Electrical Work (for Berth 132-134 as noted in Special Condition SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to construct reinforced concrete... for the lump sum price of -	Lump Sum	89,190.97	89,190.97	137,000.00	137,000.00	82,000.00	82,000.00	130,000.00	130,000.00	45,652.00	45,652.00
ITEM NO. 42 - Paving at Switchgear MTS4 and MTS5 and at SSP Substations: Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to construct paving at the Switchgear MTS4 and MTS5... for the lump sum price of -	Lump Sum	135,862.43	135,862.43	177,000.00	177,000.00	94,000.00	94,000.00	135,000.00	135,000.00	201,168.00	201,168.00
ITEM NO. 43 - Standby Time: Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to provide approximately the estimated hours of standby time for crew, land-based equipment and... for the unit price per hour of -	Unit Price	377.42	37,742.00	250.00	25,000.00	1,400.00	140,000.00	750.00	75,000.00	1,334.00	133,400.00
ITEM NO. 44 - Scheduling: Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to develop and update all schedules, complete as specified and as directed... for the lump sum price of (not less than $20,000) -	Lump Sum	22,363.82	22,363.82	77,000.00	77,000.00	166,000.00	166,000.00	35,000.00	35,000.00	20,923.00	20,923.00
ITEM NO. 45 - Ship Commissioning: Furnish all labor, materials, equipment, tools, transportation and personnel necessary to provide approximately the estimated crew hours for ship commissioning for work in all phases... for the unit price per cew hour of -	Unit Price	767.63	101,327.16	250.00	33,000.00	235.00	31,020.00	227.27	29,999.64	722.00	95,304.00
TOTAL:											
CERTIFIED CHECK OR BOND:											

The Ryan Company
LOWEST RESPONSIBLE BIDDER

774698/Exp. 02/28/2014
LICENSE NUMBER

$20,559,112.22
AMOUNT

AUTHORIZED SIGNATURE

File: Bid Analysis HD-S2348 Gordon[BID ANALYSIS] 2/14/2012 12:48 PM

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Shore to Ship Power Project at Pier T, Berths T132-T140

NO. HD-S2348

DATE OPENED: February 14, 2012

		The Ryan Company 15 Commerce Way Norton, MA 02766 Phone: (508) 742-2500 Fax: (508) 742-2540		Minako dba Minco Construction 522 E. Airline Way Gardena, CA 90248 Phone: (310) 516-8100 Fax: (310) 516-7404		Vellutini Corp dba Royal Electric 8481 Carbide Ct Sacramento, CA 95828 Phone: (916) 226-2100 Fax: (916) 226-2150		KDC, Inc. dba Dynalectric 4462 Corporate Center Drive Los Alamitos, CA 90720 Phone: (714) 828-7000 Fax: (714) 484-2384		Sully-Miller Contracting Company 135 S. State College Blvd #400 Brea, CA 92821 Phone: (714) 578-9600 Fax: (714) 449-8775	
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 46 - Power for Acceptance Testing: Reimburse the Tenant for the cost of all electrical power used by the Contractor for all specified acceptance testing -	Allowance	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00
TOTAL:		$20,559,112.22		$20,898,780.00		$21,144,553.00		$21,767,333.38		$21,995,975.00	
CERTIFIED CHECK OR BOND:		10% Bond		10% Bond		10% Bond		10% Bond		10% Bond	

The Ryan Company	774698/Exp. 02/28/2014	$20,559,112.22	
LOWEST RESPONSIBLE BIDDER	LICENSE NUMBER	AMOUNT	AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Shore to Ship Power Project at Pier T, Berths T132-T140 | **NO. HD-S2348** | **DATE OPENED: February 14, 2012**

		Shimmick Construction Company 8201 Edgewater Drive #202 Oakland, CA 94612 Phone: (949) 333-1500 Fax: (949) 333-1510		Helix Electric 8260 Camino Santa Fe #A San Diego, CA 92121 Phone: (858) 535-0505 Fax: (858) 535-0738		Griffith/Comet JV 12200 Bloomfield Avenue Santa Fe Springs, CA 90670 Phone: (562) 929-1128 Fax: (562) 864-7938					
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 1 - Mobilization and Demobilization: Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to perform mobilization and demobilization, as shown and specified (including, but... for the lump sum price of -	Lump Sum	300,000.00	300,000.00	1,253,000.00	1,253,000.00	1,068,000.00	1,068,000.00				
ITEM NO. 2 - Excavation Support Systems: Per Section 6707 of the California Labor Code, furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to provide bracing... for the lump sum price of (not less than $10,000)	Lump Sum	150,000.00	150,000.00	70,000.00	70,000.00	350,000.00	350,000.00				
ITEM NO. 3 - SWPPP Development and Compliance: Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to develop the Stormwater Pollution Prevention Plan and... for the lump sum price of (not less than $10,000)	Lump Sum	10,000.00	10,000.00	50,000.00	50,000.00	12,000.00	12,000.00				
ITEM NO. 4 - Demolition of Chain Link Fence and Gates, Bollards, and Paving: Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to remove existing 8-foot chain link fence and... for the lump sum price of -	Lump Sum	100,000.00	100,000.00	150,000.00	150,000.00	112,000.00	112,000.00				
ITEM NO. 5 - Soil Handling and Disposal, Non-Hazardous Waste: Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to handle and dispose of approximately the estimated... for the unit price per ton of -	Unit Price	50.00	131,750.00	42.00	110,670.00	75.00	197,625.00				
TOTAL:											
CERTIFIED CHECK OR BOND:											

The Ryan Company
LOWEST RESPONSIBLE BIDDER

774698/Exp. 02/28/2014
LICENSE NUMBER

$20,559,112.22
AMOUNT

AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Shore to Ship Power Project at Pier T, Berths T132-T140

NO. HD-S2348

DATE OPENED: February 14, 2012

		Shimmick Construction Company 8201 Edgewater Drive #202 Oakland, CA 94612 Phone: (949) 333-1500 Fax: (949) 333-1510		Helix Electric 8260 Camino Santa Fe #A San Diego, CA 92121 Phone: (858) 535-0505 Fax: (858) 535-0738		Griffith/Comet JV 12200 Bloomfield Avenue Santa Fe Springs, CA 90670 Phone: (562) 929-1128 Fax: (562) 864-7938					
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 6 - Soil Handling and Reuse, Fill Material: Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to handle and dispose as backfill approximately the... for the unit price per cubic yard of -	Unit Price	35.00	214,200.00	5.00	30,600.00	25.00	153,000.00				
ITEM NO. 7 - Import Material: Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to load, haul, place and compact as backfill approximately the estimated quantity of import... for the unit price per ton of -	Unit Price	35.00	21,000.00	48.00	28,800.00	35.00	21,000.00				
ITEM NO. 8 - 8-Foot Chain Link Fence with Barbed Wire: Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to furnish and install approximately the estimated quantity of... for unit price per linear foot of -	Unit Price	50.00	37,500.00	55.00	41,250.00	56.00	42,000.00				
ITEM NO. 9 - Chain Link Single Gate with Barbed Wire: Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to provide and install approximately the estimated quantity of chain... for the unit price per each of -	Unit Price	1,000.00	11,000.00	1,050.00	11,550.00	1,300.00	14,300.00				
ITEM NO. 10 - Chain Link Double Gates with Barbed Wire: Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to provide and install approximately the estimated quantity of chain... for the unit price per each of -	Unit Price	2,500.00	10,000.00	2,300.00	9,200.00	2,300.00	9,200.00				
TOTAL:											
CERTIFIED CHECK OR BOND:											

The Ryan Company
LOWEST RESPONSIBLE BIDDER

774698/Exp. 02/28/2014
LICENSE NUMBER

$20,559,112.22
AMOUNT

AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Shore to Ship Power Project at Pier T, Berths T132-T140

NO. HD-S2348

DATE OPENED: February 14, 2012

		Shimmick Construction Company 8201 Edgewater Drive #202 Oakland, CA 94612 Phone: (949) 333-1500 Fax: (949) 333-1510		Helix Electric 8260 Camino Santa Fe #A San Diego, CA 92121 Phone: (858) 535-0505 Fax: (858) 535-0738		Griffith/Comet JV 12200 Bloomfield Avenue Santa Fe Springs, CA 90670 Phone: (562) 929-1128 Fax: (562) 864-7938					
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 11 - Pipe Bollards, 12-Inch: Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to provide and install approximately the estimated quantity of 12-inch diameter pipe... for the unit price per each of -	Unit Price	2,500.00	342,500.00	1,900.00	260,300.00	2,200.00	301,400.00				
ITEM NO. 12 - Removable Pipe Bollards, 12-Inch: Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to provide and install approximately the estimated quantity of 12-inch... for the unit price per each of -	Unit Price	4,000.00	100,000.00	2,800.00	70,000.00	3,250.00	81,250.00				
ITEM NO. 13 - Shallow Pipe Bollards, 12-Inch: Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to provide and install approximately the estimated quantity of 12-inch... for the unit price per each of -	Unit Price	2,500.00	80,000.00	3,000.00	96,000.00	3,660.00	117,120.00				
ITEM NO. 14 - New Pavement Striping and Markings: Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to install new paint striping and markings, complete as shown and specified and... for the lump sum price of -	Lump Sum	6,500.00	6,500.00	7,000.00	7,000.00	5,230.00	5,230.00				
ITEM NO. 15 - Replacement of Existing Pavement Striping: Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to replace approximately the estimated quantity of existing... for the unit price per linear foot of -	Unit Price	1.00	3,500.00	2.00	7,000.00	1.10	3,850.00				
TOTAL:											
CERTIFIED CHECK OR BOND:											

The Ryan Company
LOWEST RESPONSIBLE BIDDER

774698/Exp. 02/28/2014
LICENSE NUMBER

$20,559,112.22
AMOUNT

AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Shore to Ship Power Project at Pier T, Berths T132-T140 | **NO. HD-S2348** | **DATE OPENED: February 14, 2012**

		Shimmick Construction Company 8201 Edgewater Drive #202 Oakland, CA 94612 Phone: (949) 333-1500 Fax: (949) 333-1510		Helix Electric 8260 Camino Santa Fe #A San Diego, CA 92121 Phone: (858) 535-0505 Fax: (858) 535-0738		Griffith/Comet JV 12200 Bloomfield Avenue Santa Fe Springs, CA 90670 Phone: (562) 929-1128 Fax: (562) 864-7938					
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 16 - Removal of Existing Pavement Striping: Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to replace and remove approximately the estimated quantity of... for the unit price per linear foot of -	Unit Price	10.00	1,200.00	14.00	1,680.00	35.00	4,200.00				
ITEM NO. 17 - Relocation of Water Lines and Power/Telephone/Water ("PTW") Vaults: Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to relocate water lines and PTW vaults... for the lump sum price of -	Lump Sum	100,000.00	100,000.00	100,000.00	100,000.00	300,000.00	300,000.00				
ITEM NO. 18 - Transformers (for Berth 140 as noted in Special Condition SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to provide, install and connect one (1) medium... for the lump sum price of -	Lump Sum	625,000.00	625,000.00	640,000.00	640,000.00	715,585.00	715,585.00				
ITEM NO. 19 - Transformers (for Berth 138 as noted in Special Condition SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to provide, install and connect one (1) medium... for the lump sum price of -	Lump Sum	625,000.00	625,000.00	640,000.00	640,000.00	715,585.00	715,585.00				
ITEM NO. 20 - Transformers (for Berth 136 as noted in Special Condition SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to provide, install and connect one (1) medium... for the lump sum price of -	Lump Sum	625,000.00	625,000.00	640,000.00	640,000.00	715,585.00	715,585.00				
TOTAL:											
CERTIFIED CHECK OR BOND:											

The Ryan Company — LOWEST RESPONSIBLE BIDDER

774698/Exp. 02/28/2014 — LICENSE NUMBER

$20,559,112.22 — AMOUNT

AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Shore to Ship Power Project at Pier T, Berths T132-T140

NO. HD-S2348

DATE OPENED: February 14, 2012

		Shimmick Construction Company 8201 Edgewater Drive #202 Oakland, CA 94612 Phone: (949) 333-1500 Fax: (949) 333-1510		Helix Electric 8260 Camino Santa Fe #A San Diego, CA 92121 Phone: (858) 535-0505 Fax: (858) 535-0738		Griffith/Comet JV 12200 Bloomfield Avenue Santa Fe Springs, CA 90670 Phone: (562) 929-1128 Fax: (562) 864-7938					
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 21 - Transformers (for Berth 132-134 as noted in Special Condition SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to provide, install and connect one (1)... for the lump sum price of -	Lump Sum	625,000.00	625,000.00	640,000.00	640,000.00	715,585.00	715,585.00				
ITEM NO. 22 - Switchgear Assembly(s) (for Berth 140 as noted in Special Condition SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to provide, install and connect two (2)... for the lump sum price of -	Lump Sum	3,250,000.00	3,250,000.00	3,600,000.00	3,600,000.00	4,038,100.00	4,038,100.00				
ITEM NO. 23 - Switchgear Assembly(s) (for Berth 138 as noted in Special Condition SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to provide, install and connect one (1)... for the lump sum price of -	Lump Sum	1,750,000.00	1,750,000.00	1,800,000.00	1,800,000.00	1,938,685.00	1,938,685.00				
ITEM NO. 24 - Switchgear Assembly(s) (for Berth 136 as noted in Special Condition SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to provide, install and connect one (1)... for the lump sum price of -	Lump Sum	1,650,000.00	1,650,000.00	1,700,000.00	1,700,000.00	1,783,458.00	1,783,458.00				
ITEM NO. 25 - Switchgear Assembly(s) (for Berth 132-134 as noted in Special Condition SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to provide, install and connect one... for the lump sum price of -	Lump Sum	1,950,000.00	1,950,000.00	1,900,000.00	1,900,000.00	2,130,242.00	2,130,242.00				
TOTAL:											
CERTIFIED CHECK OR BOND:											

The Ryan Company
LOWEST RESPONSIBLE BIDDER

774698/Exp. 02/28/2014
LICENSE NUMBER

$20,559,112.22
AMOUNT

AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Shore to Ship Power Project at Pier T, Berths T132-T140 | **NO. HD-S2348** | **DATE OPENED: February 14, 2012**

		Shimmick Construction Company 8201 Edgewater Drive #202 Oakland, CA 94612 Phone: (949) 333-1500 Fax: (949) 333-1510		Helix Electric 8260 Camino Santa Fe #A San Diego, CA 92121 Phone: (858) 535-0505 Fax: (858) 535-0738		Griffith/Comet JV 12200 Bloomfield Avenue Santa Fe Springs, CA 90670 Phone: (562) 929-1128 Fax: (562) 864-7938					
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 26 - Ductbanks and Raceways (for Berth 140 as noted in Special Condition SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to construct a complete and functioning... for the lump sum price of -	Lump Sum	700,000.00	700,000.00	847,000.00	847,000.00	750,000.00	750,000.00				
ITEM NO. 27 - Ductbanks and Raceways (for Berth 138 as noted in Special Condition SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to construct a complete and functioning... for the lump sum price of -	Lump Sum	700,000.00	700,000.00	1,346,000.00	1,346,000.00	890,000.00	890,000.00				
ITEM NO. 28 - Ductbanks and Raceways (for Berth 136 as noted in Special Condition SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to construct a complete and functioning... for the lump sum price of -	Lump Sum	600,000.00	600,000.00	1,195,000.00	1,195,000.00	550,000.00	550,000.00				
ITEM NO. 29 - Ductbanks and Raceways (for Berth 132-134 as noted in Special Condition SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to construct a complete and... for the lump sum price of -	Lump Sum	1,050,000.00	1,050,000.00	2,092,000.00	2,092,000.00	1,165,000.00	1,165,000.00				
ITEM NO. 30 - Conductors (for Berth 140 as noted in Special Condition SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to provide, install and connect all conductors and... for the lump sum price of -	Lump Sum	600,000.00	600,000.00	300,000.00	300,000.00	1,286,952.00	1,286,952.00				
TOTAL:											
CERTIFIED CHECK OR BOND:											

The Ryan Company	774698/Exp. 02/28/2014	$20,559,112.22	
LOWEST RESPONSIBLE BIDDER	LICENSE NUMBER	AMOUNT	AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Shore to Ship Power Project at Pier T, Berths T132-T140 | **NO. HD-S2348** | **DATE OPENED: February 14, 2012**

		Shimmick Construction Company 8201 Edgewater Drive #202 Oakland, CA 94612 Phone: (949) 333-1500 Fax: (949) 333-1510		Helix Electric 8260 Camino Santa Fe #A San Diego, CA 92121 Phone: (858) 535-0505 Fax: (858) 535-0738		Griffith/Comet JV 12200 Bloomfield Avenue Santa Fe Springs, CA 90670 Phone: (562) 929-1128 Fax: (562) 864-7938					
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 31 - Conductors (for Berth 138 as noted in Special Condition SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to provide, install and connect all conductors and... for the lump sum price of -	Lump Sum	650,000.00	650,000.00	400,000.00	400,000.00	449,167.00	449,167.00				
ITEM NO. 32 - Conductors (for Berth 136 as noted in Special Condition SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to provide, install and connect all conductors and... for the lump sum price of -	Lump Sum	400,000.00	400,000.00	300,000.00	300,000.00	369,902.00	369,902.00				
ITEM NO. 33 - Conductors (for Berth 132-134 as noted in Special Condition SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to provide, install and connect all conductors... for the lump sum price of -	Lump Sum	1,025,000.00	1,025,000.00	500,000.00	500,000.00	790,446.00	790,446.00				
ITEM NO. 34 - SPO Receptacles (for Berth 140 as noted in Special Condition SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to perform demolition and construction of two... for the lump sum price of -	Lump Sum	350,000.00	350,000.00	180,000.00	180,000.00	320,714.00	320,714.00				
ITEM NO. 35 - SPO Receptacles (for Berth 138 as noted in Special Conditon SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to perform demolition and construction of three... for the lump sum price of -	Lump Sum	450,000.00	450,000.00	270,000.00	270,000.00	489,653.00	489,653.00				
TOTAL:											
CERTIFIED CHECK OR BOND:											

The Ryan Company	774698/Exp. 02/28/2014	$20,559,112.22	
LOWEST RESPONSIBLE BIDDER	LICENSE NUMBER	AMOUNT	AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Shore to Ship Power Project at Pier T, Berths T132-T140 | **NO. HD-S2348** | **DATE OPENED: February 14, 2012**

		Shimmick Construction Company 8201 Edgewater Drive #202 Oakland, CA 94612 Phone: (949) 333-1500 Fax: (949) 333-1510		Helix Electric 8260 Camino Santa Fe #A San Diego, CA 92121 Phone: (858) 535-0505 Fax: (858) 535-0738		Griffith/Comet JV 12200 Bloomfield Avenue Santa Fe Springs, CA 90670 Phone: (562) 929-1128 Fax: (562) 864-7938					
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 36 - SPO Receptacles (for Berth 136 as noted in Special Conditions SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to perform demolition and construction of two... for the lump sum price of -	Lump Sum	350,000.00	350,000.00	180,000.00	180,000.00	322,894.00	322,894.00				
ITEM NO. 37 - SPO Receptacles (for Berth 132-134 as noted in Special Condition SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to perform demolition and construction of... for the lump sum price of -	Lump Sum	525,000.00	525,000.00	360,000.00	360,000.00	646,189.00	646,189.00				
ITEM NO. 38 - All Other Electrical Work (for Berth 140 as noted in Special Condition SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to construct reinforced concrete... for the lump sum price of -	Lump Sum	400,000.00	400,000.00	300,000.00	300,000.00	80,000.00	80,000.00				
ITEM NO. 39 - All Other Electrical Work (for Berth 138 as noted in Special Condition SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to construct reinforced concrete... for the lump sum price of -	Lump Sum	350,000.00	350,000.00	333,000.00	333,000.00	50,000.00	50,000.00				
ITEM NO. 40 - All Other Electrical Work (for Berth 136 as noted in Special Condition SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to construct reinforced concrete... for the lump sum price of -	Lump Sum	350,000.00	350,000.00	326,000.00	326,000.00	52,000.00	52,000.00				
TOTAL:											
CERTIFIED CHECK OR BOND:											

The Ryan Company	774698/Exp. 02/28/2014	$20,559,112.22	
LOWEST RESPONSIBLE BIDDER	LICENSE NUMBER	AMOUNT	AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Shore to Ship Power Project at Pier T, Berths T132-T140 | **NO. HD-S2348** | **DATE OPENED: February 14, 2012**

ITEM	ESTIMATED QUANTITIES	Shimmick Construction Company 8201 Edgewater Drive #202 Oakland, CA 94612 Phone: (949) 333-1500 Fax: (949) 333-1510		Helix Electric 8260 Camino Santa Fe #A San Diego, CA 92121 Phone: (858) 535-0505 Fax: (858) 535-0738		Griffith/Comet JV 12200 Bloomfield Avenue Santa Fe Springs, CA 90670 Phone: (562) 929-1128 Fax: (562) 864-7938					
		RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 41 - All Other Electrical Work (for Berth 132-134 as noted in Special Condition SC-25): Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to construct reinforced concrete... for the lump sum price of -	Lump Sum	600,000.00	600,000.00	396,000.00	396,000.00	80,000.00	80,000.00				
ITEM NO. 42 - Paving at Switchgear MTS4 and MTS5 and at SSP Substations: Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to construct paving at the Switchgear MTS4 and MTS5... for the lump sum price of -	Lump Sum	100,000.00	100,000.00	20,000.00	20,000.00	250,000.00	250,000.00				
ITEM NO. 43 - Standby Time: Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to provide approximately the estimated hours of standby time for crew, land-based equipment and... for the unit price per hour of -	Unit Price	350.00	35,000.00	500.00	50,000.00	200.00	20,000.00				
ITEM NO. 44 - Scheduling: Furnish all labor, materials, power, equipment, tools, transportation and supervision necessary to develop and update all schedules, complete as specified and as directed... for the lump sum price of (not less than $20,000) -	Lump Sum	20,000.00	20,000.00	40,000.00	40,000.00	20,000.00	20,000.00				
ITEM NO. 45 - Ship Commissioning: Furnish all labor, materials, equipment, tools, transportation and personnel necessary to provide approximately the estimated crew hours for ship commissioning for work in all phases... for the unit price per cew hour of -	Unit Price	315.00	41,580.00	900.00	118,800.00	272.50	35,970.00				
TOTAL:											
CERTIFIED CHECK OR BOND:											

The Ryan Company
LOWEST RESPONSIBLE BIDDER

774698/Exp. 02/28/2014
LICENSE NUMBER

$20,559,112.22
AMOUNT

AUTHORIZED SIGNATURE

File: Bid Analysis HD-S2348 Gordon[BID ANALYSIS] 2/14/2012 12:48 PM

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Shore to Ship Power Project at Pier T, Berths T132-T140 | **NO. HD-S2348** | **DATE OPENED: February 14, 2012**

		Shimmick Construction Company 8201 Edgewater Drive #202 Oakland, CA 94612 Phone: (949) 333-1500 Fax: (949) 333-1510		Helix Electric 8260 Camino Santa Fe #A San Diego, CA 92121 Phone: (858) 535-0505 Fax: (858) 535-0738		Griffith/Comet JV 12200 Bloomfield Avenue Santa Fe Springs, CA 90670 Phone: (562) 929-1128 Fax: (562) 864-7938					
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 46 - Power for Acceptance Testing: Reimburse the Tenant for the cost of all electrical power used by the Contractor for all specified acceptance testing -	Allowance	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00				
TOTAL:		$22,065,730.00		$23,460,850.00		$24,213,887.00					
CERTIFIED CHECK OR BOND:		10% Bond		10% Bond		10% Bond					

The Ryan Company	774698/Exp. 02/28/2014	$20,559,112.22	
LOWEST RESPONSIBLE BIDDER	LICENSE NUMBER	AMOUNT	AUTHORIZED SIGNATURE

Progress Payment No. 19
Period Ending : 11/30/14
PAYMENT DUE: 3/3/2015
Specification: HD-S2348 Shore to Ship Power Project at Pier T, Berths 132-140
Contractor: The Ryan Company

LBHD Contract No: HD-7928
Original Bid Amt: $20,559,112.22

Item No.	Item	Unit	Est. Qty.	Unit Price	Bid Amount	Qty This Month	T140 $ Amount This Month	T138 $ Amount This Month	T136 $ Amount This Month	T132 $ Amount This Month	Previous Qty or %	Total % of Item Comp	TOTAL $ Amount to Date
1	Mobilization and Demobilization	Lump Sum	1	1,161,050.43	1,161,050.43	-	-	-	-	-	100%	100%	1,161,050.43
2	Excavation Support Systems	Lump Sum	1	18,240.49	18,240.49	0%	-	-	0	0	100%	100%	18,240.49
3	SWPPP Development and Compliance	Lump Sum	1	16,772.86	16,772.86	-	-	0	0	0	100%	100%	16,772.86
4	Demolition of Chain Link Fence and Gates, Bollards, and Paving	Lump Sum	1	33,632.23	33,632.23	0.00%	-	-	-	-	100%	100%	33,632.23
5	Soil Handling and Disposal, Non-Hazardous Waste	Unit Price	2,635	40.26	106,085.10	-	-	-	-	-	6,430.43	244%	258,889.12
6	Soil Handling and Reuse, Fill Material	Unit Price	6,120	22.36	136,843.20	-	-	-	-	-	2,265.00	37%	50,645.40
7	Import Material	Unit Price	600	15.66	9,396.00						0%	0%	-
8	8-Foot Chain Link Fence with Barbed Wire	Unit Price	750	44.73	33,547.50	-	-	-	-	-	100%	100%	33,547.50
9	Chain Link Single Gate with Barbed Wire	Unit Price	11	670.92	7,380.12	-	0	0	0	-	100%	100%	7,380.12
10	Chain Link Double Gates with Barbed Wire	Unit Price	4	1,677.29	6,709.16	-	0	0	0	-	100%	100%	6,709.16
11	Pipe Bollards, 12-Inch	Unit Price	137	1,341.83	183,830.71	-	-	-	-	-	100%	100%	183,830.71
12	Removable Pipe Bollards, 12-Inch	Unit Price	25	1,677.29	41,932.25	-	-	-	-	-	100%	100%	41,932.25
13	Shallow Pipe Bollards, 12-Inch	Unit Price	32	1,341.83	42,938.56	-	-	-	-	-	100%	100%	42,938.56
14	New Pavement Striping and Markings	Lump Sum	1	8,386.43	8,386.43	0%	0	0	0	0	100%	20%	8,386.43
15	Replacement of Existing Pavement Striping	Unit Price	3500	0.95	3,325.00	-	-	-	-	-	7,665.00	219%	7,281.75
16	Removal of Existing Pavement Striping	Unit Price	120	9.51	1,141.20								-
17	Relocation of Water Lines and Power/Telephone/Water ("PTW") Vaults	Lump Sum	1	26,836.58	26,836.58	0.00%	0	-	0	-	100%	100%	26,836.58
18	Transformers (for Berth 140 as noted in Special Condition SC-25)	Lump Sum	1	709,593.23	709,593.23	-	-	N/A	N/A	N/A	100%	100%	709,593.23
19	Transformers (for Berth 138 as noted in Special Condition SC-25)	Lump Sum	1	709,593.23	709,593.23	0%	N/A	-	N/A	N/A	100%	100%	709,593.23
20	Transformers (for Berth 136 as noted in Special Condition SC-25)	Lump Sum	1	709,593.23	709,593.23	0%	N/A	N/A	-	N/A	100%	100%	709,593.23
21	Transformers (for Berth 132-134 as noted in Special Condition SC-25)	Lump Sum	1	709,593.23	709,593.23	0%	N/A	N/A	N/A	-	100%	100%	709,593.23
22	Switchgear Assembly(s) (for Berth 140 as noted in Special Condition SC-25)	Lump Sum	1	3,939,255.79	3,939,255.79	-	-	N/A	N/A	N/A	100%	100%	3,939,255.79
23	Switchgear Assembly(s) (for Berth 138 as noted in Special Condition SC-25)	Lump Sum	1	1,921,221.76	1,921,221.76	-	N/A	-	-	N/A	100%	100%	1,921,221.76
24	Switchgear Assembly(s) (for Berth 136 as noted in Special Condition SC-25)	Lump Sum	1	1,779,834.87	1,779,834.87	0%	N/A	N/A	-	N/A	100%	100%	1,779,834.87
25	Switchgear Assembly(s) (for Berth 132-134 as noted in Special Condition SC-25)	Lump Sum	1	2,105,417.86	2,105,417.86	0%	N/A	N/A	N/A	-	100%	100%	2,105,417.86
26	Ductbanks and Raceways (for Berth 140 as noted in Special Condition SC-25)	Lump Sum	1	349,501.65	349,501.65	0%	-	N/A	N/A	N/A	100%	100%	349,501.65

Progress Payment No. 19
Period Ending : 11/30/14
PAYMENT DUE: 3/3/2015
Specification: HD-S2348 Shore to Ship Power Project at Pier T, Berths 132-140
Contractor: The Ryan Company

LBHD Contract No: HD-7928
Original Bid Amt: $20,559,112.22

Item No.	Item	Unit	Est. Qty.	Unit Price	Bid Amount	Qty This Month	T140 $ Amount This Month	T138 $ Amount This Month	T136 $ Amount This Month	T132 $ Amount This Month	Previous Qty or %	Total % of Item Comp	TOTAL $ Amount to Date
27	Ductbanks and Raceways (for Berth 138 as noted in Special Condition SC-25)	Lump Sum	1	599,461.62	599,461.62	0%	N/A	-	N/A	N/A	100%	100%	599,461.62
28	Ductbanks and Raceways (for Berth 136 as noted in Special Condition SC-25)	Lump Sum	1	394,105.50	394,105.50	0%	N/A	N/A	-	N/A	100%	100%	394,105.50
29	Ductbanks and Raceways (for Berth 132-134 as noted in Special Condition SC-25)	Lump Sum	1	765,573.51	765,573.51	0%	N/A	N/A	N/A	-	100%	100%	765,573.51
30	Conductors (for Berth 140 as noted in Special Condition SC-25)	Lump Sum	1	413,138.96	413,138.96	0%	-	N/A	N/A	N/A	100%	100%	413,138.96
31	Conductors (for Berth 138 as noted in Special Condition SC-25)	Lump Sum	1	518,338.89	518,338.89	0%	N/A	-	N/A	N/A	100%	100%	518,338.89
32	Conductors (for Berth 136 as noted in Special Condition SC-25)	Lump Sum	1	471,591.80	471,591.80	0%	N/A	N/A	-	N/A	100%	100%	471,591.80
33	Conductors (for Berth 132-134 as noted in Special Condition SC-25)	Lump Sum	1	692,948.22	692,948.22	0%		N/A	N/A	-	100%	100%	692,948.22
34	SPO Receptacles (for Berth 140 as noted in Special Condition SC-25)	Lump Sum	1	226,959.75	226,959.75	0%	-	N/A	N/A	N/A	100%	100%	226,959.75
35	SPO Receptacles (for Berth 138 as noted in Special Conditon SC-25)	Lump Sum	1	340,439.63	340,439.63	0%	N/A	-	N/A	N/A	100%	100%	340,439.63
36	SPO Receptacles (for Berth 136 as noted in Special Conditions SC-25)	Lump Sum	1	226,959.75	226,959.75	0%	N/A		-	N/A	100%	100%	226,959.75
37	SPO Receptacles (for Berth 132-134 as noted in Special Condition SC-25)	Lump Sum	1	453,919.50	453,919.50	0%		N/A	N/A	-	100%	100%	453,919.50
38	All Other Electrical Work (for Berth 140 as noted in Special Condition SC-25)	Lump Sum	1	86,714.11	86,714.11	0%	-	N/A	N/A	N/A	100%	100%	86,714.11
39	All Other Electrical Work (for Berth 138 as noted in Special Condition SC-25)	Lump Sum	1	81,156.80	81,156.80	0%	N/A	-	N/A	N/A	100%	100%	81,156.80
40	All Other Electrical Work (for Berth 136 as noted in Special Condition SC-25)	Lump Sum	1	79,665.13	79,665.13	0%	N/A	N/A	-	-	100%	100%	79,665.13
41	All Other Electrical Work (for Berth 132-134 as noted in Special Condition SC-25)	Lump Sum	1	89,190.97	89,190.97	0%		N/A	N/A	-	100%	100%	89,190.97
42	Paving at Switchgear MTS4 and MTS5 and at SSP Substations	Lump Sum	1	135,862.43	135,862.43	0%	-	0			100%	100%	135,862.43
43	Standby Time	Unit Price	100	377.42	37,742.00	48.34	-	9,123.10	9,123.10	-	48%	96%	36,362.37
44	Scheduling	Lump Sum	1	22,363.82	22,363.82	0%	-	-	-	-	100%	100%	22,363.82
45	Ship Commissioning	Unit Price	132	767.63	101,327.16			-		16143.63	25%	41%	41,475.42
46	Power for Acceptance Testing	Allowance	1	50,000.00	50,000.00	0%	-	-	-	-	18.00%	18%	9,000.00
CO 1	CHANGE ORDER #1	Lump Sum	1	2,160,000.00		0%	-	-	-	-	100%	100%	2,160,000.00
CO 2	CHANGE ORDER #2	Lump Sum	1	38,008.63			-	-	-	-	100%	100%	38,008.63
CO 3	CHANGE ORDER #3	Lump Sum	1	(2,155.00)							100%	100%	(2,155.00)
CO 4	CHANGE ORDER #4	Lump Sum	1	26,737.00			-	-	-	-	100%	100%	26,737.00
CO 5	CHANGE ORDER #5	Lump Sum	1	2,290,790.00		38%	767,776.70	53,400.33	57,235.47	-	61.65%	100%	2,290,790.00
CO 6	CHANGE ORDER #6	Lump Sum	1	4,949.00		0%	-	-	-	-	100.00%	100%	4,949.00

Progress Payment No. 19
Period Ending : 11/30/14
PAYMENT DUE: 3/3/2015
Specification: HD-S2348 Shore to Ship Power Project at Pier T, Berths 132-140
Contractor: The Ryan Company

LBHD Contract No: HD-7928
Original Bid Amt: $20,559,112.22

Item	Unit	Est. Qty.	Unit Price	Bid Amount	Qty This Month	T140 $ Amount This Month	T138 $ Amount This Month	T136 $ Amount This Month	T132 $ Amount This Month	Previous Qty or %	Total % of Item Comp	TOTAL $ Amount to Date
CHANGE ORDER #7	Lump Sum	1	70,000.00		100%	17,500.00	17,500.00	17,500.00	17,500.00	0.00%	100%	70,000.00
			4,588,329.63									
TOTALS				20,559,112.22	4%	$ 785,276.70	$ 80,023.43	$ 83,858.58	$ 33,643.63	96%	100%	$ 25,105,236.25
NEW CONTRACT AMOUNT			25,147,441.85									

SIGN HERE

CM Initials

George Gordon
Project Manger

Date 2/24/15

SIGN HERE

SIGN HERE

Suzanne C. Plezia, P.E.
Director of Construction

Date

BPO No.	INDEX CODE	PROJ	PROJ DET	Subobject Code
BPHA12000127	HACDCMCN	HA1317	1H2348	210009

Gross Earnings:	$ 25,105,236.25
Previous Payments:	$ 23,906,498.34
Previous Retention:	$ (72,220.53)
STOP NOTICE HARDY & HARPER,INC. $23,750 + 25%	$ (29,687.50)
STOP NOTICE HAMPTON TEDDER TECHNICAL SERVICES, INC. $91,221.02 + 25%	$ (114,027.51)
Earned This Period:	$ 982,802.35
Less Retention: ESCROW #2	$ (49,140.12)
STOP NOTICE ROBERTSON'S $1,885.99 + 25%	$ (2,357.49)
STOP NOTICE ABC RESOURCES INC $8,000.00 + 25%	$ (10,000.00)
AMOUNT DUE THIS ESTIMATE:	$ 921,304.75

Project & Grant Revenue/Expenditure Financial Summary

Criteria: As Of = 3/26/2019 (48% of Year Elapsed)

Project Detail	Title	ITD Adjusted Budget	Month-To-Date Actual Activity	Quarter-To-Date Actual Activity	ITD Actual	ITD Encumbrance incl Pre-Encumb	ITD Adjusted Budget - Actuals	ITD % Actuals to Adjusted Budget
Revenue								
Project HA1314 - CLOSED-PIER A SHORE TO SHP PWR RETROFIT								
1H2342	CONSTRUCTION, PROGRAM-WIDE	0.00	0.00	0.00	6,207,535.72	0.00	(6,207,535.72)	0.0%
Total Project HA1314		0.00	0.00	0.00	6,207,535.72	0.00	(6,207,535.72)	0.0%
Project HA1317 - CLS-PIER T,T132-T140 SHORE TO SHIP POWER								
1H2348	1H2348/CONST/ELECTRICAL INFRA	0.00	0.00	0.00	10,000,000.00	0.00	(10,000,000.00)	0.0%
Total Project HA1317		0.00	0.00	0.00	10,000,000.00	0.00	(10,000,000.00)	0.0%
Total		0.00	0.00	0.00	16,207,535.72	0.00	(16,207,535.72)	0.0%
Total Revenue		0.00	0.00	0.00	16,207,535.72	0.00	(16,207,535.72)	0.0%
Expenditures								
Project HA1314 - CLOSED-PIER A SHORE TO SHP PWR RETROFIT								
1B2342	ENVIRONMENTAL, PROGRAM-WIDE	76,955.40	0.00	0.00	76,955.40	0.00	0.00	100.0%
1C2342	DESIGN, PROGRAM-WIDE	2,313,600.40	0.00	0.00	2,313,600.40	0.00	0.00	100.0%
1H2342	CONSTRUCTION, PROGRAM-WIDE	16,162,985.63	0.00	0.00	16,163,251.75	0.00	(266.12)	100.0%
Total Project HA1314		18,553,541.43	0.00	0.00	18,553,807.55	0.00	(266.12)	100.0%
Project HA1317 - CLS-PIER T,T132-T140 SHORE TO SHIP POWER								
1B2348	1B2348/PERMITTING/ELECT INFRASTRUCTURE	291,851.12	0.00	0.00	291,851.12	0.00	0.00	100.0%
1C2348	1C2348/DESIGN/ELECTRICAL INFRASTRUCTURE	4,709,456.06	0.00	0.00	4,709,456.06	0.00	0.00	100.0%
1H2348	1H2348/CONST/ELECTRICAL INFRA	29,415,926.69	0.00	0.00	29,416,228.51	0.00	(301.82)	100.0%
Total Project HA1317		34,417,233.87	0.00	0.00	34,417,535.69	0.00	(301.82)	100.0%
Total		52,970,775.30	0.00	0.00	52,971,343.24	0.00	(567.94)	100.0%
Total Expenditures		52,970,775.30	0.00	0.00	52,971,343.24	0.00	(567.94)	100.0%

Criteria: Project = HA1314, HA1317; Project Detail = !9*

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Pier A, Berths A88-A96, Shore to Ship Power Retrofit at Pier A Container Terminal

NO. HD-S2342A

DATE OPENED: January 31, 2012

		Shimmick Construction Company 8201 Edgewater Drive #202 Oakland, Ca 94612 Phone: (949) 333-1500 Fax: (949) 333-1510		KDC, Inc. dba Dynalectric 4462 Corporate Center Drive Los Alamitos, CA 90720 Phone: (714) 828-7000 Fax: (714) 484-2385		Griffith/Neubauer JV 12200 Bloomfield Avenue Santa Fe Springs, CA 90670 Phone: (562) 929-1128 Fax: (562) 864-7938		Minako America Corporation 522 E. Airline Way Gardena, CA 90248 Phone: (310) 516-8100 Fax: (310) 516-7404		Sully-Miller Contracting Company 135 S. State College Blvd #400 Brea, CA 92821 Phone: (714) 578-9600 Fax: (714) 449-8775	
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 1 - Mobilization and Demobilization: Furnish all labor, materials, tools, equipment, incidentals and supervision necessary to perform... as specified and shown for the lump sum price (of which only 50% may be applied to mobilization) of -	Lump Sum	130,000.00	130,000.00	100,000.00	100,000.00	670,000.00	670,000.00	377,000.00	377,000.00	1,250,000.00	1,250,000.00
ITEM NO. 2 - Site Specific Safety Plan: Provide and implement an approved Site Specific Safety Plan for the lump sum price of -	Lump Sum	15,000.00	15,000.00	10,000.00	10,000.00	10,000.00	10,000.00	17,000.00	17,000.00	22,106.00	22,106.00
ITEM NO. 3 - Asphalt Concrete Pavement Demolition: Provide all labor, equipment, materials and incidentals necessary to perform demolition, removal and disposal of existing asphalt pavement and... as shown and specified for the lump sum price of -	Lump Sum	150,000.00	150,000.00	105,000.00	105,000.00	100,000.00	100,000.00	107,000.00	107,000.00	201,857.00	201,857.00
ITEM NO. 4 - Soil Handling and Disposal of Surplus Soil: Provide all labor, equipment, materials and incidentals necessary to stockpile... approximately one thousand one hundred (1,100) tons... as specified and shown for the unit price per ton of -	Unit Price	10.00	11,000.00	33.00	36,300.00	19.50	21,450.00	33.64	37,004.00	66.82	73,502.00
ITEM NO. 5 - Soil Handling and Disposal of Non-Hazardous Waste: Provide all labor, equipment, materials and incidentals necessary to... approximately six hundred fifty (650) tons of Non-Hazardous... as specified and shown for the unit price per ton of -	Unit Price	80.00	52,000.00	71.00	46,150.00	58.00	37,700.00	56.92	36,998.00	78.34	50,921.00
TOTAL:											
CERTIFIED CHECK OR BOND:											

Shimmick Construction Company
LOWEST RESPONSIBLE BIDDER

594575/Exp. 05/31/2012
LICENSE NUMBER

$11,513,850.00
AMOUNT

AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Pier A, Berths A88-A96, Shore to Ship Power Retrofit at Pier A Container Terminal | **NO. HD-S2342A** | **DATE OPENED: January 31, 2012**

ITEM	ESTIMATED QUANTITIES	Shimmick Construction Company 8201 Edgewater Drive #202 Oakland, Ca 94612 Phone: (949) 333-1500 Fax: (949) 333-1510		KDC, Inc. dba Dynalectric 4462 Corporate Center Drive Los Alamitos, CA 90720 Phone: (714) 828-7000 Fax: (714) 484-2385		Griffith/Neubauer JV 12200 Bloomfield Avenue Santa Fe Springs, CA 90670 Phone: (562) 929-1128 Fax: (562) 864-7938		Minako America Corporation 522 E. Airline Way Gardena, CA 90248 Phone: (310) 516-8100 Fax: (310) 516-7404		Sully-Miller Contracting Company 135 S. State College Blvd #400 Brea, CA 92821 Phone: (714) 578-9600 Fax: (714) 449-8775	
		RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 6 - Port Furnished Crushed Miscellaneous Base: Provide all labor, equipment, materials and incidentals necessary to mix, load... approximately two thousand six hundred fifty (2,650) tons... as specified and shown for the unit price per ton of -	Unit Price	15.00	39,750.00	42.00	111,300.00	40.00	106,000.00	40.38	107,007.00	34.14	90,471.00
ITEM NO. 7 - Asphalt Concrete Pavement: Provide all labor, equipment, materials and incidentals necessary to construct approximately two thousand five hundred fifty (2,550) tons of asphalt... as specified and shown for the unit price per ton of -	Unit Price	89.00	226,950.00	213.00	543,150.00	108.00	275,400.00	108.63	277,006.50	118.60	302,430.00
ITEM NO. 8 - 8-Foot Chain Link Fence with Barbed Wire: Provide all labor, material, equipment and incidentals... approx four hundred eighty (480) linear feet of 8-foot chain link... as specified and shown for the unit price per linear foot of -	Unit Price	40.00	19,200.00	71.00	34,080.00	41.00	19,680.00	77.09	37,003.20	44.70	21,456.00
ITEM NO. 9 - Chain Link Gates: Provide all labor, material, equipment and incidentals necessary to furnish and install all chain link gates as specified and shown for the lump sum price of -	Lump Sum	15,000.00	15,000.00	10,000.00	10,000.00	14,200.00	14,200.00	17,000.00	17,000.00	10,301.00	10,301.00
ITEM NO. 10 - Pipe Bollards, 12-Inch: Provide all labor, equipment, materials and incidentals necessary to furnish, install, and coat fifty seven (57) 12-inch diameter pipe bollards, as specified and shown for the unit price per each of -	Unit Price	1,200.00	68,400.00	1,700.00	96,900.00	1,320.00	75,240.00	1,877.20	107,000.40	1,707.00	97,299.00
TOTAL:											
CERTIFIED CHECK OR BOND:											

Shimmick Construction Company
LOWEST RESPONSIBLE BIDDER

594575/Exp. 05/31/2012
LICENSE NUMBER

$11,513,850.00
AMOUNT

AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Pier A, Berths A88-A96, Shore to Ship Power Retrofit at Pier A Container Terminal

NO. HD-S2342A

DATE OPENED: January 31, 2012

		Shimmick Construction Company 8201 Edgewater Drive #202 Oakland, Ca 94612 Phone: (949) 333-1500 Fax: (949) 333-1510		KDC, Inc. dba Dynalectric 4462 Corporate Center Drive Los Alamitos, CA 90720 Phone: (714) 828-7000 Fax: (714) 484-2385		Griffith/Neubauer JV 12200 Bloomfield Avenue Santa Fe Springs, CA 90670 Phone: (562) 929-1128 Fax: (562) 864-7938		Minako America Corporation 522 E. Airline Way Gardena, CA 90248 Phone: (310) 516-8100 Fax: (310) 516-7404		Sully-Miller Contracting Company 135 S. State College Blvd #400 Brea, CA 92821 Phone: (714) 578-9600 Fax: (714) 449-8775	
ITEM	**ESTIMATED QUANTITIES**	**RATE**	**AMOUNT**	**RATE**	**AMOUNT**	**RATE**	**AMOUNT**	**RATE**	**AMOUNT**	**RATE**	**AMOUNT**
ITEM NO. 11 - Bid Item Removed: Bid item removed per Addendum No. 1 issued January 4, 2012.	Lump Sum	0	0	0	0	0	0	0	0	0	0
ITEM NO. 12 - Repair of Existing Striping: Provide all labor, equipment, materials and incidentals necessary to repair approximately three thousand eight hundred (3,800) linear feet of... as specified and required for the unit price per linear foot of -	Unit Pricie	1.00	3,800.00	2.50	9,500.00	1.15	4,370.00	1.85	7,030.00	1.12	4,256.00
ITEM NO. 13 - Repair of Existing Pavement Markings: Provide all labor, equipment, materials and incidentals necessary to repair approximately one hundred fifty five (155) existing markings, as specified and required for the unit price per each of -	Unit Pricie	50.00	7,750.00	142.00	22,010.00	46.00	7,130.00	109.68	17,000.40	45.00	6,975.00
ITEM NO. 14 - Shore Power Outlet Vaults for Berth 90 (SPO 7, SPO 8 & SPO 9): Provide all labor, material, equipment and incidentals necessary to perform demolition and construction of shore to ship... as specified and shown for the lump sum price of -	Lump Sum	250,000.00	250,000.00	365,000.00	365,000.00	340,000.00	340,000.00	377,000.00	377,000.00	343,615.00	343,615.00
ITEM NO. 15 - Shore Power Outlet Vaults for Berth 92 (SPO 4, SPO 5 & SPO 6): Provide all labor, material, equipment and incidentals necessary to perform demolition and construction of shore to ship... as specified and shown for the lump sum price of -	Lump Sum	250,000.00	250,000.00	365,000.00	365,000.00	340,000.00	340,000.00	377,000.00	377,000.00	343,615.00	343,615.00
TOTAL:											
CERTIFIED CHECK OR BOND:											

Shimmick Construction Company
LOWEST RESPONSIBLE BIDDER

594575/Exp. 05/31/2012
LICENSE NUMBER

$11,513,850.00
AMOUNT

AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Pier A, Berths A88-A96, Shore to Ship Power Retrofit at Pier A Container Terminal | **NO. HD-S2342A** | **DATE OPENED: January 31, 2012**

		Shimmick Construction Company 8201 Edgewater Drive #202 Oakland, Ca 94612 Phone: (949) 333-1500 Fax: (949) 333-1510		KDC, Inc. dba Dynalectric 4462 Corporate Center Drive Los Alamitos, CA 90720 Phone: (714) 828-7000 Fax: (714) 484-2385		Griffith/Neubauer JV 12200 Bloomfield Avenue Santa Fe Springs, CA 90670 Phone: (562) 929-1128 Fax: (562) 864-7936		Minako America Corporation 522 E. Airline Way Gardena, CA 90248 Phone: (310) 516-8100 Fax: (310) 516-7404		Sully-Miller Contracting Company 135 S. State College Blvd #400 Brea, CA 92821 Phone: (714) 578-9600 Fax: (714) 449-8775	
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 16 - Shore Power Outlet Vaults for Berth 94 (SPO 1, SPO 2 & SPO 3): Povide all labor, material, equipment and incidentals necessary to perform demolition and construction of shore to ship... as specified and shown for the lump sum price of -	Lump Sum	250,000.00	250,000.00	365,000.00	365,000.00	340,000.00	340,000.00	377,000.00	377,000.00	343,615.00	343,615.00
ITEM NO. 17 - Cut-Off Wall Plug/Penetrations: Provide all labor, material, equipment and incidentals necessary to perform demolition, coring and construction of four (4) cut-off wall plug... as specified and shown for the unit price per each of -	Unit Price	7,000.00	28,000.00	6,000.00	24,000.00	5,400.00	21,600.00	4,250.00	17,000.00	9,300.00	37,200.00
ITEM NO. 18 - SPO "Dry Run" Cable Connection Support: Provide all labor, materials, tools, equipment and incidentals necessary to support approximately four (4) ship-side "dry... as specified and directed by the Engineer for the unit price per each of -	Unit Price	3,000.00	12,000.00	1,500.00	6,000.00	2,180.00	8,720.00	1,750.00	7,000.00	2,122.00	8,488.00
ITEM NO. 19 - Ship Testing and Commissioning: Provide all labor, materials, tools, equipment and incidentals necessary to support approximately four (4) ship-side commissioning... as specified and directed by the Engineer for the unit price per each of -	Unit Price	15,000.00	60,000.00	17,500.00	70,000.00	20,437.50	81,750.00	17,500.00	70,000.00	18,392.00	73,568.00
ITEM NO. 20 - Transformer for Berth 90: Provide al labor, material, equipment, and incidentals required to furnish, install, test and commission the transformer(s) as part of a complete system as specified and shown for the lump sum price of -	Lump Sum	650,000.00	650,000.00	600,000.00	600,000.00	654,000.00	654,000.00	477,000.00	477,000.00	599,982.00	599,982.00
TOTAL:											
CERTIFIED CHECK OR BOND:											

Shimmick Construction Company
LOWEST RESPONSIBLE BIDDER

594575/Exp. 05/31/2012
LICENSE NUMBER

$11,513,850.00
AMOUNT

AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Pier A, Berths A88-A96, Shore to Ship Power Retrofit at Pier A Container Terminal

NO. HD-S2342A

DATE OPENED: January 31, 2012

		Shimmick Construction Company 8201 Edgewater Drive #202 Oakland, Ca 94612 Phone: (949) 333-1500 Fax: (949) 333-1510		KDC, Inc. dba Dynalectric 4462 Corporate Center Drive Los Alamitos, CA 90720 Phone: (714) 828-7000 Fax: (714) 484-2385		Griffith/Neubauer JV 12200 Bloomfield Avenue Santa Fe Springs, CA 90670 Phone: (562) 929-1128 Fax: (562) 864-7938		Minako America Corporation 522 E. Airline Way Gardena, CA 90248 Phone: (310) 516-8100 Fax: (310) 516-7404		Sully-Miller Contracting Company 135 S. State College Blvd #400 Brea, CA 92821 Phone: (714) 578-9600 Fax: (714) 449-8775	
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 21 - Transformer for Berth 92: Provide al labor, material, equipment, and incidentals required to furnish, install, test and commission the transformer(s) as part of a complete system as specified and shown for the lump sum price of -	Lump Sum	650,000.00	650,000.00	600,000.00	600,000.00	654,000.00	654,000.00	477,000.00	477,000.00	599,982.00	599,982.00
ITEM NO. 22 - Transformer for Berth 94: Provide al labor, material, equipment, and incidentals required to furnish, install, test and commission the transformer(s) as part of a complete system as specified and shown for the lump sum price of -	Lump Sum	650,000.00	650,000.00	600,000.00	600,000.00	654,000.00	654,000.00	477,000.00	477,000.00	599,982.00	599,982.00
ITEM NO. 23 - Switchgear Assembly for Berth 90: Provide all labor, material, equipment and incidentals required to furnish, install, test and commission the switchgear assembly as part of a complete... as specified and shown for the lump sum price of -	Lump Sum	1,750,000.00	1,750,000.00	1,690,000.00	1,690,000.00	1,744,000.00	1,744,000.00	1,777,000.00	1,777,000.00	1,582,989.00	1,582,989.00
ITEM NO. 24 - Switchgear Assembly for Berth 92: Provide all labor, material, equipment and incidentals required to furnish, install, test and commission the switchgear assembly as part of a complete... as specified and shown for the lump sum price of -	Lump Sum	1,475,000.00	1,475,000.00	1,510,000.00	1,510,000.00	1,417,000.00	1,417,000.00	1,777,000.00	1,777,000.00	1,448,485.00	1,448,485.00
ITEM NO. 25 - Switchgear Assembly for Berth 94: Provide all labor, material, equipment and incidentals required to furnish, install, test and commission the switchgear assembly as part of a complete... as specified and shown for the lump sum price of -	Lump Sum	1,500,000.00	1,500,000.00	1,600,000.00	1,600,000.00	1,471,500.00	1,471,500.00	1,377,000.00	1,377,000.00	1,469,022.00	1,469,022.00
TOTAL:											
CERTIFIED CHECK OR BOND:											

Shimmick Construction Company
LOWEST RESPONSIBLE BIDDER

594575/Exp. 05/31/2012
LICENSE NUMBER

$11,513,850.00
AMOUNT

AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Pier A, Berths A88-A96, Shore to Ship Power Retrofit at Pier A Container Terminal

NO. HD-S2342A

DATE OPENED: January 31, 2012

		Shimmick Construction Company 6201 Edgewater Drive #202 Oakland, Ca 94612 Phone: (949) 333-1500 Fax: (949) 333-1510		KDC, Inc. dba Dynalectric 4462 Corporate Center Drive Los Alamitos, CA 90720 Phone: (714) 828-7000 Fax: (714) 484-2385		Griffith/Neubauer JV 12200 Bloomfield Avenue Santa Fe Springs, CA 90670 Phone: (562) 929-1128 Fax: (562) 864-7938		Minako America Corporation 522 E. Airline Way Gardena, CA 90248 Phone: (310) 516-8100 Fax: (310) 516-7404		Sully-Miller Contracting Company 135 S. State College Blvd #400 Brea, CA 92821 Phone: (714) 578-9600 Fax: (714) 449-8775	
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 26 - Ductbanks and Raceways for Berth 90: Provide all labor, material, equipment and incidentals required to furnish and install the ductbanks and raceways as part of a complete system as specified and shown for the lump sum price of -	Lump Sum	500,000.00	500,000.00	581,000.00	581,000.00	435,000.00	435,000.00	577,000.00	577,000.00	384,754.00	384,754.00
ITEM NO. 27 - Ductbanks and Raceways for Berth 92: Provide all labor, material, equipment and incidentals required to furnish and install the ductbanks and raceways as part of a complete system as specified and shown for the lump sum price of -	Lump Sum	450,000.00	450,000.00	537,000.00	537,000.00	435,000.00	435,000.00	577,000.00	577,000.00	374,855.00	374,855.00
ITEM NO. 28 - Ductbanks and Raceways for Berth 94: Provide all labor, material, equipment and incidentals required to furnish and install the ductbanks and raceways as part of a complete system as specified and shown for the lump sum price of -	Lump Sum	325,000.00	325,000.00	436,000.00	436,000.00	355,000.00	355,000.00	477,000.00	477,000.00	342,606.00	342,606.00
ITEM NO. 29 - Conductors for Berth 90: Provide all labor, material, equipment and incidentals required to furnish, install and test the conductors as part of a complete system as specified and shown for the lump sum price of -	Lump Sum	300,000.00	300,000.00	250,000.00	250,000.00	332,450.00	332,450.00	377,000.00	377,000.00	331,972.00	331,972.00
ITEM NO. 30 - Conductors for Berth 92: Provide all labor, material, equipment and incidentals required to furnish, install and test the conductors as part of a complete system as specified and shown for the lump sum price of -	Lump Sum	300,000.00	300,000.00	260,000.00	260,000.00	332,450.00	332,450.00	277,000.00	277,000.00	345,359.00	345,359.00
TOTAL:											
CERTIFIED CHECK OR BOND:											

Shimmick Construction Company
LOWEST RESPONSIBLE BIDDER

594575/Exp. 05/31/2012
LICENSE NUMBER

$11,513,850.00
AMOUNT

AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Pier A, Berths A88-A96, Shore to Ship Power Retrofit at Pier A Container Terminal

NO. HD-S2342A

DATE OPENED: January 31, 2012

		Shimmick Construction Company 8201 Edgewater Drive #202 Oakland, Ca 94612 Phone: (949) 333-1500 Fax: (949) 333-1510		KDC, Inc. dba Dynalectric 4462 Corporate Center Drive Los Alamitos, CA 90720 Phone: (714) 828-7000 Fax: (714) 484-2385		Griffith/Neubauer JV 12200 Bloomfield Avenue Santa Fe Springs, CA 90670 Phone: (562) 929-1128 Fax: (562) 864-7938		Minako America Corporation 522 E. Airline Way Gardena, CA 90248 Phone: (310) 516-8100 Fax: (310) 516-7404		Sully-Miller Contracting Company 135 S. State College Blvd #400 Brea, CA 92821 Phone: (714) 578-9600 Fax: (714) 449-8775	
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 31 - Conductors for Berth 94: Provide all labor, material, equipment and incidentals required to furnish, install and test the conductors as part of a complete system as specified and shown for the lump sum price of -	Lump Sum	325,000.00	325,000.00	180,000.00	180,000.00	332,450.00	332,450.00	377,000.00	377,000.00	400,643.00	400,643.00
ITEM NO. 32 - SPO Receptacles for Berth 90: Provide all labor, material, equipment and incidentals required to furnish, install, test and commission the SPO receptacles as part of a complete system as specified and shown for the lump sum price of -	Lump Sum	100,000.00	100,000.00	110,000.00	110,000.00	88,000.00	88,000.00	177,000.00	177,000.00	108,398.00	108,398.00
ITEM NO. 33 - SPO Receptacles for Berth 92: Provide all labor, material, equipment and incidentals required to furnish, install, test and commission the SPO receptacles as part of a complete system as specified and shown for the lump sum price of -	Lump Sum	100,000.00	100,000.00	110,000.00	110,000.00	88,000.00	88,000.00	177,000.00	177,000.00	108,158.00	108,158.00
ITEM NO. 34 - SPO Receptacles for Berth 94: Provide all labor, material, equipment and incidentals required to furnish, install, test and commission the SPO receptacles as part of a complete system as specified and shown for the lump sum price of -	Lump Sum	100,000.00	100,000.00	110,000.00	110,000.00	88,000.00	88,000.00	177,000.00	177,000.00	108,158.00	108,158.00
ITEM NO. 35 - All Other Electrical Work for Berth 90: Provide all labor, material, equipment and incidentals required to furnish, install, test and commission all other electrical work for Berth 90 ... as specified and shown for the lump sum price of -	Lump Sum	475,000.00	475,000.00	230,750.00	230,750.00	456,000.00	456,000.00	177,000.00	177,000.00	433,504.00	433,504.00
TOTAL:											
CERTIFIED CHECK OR BOND:											

Shimmick Construction Company
LOWEST RESPONSIBLE BIDDER

594575/Exp. 05/31/2012
LICENSE NUMBER

$11,513,850.00
AMOUNT

AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Pier A, Berths A88-A96, Shore to Ship Power Retrofit at Pier A Container Terminal | **NO. HD-S2342A** | **DATE OPENED: January 31, 2012**

		Shimmick Construction Company 8201 Edgewater Drive #202 Oakland, Ca 94612 Phone: (949) 333-1500 Fax: (949) 333-1510		KDC, Inc. dba Dynalectric 4462 Corporate Center Drive Los Alamitos, CA 90720 Phone: (714) 828-7000 Fax: (714) 484-2385		Griffith/Neubauer JV 12200 Bloomfield Avenue Santa Fe Springs, CA 90670 Phone: (562) 929-1128 Fax: (562) 864-7938		Minako America Corporation 522 E. Airline Way Gardena, CA 90248 Phone: (310) 516-8100 Fax: (310) 516-7404		Sully-Miller Contracting Company 135 S. State College Blvd #400 Brea, CA 92821 Phone: (714) 578-9600 Fax: (714) 449-8775	
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 36 - All Other Electrical Work for Berth 92: Provide all labor, material, equipment and incidentals required to furnish, install, test and commission all other electrical work for Berth 92 ... as specified and shown for the lump sum price of -	Lump Sum	70,000.00	70,000.00	100,000.00	100,000.00	107,000.00	107,000.00	177,000.00	177,000.00	47,341.00	47,341.00
ITEM NO. 37 - All Other Electrical Work for Berth 94: Provide all labor, material, equipment and incidentals required to furnish, install, test and commission all other electrical work for Berth 94 ... as specified and shown for the lump sum price of -	Lump Sum	105,000.00	105,000.00	150,000.00	150,000.00	126,000.00	126,000.00	177,000.00	177,000.00	50,750.00	50,750.00
ITEM NO. 38 - Allowance for Load Bank Test Energy Usage: Provide all labor, materials, tools, equipment and incidentals necessary to reimburse the Tenant for energy... The limits and use of the Allowance shall be solely as directed by the Engineer -	Allowance	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00
ITEM NO. 39 - Stand-by Time: Provide all labor, equipment, materials and incidentals necessary to provide approximately twenty-five (25) hours of stand-by time for personnel and equipment, including, but not limited to... for the unit price per hour of -	Unit Price	1,000.00	25,000.00	720.00	18,000.00	2,100.00	52,500.00	680.00	17,000.00	1,268.00	31,700.00
ITEM NO. 40 - Environmental Protection Plan (E.P.P) Compliance: Provide all labor, equipment, materials and incidentals necessary to develop Environmental Protection Plan, including SWPPP (see Appendix... as specified and shown for the lump sum price of -	Lump Sum	20,000.00	20,000.00	72,000.00	72,000.00	34,500.00	34,500.00	77,000.00	77,000.00	22,106.00	22,106.00
TOTAL:											
CERTIFIED CHECK OR BOND:											

Shimmick Construction Company
LOWEST RESPONSIBLE BIDDER

594575/Exp. 05/31/2012
LICENSE NUMBER

$11,513,850.00
AMOUNT

AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Pier A, Berths A88-A96, Shore to Ship Power Retrofit at Pier A Container Terminal

NO. HD-S2342A

DATE OPENED: January 31, 2012

		Shimmick Construction Company 8201 Edgewater Drive #202 Oakland, Ca 94612 Phone: (949) 333-1500 Fax: (949) 333-1510		KDC, Inc. dba Dynalectric 4462 Corporate Center Drive Los Alamitos, CA 90720 Phone: (714) 828-7000 Fax: (714) 484-2385		Griffith/Neubauer JV 12200 Bloomfield Avenue Santa Fe Springs, CA 90670 Phone: (562) 929-1128 Fax: (562) 864-7938		Minako America Corporation 522 E. Airline Way Gardena, CA 90248 Phone: (310) 516-8100 Fax: (310) 516-7404		Sully-Miller Contracting Company 135 S. State College Blvd #400 Brea, CA 92821 Phone: (714) 578-9600 Fax: (714) 449-8775	
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 41 - Schedule: Provide all labor, equipment, materials and incidentals necessary to develop and update all schedules complete as specified for the lump sum price of -	Lump Sum	5,000.00	5,000.00	50,000.00	50,000.00	15,000.00	15,000.00	7,000.00	7,000.00	50,363.00	50,363.00
TOTAL:		$11,513,850.00		$12,164,140.00		$12,395,090.00		$12,606,049.50		$12,772,784.00	
CERTIFIED CHECK OR BOND:		10% Bond		10% Bond		10% Bond		10% Bond		10% Bond	

Shimmick Construction Company
LOWEST RESPONSIBLE BIDDER

594575/Exp. 05/31/2012
LICENSE NUMBER

$11,513,850.00
AMOUNT

AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Pier A, Berths A88-A96, Shore to Ship Power Retrofit at Pier A Container Terminal | **NO. HD-S2342A** | **DATE OPENED: January 31, 2012**

		Cupertino Electric, Inc. 1132 N. Seventh Street San Jose, CA 95112 Phone: (562) 641-2400 Fax: (562) 946-9988		Vellutini Corp dba Royal Electric 8481 Carbide Ct Sacramento, CA 95828 Phone: (916) 226-2100 Fax: (916) 226-2150		Comet Electric 7760 Deering Avenue Canoga Park, CA 91304 Phone: (818) 340-0965 Fax: (818) 340-4033		The Ryan Company 15 Commerce Way Norton, MA 02766 Phone: (508) 742-2500 Fax: (508) 742-2540		Marathon Construction Company 10108 Riverford Road Lakeside, CA 92040 Phone: (619) 276-4401 Fax: (619) 276-0717	
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 1 - Mobilization and Demobilization: Furnish all labor, materials, tools, equipment, incidentals and supervision necessary to perform... as specified and shown for the lump sum price (of which only 50% may be applied to mobilization) of -	Lump Sum	150,000.00	150,000.00	150,000.00	150,000.00	651,217.00	651,217.00	1,472,000.00	1,472,000.00	511,322.00	511,322.00
ITEM NO. 2 - Site Specific Safety Plan: Provide and implement an approved Site Specific Safety Plan for the lump sum price of -	Lump Sum	60,000.00	60,000.00	50,000.00	50,000.00	175,982.00	175,982.00	12,000.00	12,000.00	15,000.00	15,000.00
ITEM NO. 3 - Asphalt Concrete Pavement Demolition: Provide all labor, equipment, materials and incidentals necessary to perform demolition, removal and disposal of existing asphalt pavement and... as shown and specified for the lump sum price of -	Lump Sum	113,156.00	113,156.00	101,000.00	101,000.00	351,965.00	351,965.00	54,000.00	54,000.00	215,000.00	215,000.00
ITEM NO. 4 - Soil Handling and Disposal of Surplus Soil: Provide all labor, equipment, materials and incidentals necessary to stockpile... approximately one thousand one hundred (1,100) tons... as specified and shown for the unit price per ton of -	Unit Price	34.91	38,401.00	20.10	22,110.00	44.00	48,400.00	66.30	72,930.00	40.00	44,000.00
ITEM NO. 5 - Soil Handling and Disposal of Non-Hazardous Waste: Provide all labor, equipment, materials and incidentals necessary to... approximately six hundred fifty (650) tons of Non-Hazardous... as specified and shown for the unit price per ton of -	Unit Price	53.00	34,450.00	110.00	71,500.00	57.00	37,050.00	42.20	27,430.00	75.00	48,750.00
TOTAL:											
CERTIFIED CHECK OR BOND:											

Shimmick Construction Company
LOWEST RESPONSIBLE BIDDER

594575/Exp. 05/31/2012
LICENSE NUMBER

$11,513,850.00
AMOUNT

AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Pier A, Berths A88-A96, Shore to Ship Power Retrofit at Pier A Container Terminal

NO. HD-S2342A

DATE OPENED: January 31, 2012

		Cupertino Electric, Inc. 1132 N. Seventh Street San Jose, CA 95112 Phone: (562) 641-2400 Fax: (562) 946-9988		Vellutini Corp dba Royal Electric 8481 Carbide Ct Sacramento, CA 95828 Phone: (916) 226-2100 Fax: (916) 226-2150		Comet Electric 7760 Deering Avenue Canoga Park, CA 91304 Phone: (818) 340-0965 Fax: (818) 340-4033		The Ryan Company 15 Commerce Way Norton, MA 02766 Phone: (508) 742-2500 Fax: (508) 742-2540		Marathon Construction Company 10108 Riverford Road Lakeside, CA 92040 Phone: (619) 276-4401 Fax: (619) 276-0717	
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 6 - Port Furnished Crushed Miscellaneous Base: Provide all labor, equipment, materials and incidentals necessary to mix, load... approximately two thousand six hundred fifty (2,650) tons... as specified and shown for the unit price per ton of -	Unit Price	42.00	111,300.00	42.00	111,300.00	42.00	111,300.00	36.15	95,797.50	40.00	106,000.00
ITEM NO. 7 - Asphalt Concrete Pavement: Provide all labor, equipment, materials and incidentals necessary to construct approximately two thousand five hundred fifty (2,550) tons of asphalt... as specified and shown for the unit price per ton of -	Unit Price	204.50	521,475.00	124.00	316,200.00	106.00	270,300.00	112.00	285,600.00	130.00	331,500.00
ITEM NO. 8 - 8-Foot Chain Link Fence with Barbed Wire: Provide all labor, material, equipment and incidentals... approx four hundred eighty (480) linear feet of 8-foot chain link... as specified and shown for the unit price per linear foot of -	Unit Price	77.00	36,960.00	42.00	20,160.00	36.00	17,280.00	41.00	19,680.00	50.00	24,000.00
ITEM NO. 9 - Chain Link Gates: Provide all labor, material, equipment and incidentals necessary to furnish and install all chain link gates as specified and shown for the lump sum price of -	Lump Sum	11,436.00	11,436.00	14,600.00	14,600.00	12,318.00	12,318.00	3,455.00	3,455.00	15,000.00	15,000.00
ITEM NO. 10 - Pipe Bollards, 12-inch: Provide all labor, equipment, materials and incidentals necessary to furnish, install, and coat fifty seven (57) 12-inch diameter pipe bollards, as specified and shown for the unit price per each of -	Unit Price	1,800.00	102,600.00	1,360.00	77,520.00	1,161.00	66,177.00	1,579.00	90,003.00	2,000.00	114,000.00
TOTAL:											
CERTIFIED CHECK OR BOND:											

Shimmick Construction Company
LOWEST RESPONSIBLE BIDDER

594575/Exp. 05/31/2012
LICENSE NUMBER

$11,513,850.00
AMOUNT

AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Pier A, Berths A88-A96, Shore to Ship Power Retrofit at Pier A Container Terminal

NO. HD-S2342A

DATE OPENED: January 31, 2012

ITEM	ESTIMATED QUANTITIES	Cupertino Electric, Inc. 1132 N. Seventh Street San Jose, CA 95112 Phone: (562) 641-2400 Fax: (562) 946-9988		Vellutini Corp dba Royal Electric 8481 Carbide Ct Sacramento, CA 95828 Phone: (916) 226-2100 Fax: (916) 226-2150		Comet Electric 7760 Deering Avenue Canoga Park, CA 91304 Phone: (818) 340-0965 Fax: (818) 340-4033		The Ryan Company 15 Commerce Way Norton, MA 02766 Phone: (508) 742-2500 Fax: (508) 742-2540		Marathon Construction Company 10108 Riverford Road Lakeside, CA 92040 Phone: (619) 276-4401 Fax: (619) 276-0717	
		RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 11 - Bid Item Removed: Bid item removed per Addendum No. 1 issued January 4, 2012.	Lump Sum	0	0	0	0	0	0	0	0	0	0
ITEM NO. 12 - Repair of Existing Striping: Provide all labor, equipment, materials and incidentals necessary to repair approximately three thousand eight hundred (3,800) linear feet of... as specified and required for the unit price per linear foot of -	Unit Pricie	2.40	9,120.00	3.40	12,920.00	2.25	8,550.00	3.65	13,870.00	2.00	7,600.00
ITEM NO. 13 - Repair of Existing Pavement Markings: Provide all labor, equipment, materials and incidentals necessary to repair approximately one hundred fifty five (155) existing markings, as specified and required for the unit price per each of -	Unit Pricie	120.00	18,600.00	90.00	13,950.00	315.00	48,825.00	18.10	2,805.50	71.00	11,005.00
ITEM NO. 14 - Shore Power Outlet Vaults for Berth 90 (SPO 7, SPO 8 & SPO 9): Provide all labor, material, equipment and incidentals necessary to perform demolition and construction of shore to ship... as specified and shown for the lump sum price of -	Lump Sum	463,458.00	463,458.00	353,666.00	353,666.00	389,124.00	389,124.00	232,000.00	232,000.00	600,000.00	600,000.00
ITEM NO. 15 - Shore Power Outlet Vaults for Berth 92 (SPO 4, SPO 5 & SPO 6): Provide all labor, material, equipment and incidentals necessary to perform demolition and construction of shore to ship... as specified and shown for the lump sum price of -	Lump Sum	463,458.00	463,458.00	353,666.00	353,666.00	389,124.00	389,124.00	142,000.00	142,000.00	600,000.00	600,000.00
TOTAL:											
CERTIFIED CHECK OR BOND:											

Shimmick Construction Company
LOWEST RESPONSIBLE BIDDER

594575/Exp. 05/31/2012
LICENSE NUMBER

$11,513,850.00
AMOUNT

AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Pier A, Berths A88-A96, Shore to Ship Power Retrofit at Pier A Container Terminal

NO. HD-S2342A

DATE OPENED: January 31, 2012

		Cupertino Electric, Inc. 1132 N. Seventh Street San Jose, CA 95112 Phone: (562) 641-2400 Fax: (562) 946-9988		Vellutini Corp dba Royal Electric 8481 Carbide Ct Sacramento, CA 95828 Phone: (916) 226-2100 Fax: (916) 226-2150		Comet Electric 7760 Deering Avenue Canoga Park, CA 91304 Phone: (818) 340-0965 Fax: (818) 340-4033		The Ryan Company 15 Commerce Way Norton, MA 02766 Phone: (508) 742-2500 Fax: (508) 742-2540		Marathon Construction Company 10108 Riverford Road Lakeside, CA 92040 Phone: (619) 276-4401 Fax: (619) 276-0717	
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 16 - Shore Power Outlet Vaults for Berth 94 (SPO 1, SPO 2 & SPO 3): Povide all labor, material, equipment and incidentals necessary to perform demolition and construction of shore to ship... as specified and shown for the lump sum price of -	Lump Sum	463,458.00	463,458.00	353,666.00	353,666.00	389,124.00	389,124.00	142,000.00	142,000.00	600,000.00	600,000.00
ITEM NO. 17 - Cut-Off Wall Plug/Penetrations: Provide all labor, material, equipment and incidentals necessary to perform demolition, coring and construction of four (4) cut-off wall plug... as specified and shown for the unit price per each of -	Unit Price	7,223.00	28,892.00	6,200.00	24,800.00	4,180.00	16,720.00	14,500.00	58,000.00	12,000.00	48,000.00
ITEM NO. 18 - SPO "Dry Run" Cable Connection Support: Provide all labor, materials, tools, equipment and incidentals necessary to support approximately four (4) ship-side "dry... as specified and directed by the Engineer for the unit price per each of -	Unit Price	621.00	2,484.00	640.00	2,560.00	519.00	2,076.00	775.00	3,100.00	1,400.00	5,600.00
ITEM NO. 19 - Ship Testing and Commissioning: Provide all labor, materials, tools, equipment and incidentals necessary to support approximately four (4) ship-side commissioning... as specified and directed by the Engineer for the unit price per each of -	Unit Price	17,915.00	71,660.00	14,000.00	56,000.00	3,754.00	15,016.00	61,400.00	245,600.00	20,000.00	80,000.00
ITEM NO. 20 - Transformer for Berth 90: Provide al labor, material, equipment, and incidentals required to furnish, install, test and commission the transformer(s) as part of a complete system as specified and shown for the lump sum price of -	Lump Sum	625,700.00	625,700.00	609,000.00	609,000.00	1,208,972.00	1,208,972.00	662,000.00	662,000.00	740,000.00	740,000.00
TOTAL:											
CERTIFIED CHECK OR BOND:											

Shimmick Construction Company
LOWEST RESPONSIBLE BIDDER

594575/Exp. 05/31/2012
LICENSE NUMBER

$11,513,850.00
AMOUNT

AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Pier A, Berths A88-A96, Shore to Ship Power Retrofit at Pier A Container Terminal

NO. HD-S2342A

DATE OPENED: January 31, 2012

		Cupertino Electric, Inc. 1132 N. Seventh Street San Jose, CA 95112 Phone: (562) 641-2400 Fax: (562) 946-9988		Vellutini Corp dba Royal Electric 8481 Carbide Ct Sacramento, CA 95828 Phone: (916) 226-2100 Fax: (916) 226-2150		Comet Electric 7760 Deering Avenue Canoga Park, CA 91304 Phone: (818) 340-0965 Fax: (818) 340-4033		The Ryan Company 15 Commerce Way Norton, MA 02766 Phone: (508) 742-2500 Fax: (508) 742-2540		Marathon Construction Company 10108 Riverford Road Lakeside, CA 92040 Phone: (619) 276-4401 Fax: (619) 276-0717	
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 21 - Transformer for Berth 92: Provide al labor, material, equipment, and incidentals required to furnish, install, test and commission the transformer(s) as part of a complete system as specified and shown for the lump sum price of -	Lump Sum	625,700.00	625,700.00	609,000.00	609,000.00	1,211,997.00	1,211,997.00	662,000.00	662,000.00	665,000.00	665,000.00
ITEM NO. 22 - Transformer for Berth 94: Provide al labor, material, equipment, and incidentals required to furnish, install, test and commission the transformer(s) as part of a complete system as specified and shown for the lump sum price of -	Lump Sum	625,700.00	625,700.00	609,000.00	609,000.00	1,215,296.00	1,215,296.00	662,000.00	662,000.00	710,000.00	710,000.00
ITEM NO. 23 - Switchgear Assembly for Berth 90: Provide all labor, material, equipment and incidentals required to furnish, install, test and commission the switchgear assembly as part of a complete... as specified and shown for the lump sum price of -	Lump Sum	1,648,325.00	1,648,325.00	1,655,000.00	1,655,000.00	1,232,346.00	1,232,346.00	2,008,000.00	2,008,000.00	1,790,000.00	1,790,000.00
ITEM NO. 24 - Switchgear Assembly for Berth 92: Provide all labor, material, equipment and incidentals required to furnish, install, test and commission the switchgear assembly as part of a complete... as specified and shown for the lump sum price of -	Lump Sum	1,384,637.00	1,384,637.00	1,396,000.00	1,396,000.00	1,232,346.00	1,232,346.00	1,475,000.00	1,475,000.00	1,600,000.00	1,600,000.00
ITEM NO. 25 - Switchgear Assembly for Berth 94: Provide all labor, material, equipment and incidentals required to furnish, install, test and commission the switchgear assembly as part of a complete... as specified and shown for the lump sum price of -	Lump Sum	1,418,089.00	1,418,089.00	1,439,000.00	1,439,000.00	1,237,462.00	1,237,462.00	1,507,000.00	1,507,000.00	1,635,000.00	1,635,000.00
TOTAL:											
CERTIFIED CHECK OR BOND:											

Shimmick Construction Company
LOWEST RESPONSIBLE BIDDER

594575/Exp. 05/31/2012
LICENSE NUMBER

$11,513,850.00
AMOUNT

AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Pier A, Berths A88-A96, Shore to Ship Power Retrofit at Pier A Container Terminal | **NO. HD-S2342A** | **DATE OPENED: January 31, 2012**

ITEM	ESTIMATED QUANTITIES	Cupertino Electric, Inc. 1132 N. Seventh Street San Jose, CA 95112 Phone: (562) 641-2400 Fax: (562) 946-9988		Vellutini Corp dba Royal Electric 8481 Carbide Ct Sacramento, CA 95828 Phone: (916) 226-2100 Fax: (916) 226-2150		Comet Electric 7760 Deering Avenue Canoga Park, CA 91304 Phone: (818) 340-0965 Fax: (818) 340-4033		The Ryan Company 15 Commerce Way Norton, MA 02766 Phone: (508) 742-2500 Fax: (508) 742-2540		Marathon Construction Company 10108 Riverford Road Lakeside, CA 92040 Phone: (619) 276-4401 Fax: (619) 276-0717	
		RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 26 - Ductbanks and Raceways for Berth 90: Provide all labor, material, equipment and incidentals required to furnish and install the ductbanks and raceways as part of a complete system as specified and shown for the lump sum price of -	Lump Sum	762,606.00	762,606.00	750,000.00	750,000.00	507,835.00	507,835.00	578,000.00	578,000.00	745,000.00	745,000.00
ITEM NO. 27 - Ductbanks and Raceways for Berth 92: Provide all labor, material, equipment and incidentals required to furnish and install the ductbanks and raceways as part of a complete system as specified and shown for the lump sum price of -	Lump Sum	678,099.00	678,099.00	576,000.00	576,000.00	505,492.00	505,492.00	449,000.00	449,000.00	660,000.00	660,000.00
ITEM NO. 28 - Ductbanks and Raceways for Berth 94: Provide all labor, material, equipment and incidentals required to furnish and install the ductbanks and raceways as part of a complete system as specified and shown for the lump sum price of -	Lump Sum	559,890.00	559,890.00	443,000.00	443,000.00	473,340.00	473,340.00	353,000.00	353,000.00	540,000.00	540,000.00
ITEM NO. 29 - Conductors for Berth 90: Provide all labor, material, equipment and incidentals required to furnish, install and test the conductors as part of a complete system as specified and shown for the lump sum price of -	Lump Sum	376,811.00	376,811.00	372,000.00	372,000.00	318,573.00	318,573.00	374,000.00	374,000.00	340,000.00	340,000.00
ITEM NO. 30 - Conductors for Berth 92: Provide all labor, material, equipment and incidentals required to furnish, install and test the conductors as part of a complete system as specified and shown for the lump sum price of -	Lump Sum	381,578.00	381,578.00	369,000.00	369,000.00	304,540.00	304,540.00	425,000.00	425,000.00	310,000.00	310,000.00
TOTAL:											
CERTIFIED CHECK OR BOND:											

Shimmick Construction Company
LOWEST RESPONSIBLE BIDDER

594575/Exp. 05/31/2012
LICENSE NUMBER

$11,513,850.00
AMOUNT

AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Pier A, Berths A88-A96, Shore to Ship Power Retrofit at Pier A Container Terminal | **NO. HD-S2342A** | **DATE OPENED: January 31, 2012**

		Cupertino Electric, Inc. 1132 N. Seventh Street San Jose, CA 95112 Phone: (562) 641-2400 Fax: (562) 946-9988		Vellutini Corp dba Royal Electric 8481 Carbide Ct Sacramento, CA 95828 Phone: (916) 226-2100 Fax: (916) 226-2150		Comet Electric 7760 Deering Avenue Canoga Park, CA 91304 Phone: (818) 340-0965 Fax: (818) 340-4033		The Ryan Company 15 Commerce Way Norton, MA 02766 Phone: (508) 742-2500 Fax: (508) 742-2540		Marathon Construction Company 10108 Riverford Road Lakeside, CA 92040 Phone: (619) 276-4401 Fax: (619) 276-0717	
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 31 - Conductors for Berth 94: Provide all labor, material, equipment and incidentals required to furnish, install and test the conductors as part of a complete system as specified and shown for the lump sum price of -	Lump Sum	385,757.00	385,757.00	431,000.00	431,000.00	359,649.00	359,649.00	336,000.00	336,000.00	340,000.00	340,000.00
ITEM NO. 32 - SPO Receptacles for Berth 90: Provide all labor, material, equipment and incidentals required to furnish, install, test and commission the SPO receptacles as part of a complete system as specified and shown for the lump sum price of -	Lump Sum	114,664.00	114,664.00	102,000.00	102,000.00	243,810.00	243,810.00	257,000.00	257,000.00	160,000.00	160,000.00
ITEM NO. 33 - SPO Receptacles for Berth 92: Provide all labor, material, equipment and incidentals required to furnish, install, test and commission the SPO receptacles as part of a complete system as specified and shown for the lump sum price of -	Lump Sum	114,664.00	114,664.00	102,000.00	102,000.00	269,943.00	269,943.00	257,000.00	257,000.00	160,000.00	160,000.00
ITEM NO. 34 - SPO Receptacles for Berth 94: Provide all labor, material, equipment and incidentals required to furnish, install, test and commission the SPO receptacles as part of a complete system as specified and shown for the lump sum price of -	Lump Sum	117,737.00	117,737.00	102,000.00	102,000.00	243,880.00	243,880.00	257,000.00	257,000.00	160,000.00	160,000.00
ITEM NO. 35 - All Other Electrical Work for Berth 90: Provide all labor, material, equipment and incidentals required to furnish, install, test and commission all other electrical work for Berth 90 ... as specified and shown for the lump sum price of -	Lump Sum	204,842.00	204,842.00	883,000.00	883,000.00	128,770.00	128,770.00	510,000.00	510,000.00	525,000.00	525,000.00
TOTAL:											
CERTIFIED CHECK OR BOND:											

Shimmick Construction Company
LOWEST RESPONSIBLE BIDDER

594575/Exp. 05/31/2012
LICENSE NUMBER

$11,513,850.00
AMOUNT

AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Pier A, Berths A88-A96, Shore to Ship Power Retrofit at Pier A Container Terminal | **NO. HD-S2342A** | **DATE OPENED: January 31, 2012**

ITEM	ESTIMATED QUANTITIES	Cupertino Electric, Inc. 1132 N. Seventh Street San Jose, CA 95112 Phone: (562) 641-2400 Fax: (562) 946-9988		Vellutini Corp dba Royal Electric 8481 Carbide Ct Sacramento, CA 95828 Phone: (916) 226-2100 Fax: (916) 226-2150		Comet Electric 7760 Deering Avenue Canoga Park, CA 91304 Phone: (818) 340-0965 Fax: (818) 340-4033		The Ryan Company 15 Commerce Way Norton, MA 02766 Phone: (508) 742-2500 Fax: (508) 742-2540		Marathon Construction Company 10108 Riverford Road Lakeside, CA 92040 Phone: (619) 276-4401 Fax: (619) 276-0717	
		RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 36 - All Other Electrical Work for Berth 92: Provide all labor, material, equipment and incidentals required to furnish, install, test and commission all other electrical work for Berth 92 ... as specified and shown for the lump sum price of -	Lump Sum	108,225.00	108,225.00	91,000.00	91,000.00	51,957.00	51,957.00	272,000.00	272,000.00	68,000.00	68,000.00
ITEM NO. 37 - All Other Electrical Work for Berth 94: Provide all labor, material, equipment and incidentals required to furnish, install, test and commission all other electrical work for Berth 94 ... as specified and shown for the lump sum price of -	Lump Sum	130,900.00	130,900.00	64,000.00	64,000.00	59,268.00	59,268.00	155,000.00	155,000.00	100,000.00	100,000.00
ITEM NO. 38 - Allowance for Load Bank Test Energy Usage: Provide all labor, materials, tools, equipment and incidentals necessary to reimburse the Tenant for energy... The limits and use of the Allowance shall be solely as directed by the Engineer -	Allowance	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00
ITEM NO. 39 - Stand-by Time: Provide all labor, equipment, materials and incidentals necessary to provide approximately twenty-five (25) hours of stand-by time for personnel and equipment, including, but not limited to... for the unit price per hour of -	Unit Price	725.00	18,125.00	1,350.00	33,750.00	855.00	21,375.00	760.00	19,000.00	1,000.00	25,000.00
ITEM NO. 40 - Environmental Protection Plan (E.P.P) Compliance: Provide all labor, equipment, materials and incidentals necessary to develop Environmental Protection Plan, including SWPPP (see Appendix... as specified and shown for the lump sum price of -	Lump Sum	77,042.00	77,042.00	53,000.00	53,000.00	70,394.00	70,394.00	25,000.00	25,000.00	50,000.00	50,000.00
TOTAL:											
CERTIFIED CHECK OR BOND:											

Shimmick Construction Company
LOWEST RESPONSIBLE BIDDER

594575/Exp. 05/31/2012
LICENSE NUMBER

$11,513,850.00
AMOUNT

AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Pier A, Berths A88-A96, Shore to Ship Power Retrofit at Pier A Container Terminal | **NO. HD-S2342A** | **DATE OPENED: January 31, 2012**

		Cupertino Electric, Inc. 1132 N. Seventh Street San Jose, CA 95112 Phone: (562) 641-2400 Fax: (562) 946-9988		Vellutini Corp dba Royal Electric 8481 Carbide Ct Sacramento, CA 95828 Phone: (916) 226-2100 Fax: (916) 226-2150		Comet Electric 7760 Deering Avenue Canoga Park, CA 91304 Phone: (818) 340-0965 Fax: (818) 340-4033		The Ryan Company 15 Commerce Way Norton, MA 02766 Phone: (508) 742-2500 Fax: (508) 742-2540		Marathon Construction Company 10108 Riverford Road Lakeside, CA 92040 Phone: (619) 276-4401 Fax: (619) 276-0717	
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 41 - Schedule: Provide all labor, equipment, materials and incidentals necessary to develop and update all schedules complete as specified for the lump sum price of -	Lump Sum	50,000.00	50,000.00	163,000.00	163,000.00	35,196.00	35,196.00	80,000.00	80,000.00	250,000.00	250,000.00
TOTAL:		$13,159,999.00		$13,007,368.00		$13,982,989.00		$14,345,271.00		$14,999,777.00	
CERTIFIED CHECK OR BOND:		10% Bond		10% Bond		10% Bond		10% Bond		10% Bond	

Shimmick Construction Company
LOWEST RESPONSIBLE BIDDER

594575/Exp. 05/31/2012
LICENSE NUMBER

$11,513,850.00
AMOUNT

AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Pier A, Berths A88-A96, Shore to Ship Power Retrofit at Pier A Container Terminal | **NO. HD-S2342A** | **DATE OPENED: January 31, 2012**

		Steiny and Company 221 N. Ardmore Ave Los Angeles, CA 90004 Phone: (213) 341-2149 Fax: (213) 382-0612									
		NON-RESPONSIVE									
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 1 - Mobilization and Demobilization: Furnish all labor, materials, tools, equipment, incidentals and supervision necessary to perform... as specified and shown for the lump sum price (of which only 50% may be applied to mobilization) of -	Lump Sum	300,000.00	300,000.00								
ITEM NO. 2 - Site Specific Safety Plan: Provide and implement an approved Site Specific Safety Plan for the lump sum price of -	Lump Sum	10,000.00	10,000.00								
ITEM NO. 3 - Asphalt Concrete Pavement Demolition: Provide all labor, equipment, materials and incidentals necessary to perform demolition, removal and disposal of existing asphalt pavement and... as shown and specified for the lump sum price of -	Lump Sum	126,206.00	126,206.00								
ITEM NO. 4 - Soil Handling and Disposal of Surplus Soil: Provide all labor, equipment, materials and incidentals necessary to stockpile... approximately one thousand one hundred (1,100) tons... as specified and shown for the unit price per ton of -	Unit Price	38.94	42,834.00								
ITEM NO. 5 - Soil Handling and Disposal of Non-Hazardous Waste: Provide all labor, equipment, materials and incidentals necessary to... approximately six hundred fifty (650) tons of Non-Hazardous... as specified and shown for the unit price per ton of -	Unit Price	59.08	38,402.00								
TOTAL:											
CERTIFIED CHECK OR BOND:											

Shimmick Construction Company
LOWEST RESPONSIBLE BIDDER

594575/Exp. 05/31/2012
LICENSE NUMBER

$11,513,850.00
AMOUNT

AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Pier A, Berths A88-A96, Shore to Ship Power Retrofit at Pier A Container Terminal | **NO. HD-S2342A** | **DATE OPENED: January 31, 2012**

		Steiny and Company 221 N. Ardmore Ave Los Angeles, CA 90004 Phone: (213) 341-2149 Fax: (213) 382-0612									
		NON-RESPONSIVE									
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 6 - Port Furnished Crushed Miscellaneous Base: Provide all labor, equipment, materials and incidentals necessary to mix, load... approximately two thousand six hundred fifty (2,650) tons... as specified and shown for the unit price per ton of -	Unit Price	47.00	124,550.00								
ITEM NO. 7 - Asphalt Concrete Pavement: Provide all labor, equipment, materials and incidentals necessary to construct approximately two thousand five hundred fifty (2,550) tons of asphalt... as specified and shown for the unit price per ton of -	Unit Price	230.00	586,500.00								
ITEM NO. 8 - 8-Foot Chain Link Fence with Barbed Wire: Provide all labor, material, equipment and incidentals... approx four hundred eighty (480) linear feet of 8-foot chain link... as specified and shown for the unit price per linear foot of -	Unit Price	86.00	41,280.00								
ITEM NO. 9 - Chain Link Gates: Provide all labor, material, equipment and incidentals necessary to furnish and install all chain link gates as specified and shown for the lump sum price of -	Lump Sum	12,754.00	12,754.00								
ITEM NO. 10 - Pipe Bollards, 12-inch: Provide all labor, equipment, materials and incidentals necessary to furnish, install, and coat fifty seven (57) 12-inch diameter pipe bollards, as specified and shown for the unit price per each of -	Unit Price	2,014.00	114,798.00								
TOTAL:											
CERTIFIED CHECK OR BOND:											

Shimmick Construction Company	594575/Exp. 05/31/2012	$11,513,850.00	
LOWEST RESPONSIBLE BIDDER	LICENSE NUMBER	AMOUNT	AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Pier A, Berths A88-A96, Shore to Ship Power Retrofit at Pier A Container Terminal

NO. HD-S2342A

DATE OPENED: January 31, 2012

		Steiny and Company 221 N. Ardmore Ave Los Angeles, CA 90004 Phone: (213) 341-2149 Fax: (213) 382-0612 NON-RESPONSIVE									
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 11 - Bid Item Removed: Bid item removed per Addendum No. 1 Issued January 4, 2012.	Lump Sum	0	0								
ITEM NO. 12 - Repair of Existing Striping: Provide all labor, equipment, materials and incidentals necessary to repair approximately three thousand eight hundred (3,800) linear feet of... as specified and required for the unit price per linear foot of -	Unit Pricie	269.00	1,022,200.00								
ITEM NO. 13 - Repair of Existing Pavement Markings: Provide all labor, equipment, materials and incidentals necessary to repair approximately one hundred fifty five (155) existing markings, as specified and required for the unit price per each of -	Unit Pricie	134.25	20,808.75								
ITEM NO. 14 - Shore Power Outlet Vaults for Berth 90 (SPO 7, SPO 8 & SPO 9): Provide all labor, material, equipment and incidentals necessary to perform demolition and construction of shore to ship... as specified and shown for the lump sum price of -	Lump Sum	516,911.00	516,911.00								
ITEM NO. 15 - Shore Power Outlet Vaults for Berth 92 (SPO 4, SPO 5 & SPO 6): Provide all labor, material, equipment and incidentals necessary to perform demolition and construction of shore to ship... as specified and shown for the lump sum price of -	Lump Sum	516,911.00	516,911.00								
TOTAL:											
CERTIFIED CHECK OR BOND:											

Shimmick Construction Company
LOWEST RESPONSIBLE BIDDER

594575/Exp. 05/31/2012
LICENSE NUMBER

$11,513,850.00
AMOUNT

AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Pier A, Berths A88-A96, Shore to Ship Power Retrofit at Pier A Container Terminal | **NO. HD-S2342A** | **DATE OPENED: January 31, 2012**

		Steiny and Company 221 N. Ardmore Ave Los Angeles, CA 90004 Phone: (213) 341-2149 Fax: (213) 382-0612 NON-RESPONSIVE									
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 16 - Shore Power Outlet Vaults for Berth 94 (SPO 1, SPO 2 & SPO 3): Povide all labor, material, equipment and incidentals necessary to perform demolition and construction of shore to ship... as specified and shown for the lump sum price of -	Lump Sum	516,911.00	516,911.00								
ITEM NO. 17 - Cut-Off Wall Plug/Penetrations: Provide all labor, material, equipment and incidentals necessary to perform demolition, coring and construction of four (4) cut-off wall plug... as specified and shown for the unit price per each of -	Unit Price	8,055.05	32,220.20								
ITEM NO. 18 - SPO "Dry Run" Cable Connection Support: Provide all labor, materials, tools, equipment and incidentals necessary to support approximately four (4) ship-side "dry... as specified and directed by the Engineer for the unit price per each of -	Unit Price	1,250.00	5,000.00								
ITEM NO. 19 - Ship Testing and Commissioning: Provide all labor, materials, tools, equipment and incidentals necessary to support approximately four (4) ship-side commissioning... as specified and directed by the Engineer for the unit price per each of -	Unit Price	17,796.05	71,184.20								
ITEM NO. 20 - Transformer for Berth 90: Provide al labor, material, equipment, and incidentals required to furnish, install, test and commission the transformer(s) as part of a complete system as specified and shown for the lump sum price of -	Lump Sum	707,440.00	707,440.00								
TOTAL:											
CERTIFIED CHECK OR BOND:											

Shimmick Construction Company
LOWEST RESPONSIBLE BIDDER

594575/Exp. 05/31/2012
LICENSE NUMBER

$11,513,850.00
AMOUNT

AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Pier A, Berths A88-A96, Shore to Ship Power Retrofit at Pier A Container Terminal | **NO. HD-S2342A** | **DATE OPENED: January 31, 2012**

		Steiny and Company 221 N. Ardmore Ave Los Angeles, CA 90004 Phone: (213) 341-2149 Fax: (213) 382-0612 NON-RESPONSIVE									
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 21 - Transformer for Berth 92: Provide al labor, material, equipment, and incidentals required to furnish, install, test and commission the transformer(s) as part of a complete system as specified and shown for the lump sum price of -	Lump Sum	707,440.00	707,440.00								
ITEM NO. 22 - Transformer for Berth 94: Provide al labor, material, equipment, and incidentals required to furnish, install, test and commission the transformer(s) as part of a complete system as specified and shown for the lump sum price of -	Lump Sum	707,440.00	707,440.00								
ITEM NO. 23 - Switchgear Assembly for Berth 90: Provide all labor, material, equipment and incidentals required to furnish, install, test and commission the switchgear assembly as part of a complete... as specified and shown for the lump sum price of -	Lump Sum	1,781,839.00	1,781,839.00								
ITEM NO. 24 - Switchgear Assembly for Berth 92: Provide all labor, material, equipment and incidentals required to furnish, install, test and commission the switchgear assembly as part of a complete... as specified and shown for the lump sum price of -	Lump Sum	1,465,896.00	1,465,896.00								
ITEM NO. 25 - Switchgear Assembly for Berth 94: Provide all labor, material, equipment and incidentals required to furnish, install, test and commission the switchgear assembly as part of a complete... as specified and shown for the lump sum price of -	Lump Sum	1,501,827.00	1,501,827.00								
TOTAL:											
CERTIFIED CHECK OR BOND:											

Shimmick Construction Company
LOWEST RESPONSIBLE BIDDER

594575/Exp. 05/31/2012
LICENSE NUMBER

$11,513,850.00
AMOUNT

AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Pier A, Berths A88-A96, Shore to Ship Power Retrofit at Pier A Container Terminal | **NO. HD-S2342A** | **DATE OPENED: January 31, 2012**

		Steiny and Company 221 N. Ardmore Ave Los Angeles, CA 90004 Phone: (213) 341-2149 Fax: (213) 382-0612 NON-RESPONSIVE									
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 26 - Ductbanks and Raceways for Berth 90: Provide all labor, material, equipment and incidentals required to furnish and install the ductbanks and raceways as part of a complete system as specified and shown for the lump sum price of -	Lump Sum	727,666.00	727,666.00								
ITEM NO. 27 - Ductbanks and Raceways for Berth 92: Provide all labor, material, equipment and incidentals required to furnish and install the ductbanks and raceways as part of a complete system as specified and shown for the lump sum price of -	Lump Sum	777,400.00	777,400.00								
ITEM NO. 28 - Ductbanks and Raceways for Berth 94: Provide all labor, material, equipment and incidentals required to furnish and install the ductbanks and raceways as part of a complete system as specified and shown for the lump sum price of -	Lump Sum	569,505.00	569,505.00								
ITEM NO. 29 - Conductors for Berth 90: Provide all labor, material, equipment and incidentals required to furnish, install and test the conductors as part of a complete system as specified and shown for the lump sum price of -	Lump Sum	407,685.00	407,685.00								
ITEM NO. 30 - Conductors for Berth 92: Provide all labor, material, equipment and incidentals required to furnish, install and test the conductors as part of a complete system as specified and shown for the lump sum price of -	Lump Sum	570,934.00	570,934.00								
TOTAL:											
CERTIFIED CHECK OR BOND:											

Shimmick Construction Company
LOWEST RESPONSIBLE BIDDER

594575/Exp. 05/31/2012
LICENSE NUMBER

$11,513,850.00
AMOUNT

AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Pier A, Berths A88-A96, Shore to Ship Power Retrofit at Pier A Container Terminal | **NO. HD-S2342A** | **DATE OPENED: January 31, 2012**

		Steiny and Company 221 N. Ardmore Ave Los Angeles, CA 90004 Phone: (213) 341-2149 Fax: (213) 382-0612 NON-RESPONSIVE									
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 31 - Conductors for Berth 94: Provide all labor, material, equipment and incidentals required to furnish, install and test the conductors as part of a complete system as specified and shown for the lump sum price of -	Lump Sum	347,513.00	347,513.00								
ITEM NO. 32 - SPO Receptacles for Berth 90: Provide all labor, material, equipment and incidentals required to furnish, install, test and commission the SPO receptacles as part of a complete system as specified and shown for the lump sum price of -	Lump Sum	259,726.00	259,726.00								
ITEM NO. 33 - SPO Receptacles for Berth 92: Provide all labor, material, equipment and incidentals required to furnish, install, test and commission the SPO receptacles as part of a complete system as specified and shown for the lump sum price of -	Lump Sum	259,726.00	259,726.00								
ITEM NO. 34 - SPO Receptacles for Berth 94: Provide all labor, material, equipment and incidentals required to furnish, install, test and commission the SPO receptacles as part of a complete system as specified and shown for the lump sum price of -	Lump Sum	259,726.00	259,726.00								
ITEM NO. 35 - All Other Electrical Work for Berth 90: Provide all labor, material, equipment and incidentals required to furnish, install, test and commission all other electrical work for Berth 90 ... as specified and shown for the lump sum price of -	Lump Sum	660,975.00	660,975.00								
TOTAL:											
CERTIFIED CHECK OR BOND:											

Shimmick Construction Company
LOWEST RESPONSIBLE BIDDER

594575/Exp. 05/31/2012
LICENSE NUMBER

$11,513,850.00
AMOUNT

AUTHORIZED SIGNATURE

File: Bid Analysis HD-S2342A Segredo[BID ANALYSIS] 1/31/2012 3:04 PM

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Pier A, Berths A88-A96, Shore to Ship Power Retrofit at Pier A Container Terminal | **NO. HD-S2342A** | **DATE OPENED: January 31, 2012**

		Steiny and Company 221 N. Ardmore Ave Los Angeles, CA 90004 Phone: (213) 341-2149 Fax: (213) 382-0612 NON-RESPONSIVE									
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 36 - All Other Electrical Work for Berth 92: Provide all labor, material, equipment and incidentals required to furnish, install, test and commission all other electrical work for Berth 92 ... as specified and shown for the lump sum price of -	Lump Sum	153,354.00	153,354.00								
ITEM NO. 37 - All Other Electrical Work for Berth 94: Provide all labor, material, equipment and incidentals required to furnish, install, test and commission all other electrical work for Berth 94 ... as specified and shown for the lump sum price of -	Lump Sum	223,576.00	223,576.00								
ITEM NO. 38 - Allowance for Load Bank Test Energy Usage: Provide all labor, materials, tools, equipment and incidentals necessary to reimburse the Tenant for energy... The limits and use of the Allowance shall be solely as directed by the Engineer -	Allowance	50,000.00	50,000.00								
ITEM NO. 39 - Stand-by Time: Provide all labor, equipment, materials and incidentals necessary to provide approximately twenty-five (25) hours of stand-by time for personnel and equipment, including, but not limited to... for the unit price per hour of -	Unit Price	805.52	20,138.00								
ITEM NO. 40 - Environmental Protection Plan (E.P.P) Compliance: Provide all labor, equipment, materials and incidentals necessary to develop Environmental Protection Plan, including SWPPP (see Appendix... as specified and shown for the lump sum price of -	Lump Sum	75,928.00	75,928.00								
TOTAL:											
CERTIFIED CHECK OR BOND:											

Shimmick Construction Company
LOWEST RESPONSIBLE BIDDER

594575/Exp. 05/31/2012
LICENSE NUMBER

$11,513,850.00
AMOUNT

AUTHORIZED SIGNATURE

Port of LONG BEACH
The Green Port

ANALYSIS OF BIDS
CITY OF LONG BEACH, HARBOR DEPARTMENT

SPECIFICATIONS FOR: Pier A, Berths A88-A96, Shore to Ship Power Retrofit at Pier A Container Terminal

NO. HD-S2342A

DATE OPENED: January 31, 2012

		Steiny and Company 221 N. Ardmore Ave Los Angeles, CA 90004 Phone: (213) 341-2149 Fax: (213) 382-0612 NON-RESPONSIVE									
ITEM	ESTIMATED QUANTITIES	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
ITEM NO. 41 - Schedule: Provide all labor, equipment, materials and incidentals necessary to develop and update all schedules complete as specified for the lump sum price of -	Lump Sum	20,000.00	20,000.00								
TOTAL:		$16,355,204.15									
CERTIFIED CHECK OR BOND:		10% Bond									

Shimmick Construction Company
LOWEST RESPONSIBLE BIDDER

594575/Exp. 05/31/2012
LICENSE NUMBER

$11,513,850.00
AMOUNT

AUTHORIZED SIGNATURE

Progress Payment No. 15
Period Ending: OCTOBER 1 THRU NOVEMBER 13, 2014
PAYMENT DUE : 12-14-14
Specification: HD-S2342A Shore to Ship Retrofit at Pier A, Berths A88-A96
Contractor: Shimmick Construction Company

LBHD Contract No: HD-7912
Original Bid Amt: $11,513,850

Item No.	Item	Unit	Est. Qty.	Unit Price	Bid Amount	Qty This Month	A90 $ Amount This Month	A92 $ Amount This Month	A94 $ Amount This Month	Previous Qty or %	% of Item Comp	TOTAL $ Amount to Date
1	Mobilization and Demobilization	Lump Sum	1	130,000.00	130,000.00	0%	-	-	-	100%	100%	130,000.00
2	Site Specific Safety Plan	Lump Sum	1	15,000.00	15,000.00	0%	-	-	-	100%	100%	15,000.00
3	Asphalt Concrete Pavement Demolition	Lump Sum	1	150,000.00	150,000.00	0%	-	-	-	100%	100%	150,000.00
4	Soil Handling and Disposal of Surplus Soil	Tons	1100	10.00	11,000.00	-		-		862.43	78%	8,624.30
5	Soil Handling and Disposal of Non-Hazardous Waste	Tons	650	80.00	52,000.00	-	-	-	-	2,000.56	308%	160,044.64
6	Port Furnished Crushed Miscellaneous Base	Tons	2,650	15.00	39,750.00	-	-	-	-	2,137.65	81%	32,064.75
7	Asphalt Concrete Pavement	Tons	2,550	89.00	226,950.00	-	-	-	-	2,291.07	90%	203,905.23
8	8-Foot Chain Link Fence with Barbed Wire	LF	480	40.00	19,200.00	-	-	-	-	480.00	100%	19,200.00
9	Chain Link Gates	Lump Sum	1	15,000.00	15,000.00	0%	-	-	-	100%	100%	15,000.00
10	Pipe Bollards, 12-inch	Each	57	1,200.00	68,400.00	-			-	60.00	105%	72,000.00
11	Bid Item Removed	-	1	-	-	N/A	N/A	N/A	N/A	N/A	N/A	N/A
12	Repair of Existing Striping	LF	3,800	1.00	3,800.00	-	-	-	-	5,747.00	151%	5,747.00
13	Repair of Existing Pavement Markings	Each	155	50.00	7,750.00	-	-	-	-	148.00	95%	7,400.00
14	Shore Power Outlet Vaults for Berth 90 (SPO 7, SPO 8 & SPO 9)	Lump Sum	1	250,000.00	250,000.00	0%	-	N/A	N/A	100%	100%	250,000.00
15	Shore Power Outlet Vaults for Berth 92 (SPO 4, SPO 5 & SPO 6)	Lump Sum	1	250,000.00	250,000.00	0%	N/A	-	N/A	100%	100%	250,000.00
16	Shore Power Outlet Vaults for Berth 94 (SPO 1, SPO 2 & SPO 3)	Lump Sum	1	250,000.00	250,000.00	0%	N/A	N/A	-	100%	100%	250,000.00
17	Cut-Off Wall Plug/Penetrations	Each	4	7,000.00	28,000.00	-	-	-	-	4.00	100%	28,000.00
18	SPO "Dry Run" Cable Connection Support	Each	4	3,000.00	12,000.00	-	-	-	-	2.00	50%	6,000.00
19	Ship Testing and Commissioning	Each	4	15,000.00	60,000.00	-	-	-	-	3.00	75%	45,000.00
20	Transformer for Berth 90	Lump Sum	1	650,000.00	650,000.00	0.00%	-	N/A	N/A	100%	100%	650,000.00
21	Transformer for Berth 92	Lump Sum	1	650,000.00	650,000.00	0.00%	-	-	N/A	100%	100%	650,000.00
22	Transformer for Berth 94	Lump Sum	1	650,000.00	650,000.00	0.00%	-	N/A	-	100%	100%	650,000.00
23	Switchgear Assembly for Berth 90	Lump Sum	1	1,750,000.00	1,750,000.00	0.00%	-	N/A	N/A	100%	100%	1,750,000.00
24	Switchgear Assembly for Berth 92	Lump Sum	1	1,475,000.00	1,475,000.00	0.00%	N/A	-	N/A	100%	100%	1,475,000.00
25	Switchgear Assembly for Berth 94	Lump Sum	1	1,500,000.00	1,500,000.00	0.00%	N/A	N/A	-	100%	100%	1,500,000.00
26	Ductbanks and Raceways for Berth 90	Lump Sum	1	500,000.00	500,000.00	0%	-	N/A	N/A	100%	100%	500,022.00

Progress Payment No. 15
Period Ending: OCTOBER 1 THRU NOVEMBER 13, 2014
PAYMENT DUE : 12-14-14
Specification: HD-S2342A Shore to Ship Retrofit at Pier A, Berths A88-A96
Contractor: Shimmick Construction Company

LBHD Contract No: HD-7912
Original Bid Amt: $11,513,850

Item No.	Item	Unit	Est. Qty.	Unit Price	Bid Amount	Qty This Month	A90 $ Amount This Month	A92 $ Amount This Month	A94 $ Amount This Month	Previous Qty or %	% of Item Comp	TOTAL $ Amount to Date
27	Ductbanks and Raceways for Berth 92	Lump Sum	1	450,000.00	450,000.00	0%	N/A	-	N/A	100%	100%	450,000.00
28	Ductbanks and Raceways for Berth 94	Lump Sum	1	325,000.00	325,000.00	0%	N/A	N/A	-	100%	100%	325,000.00
29	Conductors for Berth 90	Lump Sum	1	300,000.00	300,000.00	0%	-	N/A	N/A	100%	100%	300,000.00
30	Conductors for Berth 92	Lump Sum	1	300,000.00	300,000.00	0%	N/A	-	N/A	100%	100%	300,000.00
31	Conductors for Berth 94	Lump Sum	1	325,000.00	325,000.00	0%	N/A	N/A	-	100%	100%	325,000.00
32	SPO Receptacles for Berth 90	Lump Sum	1	100,000.00	100,000.00	0%	-	N/A	N/A	100%	100%	100,000.00
33	SPO Receptacles for Berth 92	Lump Sum	1	100,000.00	100,000.00	0%	N/A	-	N/A	100%	100%	100,000.00
34	SPO Receptacles for Berth 94	Lump Sum	1	100,000.00	100,000.00	0%	N/A	N/A	-	100%	100%	100,000.00
35	All Other Electrical Work for Berth 90	Lump Sum	1	475,000.00	475,000.00	0%	-	N/A	N/A	100%	100%	475,000.00
36	All Other Electrical Work for Berth 92	Lump Sum	1	70,000.00	70,000.00	0%	N/A	-	N/A	100%	100%	70,000.00
37	All Other Electrical Work for Berth 94	Lump Sum	1	105,000.00	105,000.00	0%	N/A	-	-	100%	100%	105,000.00
38	Allowance for Load Bank Test Energy Usage	Allowance	1	50,000.00	50,000.00		0	0	0	1%	1%	707.61
39	Stand-by Time	Hour	25	1,000.00	25,000.00	-			-	5	20%	5,000.00
40	Environmental Protection Plan (E.P.P) Compliance	Lump Sum	1	20,000.00	20,000.00	0%	-	-	-	100%	100%	20,000.00
41	Schedule	Lump Sum	1	5,000.00	5,000.00	0%	0	0	0	100%	100%	5,000.00
	CHANGE ORDERS						-	-	-			
	CHANGE ORDER #1	Lump Sum	1	2,660.13		0%	-			100%	100%	2,660.13
	CHANGE ORDER #2 - WORK											
	CHANGE ORDER #3L	Lump Sum	1	185,000.00		0%	-	-		100%	100%	185,000.00
	CHANGE ORDER #4	L	1	10,230.67			-	-	-	100%	100%	10,230.67
	CHANGE ORDER # 5	Lump Sum	1	38,737.84			-	-	-	100%	100%	38,737.84
	CHANGE ORDER #6	Lump Sum	1	251,913.40			83,971.13	83,971.13	83,971.14	0%	100%	251,913.40
TOTALS				488,542.04	11,513,850.00	2.19%	$ 83,971.13	$ 83,971.13	$ 83,971.14	97.82%	100%	$ 11,992,257.57
	NEW CONTRACT AMOUNT			**12,002,392.04**								$ -

Progress Payment No. 15
Period Ending: OCTOBER 1 THRU NOVEMBER 13, 2014
PAYMENT DUE : 12-14-14
Specification: HD-S2342A Shore to Ship Retrofit at Pier A, Berths A88-A96
Contractor: Shimmick Construction Company

LBHD Contract No: HD-7912
Original Bid Amt: $11,513,850

Item No.	Item	Unit	Est. Qty.	Unit Price	Bid Amount	Qty This Month	A90 $ Amount This Month	A92 $ Amount This Month	A94 $ Amount This Month	Previous Qty or %	% of Item Comp	TOTAL $ Amount to Date

CM Initials

Victor Sagredo 12/4/14

Victor Sagredo
Project Manger

Date

SIGN HERE

Suzanne C. Plezia P.E.
Director of Construction Management

Date

SIGN HERE

INITIAL HERE

Gross Earnings:	$ 11,992,257.57
Previous Payments:	$ 11,670,247.87
Previous Retention:	$ (70,096.32)
Earned This Period:	**$ 251,913.40**
STOP NOTICE R J NOBLE $13,310.88+25%	$ (16,638.60)
Less Retention: E	$ -
RELEASE STOP NOTICE R J NOBLE $13,310.88+25%	$ 16,638.60
AMOUNT DUE THIS ESTIMATE:	**$ 251,913.40**

BPO No.	INDEX CODE	PROJ	PROJ DET	Subobject Code
BPHA12000126	HACDCMCN	HA1314	1H2342A	210009

ATTACHMENT B
Prop 1B Shore Power Infrastructure Costs

Costs Accrued Per Berth - Pier A

A90

Contract Cost Category Description	Contract Cost Category No.	Corresponding Bid Item No.	Cost Estimates (Submitted 11-2012)	Progress Payment No. 1	2	3	4	5	6	7	8	9	10	11	12	13	TOTAL TO DATE
Mobilization and Demobilization	1	1	$43,333.33	$21,666.00													$21,666.00
Chain-Link Fence and Gates	2	8, 9	$11,400.00											$1,300.00	$2,880.00		$4,180.00
Pipe Bollards	3	10	$22,800.00														$0.00
Pavement (including striping)	4	3, 7, 12, 13	$79,500.00		$12,951.71	$34,389.23	$26,685.00	$18,382.50	$26,407.14	$550.00	$1,530.00	$1,585.00				$3,415.52	$125,896.10
Relocation of utilities	5	n/a	$0.00														$0.00
Transformers	6	20	$650,000.00					$560,000.00		$63,750.00				$4,500.00	$20,500.00	$750.00	$649,500.00
Switchgear assembly(s)	7	23	$1,750,000.00						$81,000.00	$1,339,600.00			$6,000.00	$48,000.00	$247,200.00	$6,000.00	$1,727,800.00
Ductbanks and raceways	8	26	$500,000.00	$6,053.54	$11,275.42	$86,538.14	$159,127.61	$91,580.97	$95,446.32		$22,000.00	$25,000.00				$500.00	$497,522.00
Conductors	9	29	$300,000.00										$16,000.00	$22,853.00	$198,750.00	$50,250.00	$287,853.00
SPO Receptacles	10	32	$100,000.00			$85,000.00						$11,400.00					$96,400.00
SPO Vaults	11	14	$250,000.00				$160,700.00	$18,225.00	$2,075.00	$46,000.00	$10,500.00		$7,500.00			$5,000.00	$250,000.00
All other electrical work	12	35	$475,000.00	$17,555.56	$8,777.78	$8,777.78	$8,777.78	$8,777.78	$124,777.78	$8,777.78	$8,777.78	$8,777.78	$8,777.78	$109,277.78	$77,577.78	$27,797.78	$427,208.92
Commissioning and testing	13	19, 38	$20,000.00												$200.00	$1,400.00	$1,600.00
Demolition	14	n/a	$50,000.00														$0.00
Soil, excavation, fill and waste handling	15	4, 5, 6	$34,250.00			$3,957.75	$29,616.60		$28,290.00							$30,826.67	$92,691.02
Other costs*	16	2, 39, 40, 41, 17, 18	$51,666.67	$1,488.00	$740.33	$740.33	$740.33	$740.33	$14,740.33	$740.33	$740.33	$740.33	$740.33	$740.33	$740.33	$740.33	$24,371.96
Change Order #1												$2,660.13					$2,660.13
Change Order #2																	$0.00
Change Order #3												$35,000.00		$7,500.00			$42,500.00
Total Berth Cost			$4,337,950	$46,763.10	$33,745.24	$219,403.23	$385,647.32	$697,706.58	$372,736.57	$1,459,418.11	$43,548.11	$85,163.24	$39,018.11	$194,171.11	$547,848.11	$126,680.30	$4,251,849.13
			Cost Breakdown														
			Labor ($)	$0.00	$22,669.89	$15,006.18	$43,666.76	$17,576.56	$23,990.62	$34,395.30	$27,354.00	$22,160.27	$0.00	$45,262.70	$15,458.86	$18,031.25	
			Labor (man-hours)	0	452.50	281.00	843.00	344.50	429.00	684.25	508.40	387.50	0.00	856.50	281.50	305.00	
			Materials	$6,825.74	$9,763.79	$111,975.75	$159,990.31	$555,285.46	$190,949.10	$1,983,738.06	$7,699.24	$7,024.26	$0.00	$18,588.43	$96,163.74	$1,780.25	
			Equipment	$0.00	$7,149.60	$5,814.10	$18,026.20	$7,750.53	$16,774.88	$6,709.60	$563.55	$0.00	$0.00	$2,743.65	$1,193.40	$754.40	
			Other	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00		$0.00	$0.00	$0.00	$0.00			

A92

Contract Cost Category Description	Contract Cost Category No.	Corresponding Bid Item No.	Cost Estimates (Submitted 11-2012)	Progress Payment No. 1	2	3	4	5	6	7	8	9	10	11	12	13	TOTAL TO DATE
Mobilization and Demobilization	1	1	$43,333.33	$21,666.00													$21,666.00
Chain-Link Fence and Gates	2	8, 9	$11,400.00											$1,300.00			$1,300.00
Pipe Bollards	3	10	$22,800.00														$0.00
Pavement (including striping)	4	3, 7, 12, 13	$79,500.00								$73,864.43	$45,746.00		$5,450.00		$3,415.52	$128,475.95
Relocation of utilities	5	n/a	$0.00														$0.00
Transformers	6	21	$650,000.00					$560,000.00		$63,750.00				$4,500.00	$20,500.00		$648,750.00
Switchgear assembly(s)	7	24	$1,475,000.00							$1,222,300.00					$226,500.00	$6,000.00	$1,454,800.00
Ductbanks and raceways	8	27	$450,000.00			$12,000.00	$17,800.00	$25,200.00			$266,300.00	$83,700.00		$39,820.00	$2,680.00		$447,500.00
Conductors	9	30	$300,000.00										$7,500.00		$212,000.00	$67,700.00	$287,200.00
SPO Receptacles	10	33	$100,000.00			$85,000.00							$10,800.00		$600.00		$96,400.00
SPO Vaults	11	15	$250,000.00				$152,000.00				$85,500.00				$7,500.00	$4,700.00	$249,700.00
All other electrical work	12	36	$70,000.00	$7,792.00	$3,888.00	$3,888.00	$3,888.00	$3,888.00	$3,888.00	$3,888.00	$3,888.00	$3,888.00	$3,888.00	$3,888.00	$3,888.00	$9,721.00	$60,281.00
Commissioning and testing	13	19, 38	$20,000.00												$200.00	$1,400.00	$1,600.00
Demolition	14	n/a	$50,000.00														$0.00
Soil, excavation, fill and waste handling	15	4, 5, 6	$34,250.00								$42,815.00	$5,325.00	$8,624.30	$104,382.80		$30,826.67	$191,973.77
Other costs*	16	2, 39, 40, 41, 17, 18	$51,666.67	$1,488.00	$740.33	$740.33	$740.33	$740.33	$740.33	$740.33	$7,740.33	$740.33	$740.33	$740.33	$740.33	$740.33	$17,371.96
Change Order #1																	$0.00
Change Order #2																	$0.00
Change Order #3												$90,000.00		$7,500.00		$8,800.00	$106,300.00
Total Berth Cost			$3,607,950	$30,946.00	$4,628.33	$101,628.33	$174,428.33	$589,828.33	$4,628.33	$1,290,678.33	$480,107.76	$229,399.33	$31,552.63	$167,581.13	$474,608.33	$133,303.52	$3,713,316.68
			Cost Breakdown														
			Labor ($)	$0.00	$0.00	$0.00	$21,833.38	$17,576.56	$0.00	$847.81	$76,398.39	$15,851.64	$0.00	$25,622.31	$20,113.49	$18,270.80	
			Labor (man-hours)	0.00	0.00	0.00	421.50	344.50	0.00	15.25	1,442.50	279.50	0.00	432.10	372.00	308.00	
			Materials	$772.20	$3,590.93	$98,741.48	$137,740.31	$575,988.93	$3,726.88	$1,872,326.20	$37,705.32	$22,766.37	$3,861.87	$3,861.87	$91,025.16		
			Equipment	$0.00	$0.00	$0.00	$9,084.60	$2,065.65	$0.00	$140.40	$8,192.60	$1,444.30	$0.00	$976.95	$1,872.00	$70.20	
			Other	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00		$0.00	$0.00	$0.00	$0.00			

A94

Contract Cost Category Description	Contract Cost Category No.	Corresponding Bid Item No.	Cost Estimates (Submitted 11-2012)	Progress Payment No. 1	2	3	4	5	6	7	8	9	10	11	12	13	TOTAL TO DATE
Mobilization and Demobilization	1	1	$43,333.33	$21,666.00													$21,666.00
Chain-Link Fence and Gates	2	8, 9	$11,400.00										$4,120.00		$4,380.00		$8,500.00
Pipe Bollards	3	10	$22,800.00													$12,000.00	$12,000.00
Pavement (including striping)	4	3, 7, 12, 13	$79,500.00									$3,300.00	$24,876.19	$35,760.18		$3,415.52	$67,351.89
Relocation of utilities	5	n/a	$0.00														$0.00
Transformers	6	22	$650,000.00							$623,750.00				$4,500.00	$20,500.00		$648,750.00
Switchgear assembly(s)	7	25	$1,500,000.00							$1,201,050.00			$35,500.00	$12,500.00	$223,750.00	$6,000.00	$1,478,800.00
Ductbanks and raceways	8	28	$325,000.00			$12,000.00	$17,800.00	$25,200.00				$39,323.00	$93,467.00	$92,050.00	$40,460.00	$2,200.00	$322,500.00
Conductors	9	31	$325,000.00										$10,000.00		$192,000.00	$54,000.00	$256,000.00
SPO Receptacles	10	34	$100,000.00			$85,000.00						$3,600.00			$7,800.00		$96,400.00
SPO Vaults	11	16	$250,000.00				$152,000.00					$42,299.00	$34,135.00	$14,566.00	$2,000.00	$4,700.00	$249,700.00
All other electrical work	12	37	$105,000.00	$11,672.00	$5,833.00	$5,833.00	$5,833.00	$5,833.00	$5,833.00	$5,833.00	$5,833.00	$5,833.00	$5,833.00	$5,833.00	$5,833.00		$75,835.00
Commissioning and testing	13	19, 38	$20,000.00												$200.00	$1,400.00	$1,600.00
Demolition	14	n/a	$50,000.00														$0.00
Soil, excavation, fill and waste handling	15	4, 5, 6	$34,250.00										$750.00	$115,932.80		$30,826.67	$147,509.47

Other costs*	16	2, 39, 40, 41, 17, 18	$51,666.67	$1,488.00	$740.33	$740.33	$740.33	$740.33	$740.33	$740.33	$740.33	$1,740.33	$740.33	$4,240.33	$1,440.33	$3,740.33	$18,571.96
Change Order #1																	$0.00
Change Order #2																	$0.00
Change Order #3																	$0.00
Total Berth Cost			$3,567,950	$34,826.00	$6,573.33	$103,573.33	$176,373.33	$31,773.33	$6,573.33	$1,831,373.33	$6,573.33	$96,095.33	$209,421.52	$285,382.31	$498,363.33	$118,282.52	$3,405,184.32
			Cost Breakdown														
			Labor ($)	$0.00	$0.00	$0.00	$21,833.38	$0.00	$0.00	$1,766.13	$0.00	$37,472.27	$0.00	$37,174.00	$20,272.89	$18,131.39	
			Labor (man-hours)	0.00	0.00	0.00	421.50	0.00	0.00	32.00	0.00	703.00	0.00	673.30	374.50	306.50	
			Materials	$772.20	$6,003.00	$99,972.79	$137,740.31	$30,251.90	$5,773.72	$1,980,795.16	$5,973.20	$7,904.60	$5,440.52	$33,711.66	$92,066.73		
			Equipment	$0.00	$0.00	$0.00	$9,084.60	$0.00	$0.00	$2,250.52	$0.00	$2,853.50	$0.00	$4,989.29	$2,033.55	$153.68	
			Other	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00		$0.00	$0.00	$0.00				

Actual Port Payment Amounts (Less Retentions)

	8/30/2012	9/30/2012	10/30/2012	11/30/2012	12/31/2012	1/31/2013	2/28/2013	3/31/2013	4/30/2013	5/31/2013	6/30/2013	7/31/2013	8/31/2013
A90	$44,424.94	$32,057.98	$208,433.07	$366,364.95	$662,821.25	$347,294.90	$1,386,447.20	$41,370.70	$87,710.31	$37,067.21	$184,462.56	$520,455.71	$120,346.29
A92	$29,398.70	$4,396.91	$96,546.91	$165,706.92	$560,336.92	$4,396.91	$1,226,144.42	$456,102.38	$217,929.36	$29,975.00	$159,202.07	$450,877.91	$126,638.34
A94	$33,084.70	$6,244.66	$98,394.66	$167,554.66	$30,184.66	$6,244.66	$1,739,804.66	$6,244.66	$91,290.56	$198,950.44	$271,113.19	$473,445.16	$112,368.39
Total	$106,908.34	$42,699.56	$403,374.64	$699,626.53	$1,253,342.83	$357,936.47	$4,352,396.28	$503,717.74	$396,930.23	$265,992.65	$614,777.82	$1,444,778.78	$359,353.02

		A90				A92				A94			
Progress Payment No.	Period Ending	Paid		Retention		Paid		Retention		Paid		Retention	
		Amount	Check No.	Amount	Check No.	Amount	Check No.	Amount	Check No.	Amount	Check No.	Amount	Check No.
1	8/30/2012	$44,424.94	1010292	$2,338.16	1010294	$29,398.70	1010292	$1,547.30	1010294	$33,084.70	1010292	$1,741.30	1010294
2	9/30/2012	$32,057.98	1011437	$1,687.26	1011438	$4,396.91	1011437	$231.42	1011438	$6,244.66	1011437	$328.67	1011438
3	10/30/2012	$208,433.07	1017592	$10,970.16	1017593	$96,546.91	1017592	$5,081.42	1017593	$98,394.66	1017592	$5,178.67	1017593
4	11/30/2012	$366,364.95	1023063	$19,282.37	1023064	$165,706.92	1023063	$8,721.42	1023064	$167,554.66	1023063	$8,818.67	1023064
5	12/31/2012	$662,821.25	1027973	$34,885.33	1027972	$560,336.92	1027973	$29,491.42	1027972	$30,184.66	1027973	$1,588.66	1027972
6	1/31/2013	$347,294.90	1033258	$18,636.85	1033260	$4,396.91	1033258	$231.42	1033260	$6,244.66	1033258	$328.66	1033260
7	2/28/2013	$1,386,447.20	1037109	$72,970.91	1037110	$1,226,144.42	1037109	$64,553.92	1037110	$1,739,804.66	1037109	$91,568.66	1037110
8	3/31/2013	$41,370.70	1039225	$2,177.40	1039226	$456,102.38	1039225	$24,005.39	1039226	$6,244.66	1039225	$328.67	1039226
9	4/30/2013	$87,710.31	1043037	$4,258.16	1043038	$217,929.36	1043037	$11,469.97	1043038	$91,290.56	1043037	$4,804.77	1043038
10	5/31/2013	$37,067.21	1045328	$1,950.90	1045329	$29,975.00	1045328	$1,577.63	1045329	$198,950.44	1045328	$10,471.08	1045329
11	6/30/2013	$184,462.56	1051035	$9,708.55	1051036	$159,202.07	1051035	$8,379.06	1051036	$271,113.19	1051035	$14,269.12	1051036
12	7/31/2013	$520,455.71	1054083	$27,392.40	1054084	$450,877.91	1054083	$23,730.42	1054084	$473,445.16	1054083	$24,918.17	1054084
13	8/31/2013	$120,346.29	1059186	$6,334.02	1059187	$126,638.39	1059186	$6,665.18	1059187	$112,368.39	1059186	$5,914.12	1059187
TOTAL		$4,039,257.07		$212,592.47		$3,527,652.80		$185,685.97		$3,234,925.06		$170,259.22	
GRAND TOTAL		$4,251,849.54				$3,713,338.77							

G236				Progress Payment No.														
Contract Cost Category Description	Contract Cost Category No.	Corresponding Bid Item No.	Cost Estimates (Submitted 11-2012)	1	2	3	4	5	6	7	8	9	10	11	12	13	TOTAL
Mobilization and Demobilization	1	4, 5	$ 350,000.00	$ 169,998.00	$ 3,000.04	$ 6,000.07	$ 3,000.04	$ 3,000.04	$ 3,000.04	$ 3,000.04	$ 3,000.04	$ 3,000.04	$ 3,000.03	$ 3,000.04	$ 58,930.70	$ 61,670.72	$ 323,599.84
Chain-Link Fence and Gates	2	3, 16, 17	$ 260,000.00	$ 102,142.86	$ -	$ 40,000.00	$ -	$ 33,571.43	$ -	$ 29,285.71		$ 20,000.00	$ 27,300.00	$ 7,283.33	$ 416.67		$ 260,000.00
Pipe Bollards	3	n/a	$ -	$ -	$ -	$ -	$ -	$ -	$ -								$ -
Pavement (including striping)	4	15	$ 15,000.00	$ -	$ -	$ -	$ -	$ -	$ 4,950.00	$ 4,950.00		$ 5,100.00					$ 15,000.00
Relocation of utilities	5	n/a	$ -	$ -	$ -	$ -	$ -	$ -	$ -								$ -
Transformers	6	19	$ 650,000.00	$ -	$ -	$ -	$ 635,000.00	$ -	$ -		$ 7,500.00	$ 7,500.00					$ 650,000.00
Switchgear assembly(s)	7	20, 24	$ 3,195,000.00	$ -	$ -	$ 1,517,500.00	$ 321,998.30	$ 146,854.96	$ -	$ 45,245.90	$ 844,525.00	$ 483,875.84	$ 90,000.00	$ 3,500.00	$ 76,500.00		$ 3,530,000.00
Ductbanks and raceways	8	21	$ 1,300,000.00	$ 50,500.00	$ 76,913.46	$ 170,315.01	$ 201,817.70	$ 171,727.91	$ 259,572.60	$ 195,170.07	$ 145,693.03	$ 28,290.19					$ 1,299,999.97
Conductors	9	22	$ 600,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,000.00	$ 5,000.00	$ 171,000.00	$ 332,000.00	$ 87,000.00			$ 600,000.00
SPO Receptacles	10	23	$ 350,000.00	$ -	$ 272,000.00	$ 20,000.00	$ 10,000.00	$ -	$ -	$ 20,000.00	$ 10,000.00			$ 18,000.00			$ 350,000.00
SPO Vaults	11	18	$ 500,000.00	$ -	$ 6,000.00	$ 204,583.33	$ 84,916.67	$ -	$ 118,750.00	$ 64,750.00	$ 21,000.00						$ 500,000.00
All other electrical work	12	25	$ 535,000.00	$ 47,969.88	$ 10,859.27	$ 21,718.59	$ 10,859.29	$ 10,859.29	$ 10,859.29	$ 10,859.29	$ 10,859.28	$ 10,859.29	$ 10,859.30	$ 10,859.29	$ 32,577.88		$ 199,999.94
Commissioning and testing	13	26	$ 187,500.00	$ -	$ -	$ -	$ -	$ -	$ -					$ 1,085.65	$ 30,000.00	$ 11,250.00	$ 42,335.65
Demolition	14	n/a	$ -	$ -	$ -	$ -	$ -	$ -	$ -								$ -
Soil, excavation, fill and waste handling	15	8, 9, 10, 11, 12, 14	$ 295,400.00	$ -	$ 16,588.00	$ 24,112.54	$ 34,496.13	$ 48,600.25	$ 22,650.74	$ 47,287.37	$ 33,652.58	$ 29,356.37		$ 100.00	$ (12,109.00)		$ 244,734.98
Other costs*	16	1, 2, 6, 7, 13, 27, 28, 29	$ 310,000.00	$ 34,815.80	$ 7,870.31	$ 43,064.50	$ 9,193.84	$ 7,870.31	$ 7,870.31	$ 20,370.31	$ 12,870.31	$ 7,870.31	$ 7,870.30	$ 12,664.65	$ 21,280.50	$ 3,406.86	$ 197,018.31
Change Order 1																	$ -
Change Order 2							$ 24,725.82										$ 24,725.82
Change Order 3																	$ -
Change Order 4											$ 20,138.44						$ 20,138.44
Total Berth Cost			$ 8,547,900.00	$ 405,426.54	$ 393,231.08	$ 2,047,294.04	$ 1,336,007.79	$ 422,484.19	$ 427,652.98	$ 445,918.69	$ 1,114,238.68	$ 766,852.04	$ 471,029.63	$ 143,492.96	$ 207,596.75	$ 76,327.58	$ 8,257,552.95
			Cost Breakdown														
			Labor ($)	$7,272.59	$12,827.76	$75,503.95	$94,544.61	$56,838.11	$82,809.64	$78,928.94	$141,743.04	$88,905.63	$42,895.98	$68,206.99	$33,322.71	$16,527.70	$800,327.65
			Labor (man-hours)	99.00	275.75	1,513.50	1,673.00	996.00	950.70	1,430.50	2,511.00	1,572.00	826.00	1,181.50	589.00	282.50	13,900.45
			Materials	$69,181.54	$285,375.31	$1,561,028.21	$738,870.99	$216,772.90	$123,909.57	$110,219.21	$572,256.82	$243,134.87	$259,784.60	$113,883.30	$151,748.49	$462.31	$4,446,628.12
			Equipment	$5,456.46	$14,875.66	$5,642.23	$2,607.32	$16,544.75	$8,254.61	$10,908.59	$6,213.98	$6,524.54	$1,356.88	$10,206.64	$300.48	$1,001.60	$89,893.74
			Other	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

Port Payments

	Payment 1 (October 2012)	Payment 2 (January 2013)	Payment 3 (January 2013)	Payment 4 (12/31/2013)	Payment 5 (1/31/2013	Payment 6 (2/282013)	Payment 7 (3/31/2013)	Payment 8 (4/30/2013)	Payment 9 (5/31/2013)	Payment 10 (5/31/2013)	Payment 11 (7/31/2013)	Payment 12 (8/31/2013)	Payment 13 (9/30/2013)	
	Amount	Amount	Amount	Amount	Amount	Amount	Amount	Amount	Amount	Amount	Amount	Amount	Amount	
G236	$405,426.54	$393,231.08	$2,047,294.04	$ 1,336,007.78	$422,484.19	$427,652.98	$445,918.69	$1,114,238.68	$766,852.04	$471,029.63	$143,492.96	$207,596.75	$76,327.58	
Contractor Invoice Amount (less retentions)	$385,155.21	$373,569.52	$1,944,929.34	$1,269,207.39	$390,859.98	$416,770.33	$419,622.76	$1,062,526.75	$727,709.44	$419,278.15	$130,418.31	$214,616.91	$75,657.97	
Port Payment to Contractor	$385,155.21	$373,569.52	$1,944,929.34	$1,269,207.39	$390,859.98	$416,770.33	$419,622.76	$1,062,526.75	$727,709.44	$419,278.15	$130,418.31	$214,616.91	$75,657.97	
Port Set Aside for Retention	$20,271.33	$19,661.56	$102,364.70	$66,800.39	$21,124.21	$21,382.65	$22,295.93	$55,711.93	$38,342.60	$23,551.48	$7,174.65	$10,379.84	$7,853.23	
Check Totals	$405,426.54	$393,231.08	$2,047,294.04	$1,336,007.78	$411,984.19	$438,152.98	$441,918.69	$1,118,238.68	$766,052.04	$442,829.63	$137,592.96	$224,996.75	$83,511.20	$8,247,236.56

I245					Progress Payment No.																
Contract Cost Category Description	Contract Cost Category No.	Corresponding Bid Item No.	Cost Estimates (Submitted 11-2012)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16**	TOTAL
Mobilization and Demobilization	1	4, 5	$ 333,750.00	$ 100,500.00	$ 49,500.00	$ -	$ -	$ -	$ -							$ 27,000.00	$ 67,875.00	$ 4,500.00	$ 26,250.00	$ 275,625.00
Chain-Link Fence and Gates	2	3, 16, 17	$ 398,250.00	$ 212,000.00	$ 45,250.00	$ 3,000.00	$ 24,750.00	$ 3,000.00	$ 3,000.00	$ 3,000.00	$ 3,000.00	$ 3,000.00	$ 3,000.00	$ 3,000.00	$ 52,000.00	$ 19,950.00	$ 16,000.00			$ 393,950.00
Pipe Bollards	3	n/a	$ -	$ -	$ -	$ -	$ -	$ -	$ -											$ -
Pavement (including striping)	4	14, 15	$ 12,000.00	$ -	$ -	$ 1,034.00	$ 3,540.00	$ 1,531.50	$ -				$ 3,382.50	$ (4,841.00)		$ 1,404.50				$ 6,051.50
Relocation of utilities	5	n/a	$ -	$ -	$ -	$ -	$ -	$ -	$ -											$ -
Transformers	6	22	$ 600,000.00	$ -	$ -	$ -	$ -	$ -	$ -						$ 583,000.00	$ 12,000.00	$ 5,000.00			$ 600,000.00
Switchgear assembly(s)	7	26	$ 1,112,440.00	$ -	$ -	$ -	$ -	$ -	$ -					$ 1,094,940.00		$ 7,500.00	$ 10,000.00			$ 1,112,440.00
Ductbanks and raceways	8	30	$ 1,500,000.00	$ 187,080.00	$ 100,530.00	$ 357,700.00	$ 361,705.00	$ 23,060.00	$ 154,035.00	$ 105,760.00	$ 78,900.00	$ 238,150.00	$ 92,150.00							$ 1,500,000.00
Conductors	9	34	$ 400,000.00	$ -	$ -	$ -	$ -	$ -	$ -		$ 320,000.00	$ 1,500.00			$ 68,500.00	$ 7,500.00	$ 2,500.00			$ 400,000.00
SPO Receptacles	10	38	$ 150,000.00	$ -	$ -	$ -	$ 125,000.00	$ -	$ -			$ 5,000.00			$ 7,500.00	$ 5,000.00	$ 7,500.00			$ 150,000.00
SPO Vaults	11	18	$ 400,000.00	$ -	$ -	$ -	$ 250,000.00	$ -	$ -	$ 25,000.00	$ 65,000.00		$ 60,000.00							$ 400,000.00
All other electrical work	12	42	$ 150,000.00	$ 70,000.00	$ -	$ -	$ 70,000.00	$ -	$ -									$ 5,000.00	$ 2,500.00	$ 147,500.00
Commissioning and testing	13	49	$ 100,000.00	$ -	$ -	$ -	$ -	$ -	$ -											$ -
Demolition	14	n/a	$ -	$ -	$ -	$ -	$ -	$ -	$ -											$ -
Soil, excavation, fill and waste handling	15	8, 9, 10, 11, 12, 13	$ 215,390.00	$ 3,260.00	$ 18,609.00	$ 18,232.00	$ 46,572.25	$ 21,296.75	$ 14,601.50	$ 26,793.25	$ 28,574.00	$ 13,789.00	$ 13,013.75	$ (8,754.00)	$ (21,290.00)	$ 29,014.00	$ (3,510.00)			$ 192,221.44
Other costs*	16	1, 2, 6, 7, 46, 47, 48	$ 262,500.00	$ 40,875.00	$ 6,437.50	$ 6,437.50	$ 6,437.50	$ 11,207.50	$ 6,437.50	$ 18,937.50	$ 6,437.50	$ 6,437.50	$ 43,937.50	$ 6,437.50	$ 6,437.50	$ 66,437.50	$ 13,937.50	$ 9,167.50	$ 3,500.00	$ 259,500.00
Change Order #2 - R14A (acceleration)							$ 30,000.00													$ 30,000.00
Change Order #3 (GCC grounding)							$ 2,606.75													$ 2,606.75
Change Order #3									$ 6,397.50											$ 6,397.50
Change Order #4									$ 72,542.10	$ 39,042.10	$ 39,042.10	$ 39,042.10	$ 39,042.10	$ 39,042.10	$ 39,042.10	$ 39,042.10	$ 39,042.10	$ 39,042.10	$ 39,042.10	$ 342,921.50
Change Order #5											$ 18,897.50									$ 18,897.50
Change Order #6													$ 10,500.00							$ 10,500.00
Change Order #7																				$ -
Change Order #8													$ 33,177.00	$ 3,183.00			$ 12,794.51			$ 29,844.51
Change Order #9																		$ 10,780.00		$ 10,780.00
Change Order #10																			$ 14,294.75	$ 14,294.75
Total Berth Cost			$ 5,834,330.00	$ 813,735.00	$ 320,326.50	$ 386,403.50	$ 720,613.50	$ 60,995.75	$ 280,013.10	$ 209,532.85	$ 550,851.10	$ 285,918.60	$ 368,731.85	$ 1,124,007.54	$ 728,189.80	$ 205,868.10	$ 162,049.11	$ 59,489.60	$ 48,544.75	$ 5,905,349.45
			Cost Breakdown																	
			Labor ($)	$11,398.38	$36,325.28	$60,406.67	$67,465.81	$38,485.63	$51,849.95	$68,743.17	$75,072.22	$270,248.52	$191,535.07	$16,855.38	$52,160.89	$63,385.34	$24,588.28	$329.56	$13,680.38	$1,042,530.53
			Labor (man-hours)	337.39	591.16	943.67	1,133.38	626.16	856.45	1,160.66	1,257.20	3,848.13	3,060.15	281.40	898.25	1,191.00	483.40	7.00	182.00	16,856
			Materials	$89,606.14	$81,605.79	$125,142.06	$260,111.02	$199,546.64	$14,345.95	$21,688.36	$191,364.94	$390,174.41	$58,918.26	$1,222,208.18	$551,460.02	$458,237.67	$54,755.55	$21,553.83	$2,274.16	$3,796,717.80
			Equipment	$3,046.86	$24,846.50	$17,106.81	$3,759.16	$0.00	$0.00	$24,812.33	$28,639.64	$35,442.03	$37,524.33	$441.45	$0.00	$0.00	$0.00			$193,719.12
			Other	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00			$0.00		$0.00			$0.00

**Not submitted to AQMD.

I247					Progress Payment No.																
Contract Cost Category Description	Contract Cost Category No.	Corresponding Bid Item No.	Cost Estimates (Submitted 11-2012)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16**	TOTAL
Mobilization and Demobilization	1	4, 5	$ 333,750.00	$ 100,500.00	$ 49,500.00	$ -	$ -	$ -	$ -							$ 27,000.00	$ 67,875.00	$ 4,500.00	$ 26,250.00	$ 275,625.00
Chain-Link Fence and Gates	2	3, 16, 17	$ 398,250.00	$ 212,000.00	$ 45,250.00	$ 3,000.00	$ 24,750.00	$ 3,000.00	$ 3,000.00	$ 3,000.00	$ 3,000.00	$ 3,000.00	$ 3,000.00	$ 3,000.00	$ 52,000.00	$ 19,950.00	$ 16,000.00			$ 393,950.00
Pipe Bollards	3	n/a	$ -	$ -	$ -	$ -	$ -	$ -	$ -											$ -
Pavement (including striping)	4	14, 15	$ 12,000.00	$ -	$ -	$ 1,034.00	$ 3,540.00	$ 1,531.50	$ -				$ 3,382.50	$ (4,841.00)		$ 1,404.50				$ 6,051.50
Relocation of utilities	5	n/a	$ -	$ -	$ -	$ -	$ -	$ -	$ -											$ -
Transformers	6	23	$ 600,000.00	$ -	$ -	$ -	$ -	$ -	$ -						$ 583,000.00	$ 12,000.00	$ 5,000.00			$ 600,000.00
Switchgear assembly(s)	7	27	$ 1,000,000.00	$ -	$ -	$ -	$ -	$ -	$ -					$ 982,500.00	$ 10,000.00	$ 7,500.00	$ 10,000.00			$ 1,000,000.00
Ductbanks and raceways	8	31	$ 1,500,000.00	$ 159,760.00	$ 48,330.00	$ 274,990.00	$ 242,465.00	$ 292,280.00	$ 40,425.00	$ 10,400.00	$ 37,750.00	$ 42,480.00	$ 79,760.00	$ 207,000.00	$ 69,100.00					$ 1,500,000.00
Conductors	9	35	$ 200,000.00	$ -	$ -	$ -	$ -	$ -	$ -		$ 160,000.00	$ 1,500.00			$ 36,500.00		$ 2,000.00			$ 200,000.00
SPO Receptacles	10	39	$ 100,000.00	$ -	$ -	$ -	$ 80,000.00	$ -	$ 2,500.00						$ 7,500.00	$ 4,000.00	$ 6,000.00			$ 100,000.00
SPO Vaults	11	19	$ 500,000.00	$ -	$ -	$ 57,500.00	$ 257,500.00	$ 35,000.00	$ -				$ 115,000.00	$ 35,000.00						$ 500,000.00
All other electrical work	12	43	$ 150,000.00	$ 70,000.00	$ -	$ -	$ 70,000.00	$ -	$ -									$ 5,000.00	$ 2,500.00	$ 147,500.00
Commissioning and testing	13	49	$ 100,000.00	$ -	$ -	$ -	$ -	$ -	$ -											$ -
Demolition	14	n/a	$ -	$ -	$ -	$ -	$ -	$ -	$ -											$ -
Soil, excavation, fill and waste handling	15	8, 9, 10, 11, 12, 13	$ 215,390.00	$ 3,260.00	$ 18,609.00	$ 18,232.00	$ 46,572.25	$ 21,296.75	$ 14,601.50	$ 26,793.25	$ 28,574.00	$ 13,789.00	$ 13,013.75	$ (8,754.00)	$ (21,290.00)	$ 29,014.00	$ (3,510.00)			$ 192,221.44
Other costs*	16	1, 2, 6, 7, 46, 47, 48	$ 262,500.00	$ 40,875.00	$ 6,437.50	$ 6,437.50	$ 6,437.50	$ 11,207.50	$ 6,437.50	$ 18,937.50	$ 6,437.50	$ 6,437.50	$ 43,937.50	$ 6,437.50	$ 6,437.50	$ 66,437.50	$ 13,937.50	$ 9,167.50	$ 3,500.00	$ 259,500.00
Change Order #2 - R14A (acceleration)							$ 30,000.00													$ 30,000.00
Change Order #3 (GCC grounding)							$ 2,606.75													$ 2,606.75
Change Order #3									$ 42,397.50											$ 42,397.50
Change Order #4									$ 72,542.10	$ 39,042.10	$ 39,042.10	$ 39,042.10	$ 39,042.10	$ 39,042.10	$ 39,042.10	$ 39,042.10	$ 39,042.10	$ 39,042.10	$ 39,042.10	$ 342,921.50
Change Order #5											$ 18,897.50									$ 18,897.50
Change Order #6													$ 10,500.00							$ 10,500.00
Change Order #7																				$ -
Change Order #8													$ 33,177.00	$ 3,183.00			$ 12,794.51			$ 29,844.51
Change Order #9																		$ 10,780.00		$ 10,780.00
Change Order #10																			$ 14,294.75	$ 14,294.75
Total Berth Cost			$ 5,371,890.00	$ 586,415.00	$ 168,026.50	$ 363,193.50	$ 763,871.50	$ 364,315.75	$ 180,903.10	$ 83,571.85	$ 284,761.10	$ 95,248.60	$ 364,112.85	$ 1,328,567.54	$ 783,289.60	$ 197,348.10	$ 160,049.11	$ 59,489.60	$ 48,544.75	$ 5,667,709.43
			Cost Breakdown																	
			Labor ($)	$11,398.38	$36,325.28	$60,406.67	$72,441.76	$38,485.63	$51,849.95	$68,743.17	$75,072.22	$270,248.52	$191,535.07	$16,855.38	$52,160.89	$63,385.34	$24,588.28	$329.56	$13,680.38	$1,042,530.53
			Labor (man-hours)	337.39	591.16	943.67	1,211.38	652.16	856.45	910.4	971.9	315.8	1,458.7	2,338.3	1,258.3	678.0	412.3	5.5	182.0	16,856
			Materials	$89,606.14	$81,605.79	$125,142.06	$215,958.52	$154,487.77	$0.00	$11,247.73	$151,978.75	$309,475.24	$57,997.18	$672,958.13	$1,126,128.85	$4,945.46	$45,519.07	$19,541.83	$2,274.16	$2,796,717.80
			Equipment	$3,046.86	$24,846.50	$17,106.81	$3,759.16	$0.00	$0.00	$12,406.17	$29,012.83	$18,597.73	$8,558.16	$353.16	$0.00	$0.00	$0.00			$193,719.12
			Other	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00			$0.00	$0.00	$0.00			$0.00

**Not submitted to AQMD.

I266					Progress Payment No.																
Contract Cost Category Description	Contract Cost Category No.	Corresponding Bid Item No.	Cost Estimates (Submitted 11-2012)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16**	TOTAL
Mobilization and Demobilization	1	4, 5	$ 333,750.00	$ 100,500.00	$ 49,500.00	$ -	$ -	$ -								$ 27,000.00	$ 67,875.00	$ 4,500.00	$ 26,250.00	$ 275,625.00
Chain-Link Fence and Gates	2	3, 16, 17	$ 398,250.00	$ 212,000.00	$ 45,250.00	$ 3,000.00	$ 24,750.00	$ 3,000.00	$ 3,000.00	$ 3,000.00	$ 3,000.00	$ 3,000.00	$ 3,000.00	$ 17,250.00	$ 38,250.00	$ 19,950.00	$ 16,000.00			$ 382,450.00
Pipe Bollards	3	n/a	$ -	$ -	$ -	$ -	$ -	$ -												$ -
Pavement (including striping)	4	14, 15	$ 12,000.00	$ -	$ -	$ 1,034.00	$ 3,540.00	$ 1,531.50												$ 6,051.50
Relocation of utilities	5	n/a	$ -	$ -	$ -	$ -	$ -	$ -												$ -
Transformers	6	24	$ 600,000.00	$ -	$ -	$ -	$ 149,270.00	$ -			$ 592,500.00		$ 7,500.00							$ 600,000.00
Switchgear assembly(s)	7	28	$ 2,000,000.00	$ -	$ -	$ -	$ -	$ -			$ 1,982,500.00		$ 17,500.00							$ 2,000,000.00
Ductbanks and raceways	8	32	$ 2,000,000.00	$ 226,180.00	$ 211,400.00	$ 316,410.00	$ 141,000.00	$ -			$ 317,600.00	$ 25,830.00	$ 50,920.00		$ 48,000.00					$ 2,000,000.00
Conductors	9	36	$ 500,000.00	$ -	$ -	$ -	$ 300,000.00	$ -			$ 401,200.00	$ 48,900.00	$ 15,400.00	$ 34,400.00						$ 500,000.00
SPO Receptacles	10	40	$ 170,000.00	$ -	$ -	$ -	$ 70,000.00	$ -			$ 14,000.00			$ 12,000.00			$ 3,000.00			$ 170,000.00
SPO Vaults	11	20	$ 580,000.00	$ -	$ -	$ -	$ -	$ -			$ 231,000.00	$ 24,000.00								$ 580,000.00
All other electrical work	12	44	$ 150,000.00	$ 70,000.00	$ -	$ -	$ -	$ -										$ 5,000.00	$ 2,500.00	$ 147,500.00
Commissioning and testing	13	50	$ 100,000.00	$ -	$ -	$ -	$ -	$ -												$ -

Demolition	14	n/a	$ -	$ -	$ -	$ -	$ -	$ -																$ -
Soil, excavation, fill and waste handling	15	8, 9, 10, 11, 12, 13	$ 215,390.00	$ 3,260.00	$ 18,609.00	$ 18,232.00	$ 46,572.25	$ 21,296.75	$ 14,601.50	$ 20,793.25	$ 28,574.00	$ 11,780.00	$ 13,013.75	$ (8,754.06)	$ (21,200.00)	$ 29,014.00	$ (3,510.00)					$ 192,221.44
Other costs*	16	1, 2, 6, 7, 46, 47, 48	$ 262,500.00	$ 40,875.00	$ 6,437.50	$ 6,437.50	$ 6,437.50	$ 11,207.50	$ 18,937.50	$ 43,937.50	$ 6,437.50	$ 6,437.50	$ 6,437.50	$ 6,437.50	$ 6,437.50	$ 66,437.50	$ 13,937.50	$ 9,167.50	$ 3,500.00			$ 259,500.00
Change Order #2 (SCE grounding)							$ 2,606.75															$ 2,606.75
Change Order #3									$ 5,351.50													$ 5,351.50
Change Order #4									$ 72,542.10	$ 30,042.10	$ 30,042.10	$ 30,042.10	$ 30,042.10	$ 30,042.10	$ 30,042.10							$ 252,794.70
Change Order #5											$ (24,524.60)					$ 30,042.10	$ 30,042.10	$ 30,042.10				$ 65,602.70
Change Order #6												$ 22,500.00	$ 5,000.00									$ 27,500.00
Change Order #7														$ 43,466.70								$ 43,466.70
Change Order #8																						$ -
Change Order #9																		$ 16,486.00				$ 16,486.00
Change Order #10																			$ 14,294.75			$ 14,294.75
Total Berth Cost			$ 7,321,890.00	$ 652,855.00	$ 331,196.50	$ 345,113.50	$ 744,176.50	$ 150,883.75	$ 291,932.60	$ 485,992.85	$ 3,382,429.60	$ 171,798.60	$ 152,695.85	$ 130,000.54	$ 99,439.60	$ 173,868.10	$ 127,344.60	$ 65,253.60	$ 46,544.75	$ 7,331,449.94		
			Cost Breakdown																			
			Labor ($)	$11,398.38	$36,325.28	$60,406.67	$77,072.81	$45,599.71	$1,957.20	$176,117.91	$116,184.11	$18,772.03	$23,086.35	$54,724.27	$19,527.81	$7,683.12	$17,936.08	$12,340.79	$12,358.49			
			Labor (man-hours)	337.39	991.18	943.67	1,285.88	744.80	38.05	3,038.95	2,039.60	361.35	409.70	905.23	328.00	138.00	354.00	286.30	199.00			
			Materials	$99,606.14	$81,605.79	$125,142.06	$304,203.53	$232,505.35	$0.00	$52,998.15	$2,039,879.10	$393,136.43	$191,426.25	$68,432.01	$8,893.82	$18,082.96	$80.97	$48,703.99	$2,274.16			
			Equipment	$3,046.88	$24,946.50	$17,106.61	$3,759.16	$0.00	$0.00	$42,031.33	$30,270.76	$1,520.05	$6,331.08	$519.74	$0.00	$0.00	$0.00					
			Other	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00			$0.00	$0.00	$0.00					

**Not submitted to AQMD.

J270					Progress Payment No.																	
Contract Cost Category Description	Contract Cost Category No.	Corresponding Bid Item No.	Cost Estimates (Submitted 11-2012)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16**	TOTAL
Mobilization and Demobilization	1	4, 5	$ 333,750.00	$ 100,000.00	$ 49,500.00	$ -	$ -	$ -	$ -							$ 27,000.00	$ 67,675.00	$ 4,500.00	$ 26,250.00	$ 275,425.00		
Chain-Link Fence and Gates	2	3, 16, 17	$ 398,250.00	$ 212,000.00	$ 45,250.00	$ 3,000.00	$ 34,750.00	$ 3,000.00	$ 3,000.00	$ 3,000.00	$ 3,000.00	$ 3,000.00	$ 3,000.00	$ 17,250.00	$ 36,250.00	$ 19,950.00	$ 16,000.00			$ 382,450.00		
Pipe Bollards	3	n/a	$ -	$ -	$ -	$ -	$ -	$ -	$ -											$ -		
Pavement (including striping)	4	14, 15	$ 12,000.00	$ -	$ -	$ 1,034.00	$ 3,540.00	$ 1,531.50	$ -				$ 3,382.50	$ (4,841.00)		$ 1,404.50				$ 6,051.50		
Relocation of Utilities	5	n/a	$ -	$ -	$ -	$ -	$ -	$ -	$ -											$ -		
Transformers	6	25	$ 600,000.00	$ -	$ -	$ -	$ -	$ -	$ -		$ 592,500.00		$ 7,500.00							$ 600,000.00		
Switchgear assembly(s)	7	29	$ 2,200,000.00	$ -	$ -	$ -	$ -	$ -	$ -		$ 2,182,500.00		$ 17,500.00							$ 2,200,000.00		
Duct banks and raceways	8	33	$ 1,500,000.00	$ 131,220.00	$ 128,400.00	$ 283,560.00	$ 155,600.00	$ 55,580.00	$ 372,220.00	$ 203,480.00	$ 150,240.00	$ 8,460.00	$ 9,240.00		$ 2,000.00					$ 1,500,000.00		
Conductors	9	37	$ 400,000.00	$ -	$ -	$ -	$ -	$ -	$ -		$ 342,900.00	$ 12,950.00	$ 11,250.00	$ 32,900.00						$ 400,000.00		
SPO Receptacles	10	41	$ 150,000.00	$ -	$ -	$ -	$ 125,000.00	$ -	$ -		$ 12,500.00			$ 7,500.00			$ 5,000.00			$ 150,000.00		
SPO Vaults	11	21	$ 550,000.00	$ -	$ -	$ -	$ 250,000.00	$ 25,500.00	$ 86,000.00	$ 52,500.00	$ 116,000.00	$ 20,000.00								$ 550,000.00		
All other electrical work	12	45	$ 150,000.00	$ 70,000.00	$ -	$ -	$ 70,000.00	$ -	$ -									$ 5,000.00	$ 2,500.00	$ 147,500.00		
Commissioning and testing	13	50	$ 100,000.00	$ -	$ -	$ -	$ -	$ -	$ -											$ -		
Demolition	14	n/a	$ -	$ -	$ -	$ -	$ -	$ -	$ -											$ -		
Soil, excavation, fill and waste handling	15	8, 9, 10, 11, 12, 13	$ 215,390.00	$ 3,260.00	$ 18,609.00	$ 18,232.00	$ 46,572.25	$ 21,296.75	$ 14,601.50	$ 20,793.25	$ 28,574.00	$ 11,780.00	$ 13,013.75	$ (8,754.06)	$ (21,200.00)	$ 29,014.00	$ (3,510.00)			$ 192,221.44		
Other costs*	16	1, 2, 6, 7, 46, 47, 48	$ 262,500.00	$ 40,875.00	$ 6,437.50	$ 6,437.50	$ 6,437.50	$ 11,207.50	$ 18,937.50	$ 43,937.50	$ 6,437.50	$ 6,437.50	$ 6,437.50	$ 6,437.50	$ 6,437.50	$ 66,437.50	$ 13,937.50	$ 9,167.50	$ 3,500.00	$ 259,500.00		
Change Order #2 (SCE grounding)							$ 2,606.75													$ 2,606.75		
Change Order #3									$ 5,351.50											$ 5,351.50		
Change Order #4									$ 72,542.10	$ 30,042.10	$ 30,042.10	$ 30,042.10	$ 30,042.10	$ 30,042.10	$ 30,042.10					$ 252,794.70		
Change Order #5											$ (24,524.60)					$ 30,042.10	$ 30,042.10	$ 30,042.10		$ 65,602.70		
Change Order #6												$ 22,500.00	$ 5,000.00							$ 27,500.00		
Change Order #7														$ 43,466.70						$ 43,466.70		
Change Order #8																				$ -		
Change Order #9																		$ 16,486.00		$ 16,486.00		
Change Order #10																			$ 14,294.75	$ 14,294.75		
Total Berth Cost			$ 6,871,890.00	$ 557,875.00	$ 348,196.50	$ 312,263.50	$ 684,506.50	$ 118,115.75	$ 572,652.60	$ 353,752.85	$ 3,440,169.60	$ 114,678.60	$ 106,865.85	$ 124,000.54	$ 53,459.60	$ 173,849.10	$ 129,344.60	$ 69,810.60	$ 46,544.75	$ 7,106,064.94		
			Cost Breakdown																			
			Labor ($)	$11,398.38	$36,325.28	$60,406.67	$107,361.41	$43,014.65	$75,058.54	$68,743.17	$85,972.71	$50,903.90	$6,748.35	$44,101.78	$14,925.86	$6,390.82	$14,364.62	$329.56	$11,412.81			
			Labor (man-hours)	337.39	991.18	943.67	1,685.38	714.30	1,343.05	1,160.06	1,463.85	799.13	135.75	730.34	260.45	108.00	283.40	7.00	175.50			
			Materials	$99,606.14	$81,605.79	$125,142.06	$260,111.02	$195,045.53	$24,001.90	$21,688.36	$1,398,023.38	$396,117.85	$219,922.50	$56,502.35	$10,497.05	$9,736.78	$67.47	$10,054.99	$2,274.16			
			Equipment	$3,046.88	$24,946.50	$17,106.61	$3,759.16	$0.00	$0.00	$24,812.52	$26,639.64	$22,290.59	$2,600.00	$441.45	$0.00	$0.00	$0.00					
			Other	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00			$0.00	$0.00	$0.00					

**Not submitted to AQMD.

		J243				J247				J266				J270			
Progress Payment No.	Period Ending	Paid		Retention		Paid		Retention		Paid		Retention		Paid		Retention	
		Amount	Check No.	Amount	Check No.	Amount	Check No.	Amount	Check No.	Amount	Check No.	Amount	Check No.	Amount	Check No.	Amount	Check No.
1	8/31/2012	$583,048.25	1010181	$30,686.75	1010182	$557,094.25	1010181	$29,320.75	1010182	$626,193.25	1010181	$32,641.75	1010182	$529,981.25	1010181	$27,893.75	1010182
2	9/30/2012	$209,310.17	1011927	$11,016.33	1011928	$159,625.17	1011927	$8,401.32	1011928	$314,636.68	1011927	$16,559.82	1011928	$235,786.68	1011927	$12,409.82	1011928
3	10/31/2012	$367,083.33	1017464	$19,320.17	1017465	$343,133.83	1017464	$18,059.07	1017465	$327,957.83	1017464	$17,255.68	1017465	$296,650.33	1017464	$15,613.16	1017465
4	11/30/2012	$684,580.92	1021977	$36,030.58	1021978	$725,677.82	1021977	$38,193.58	1021978	$706,967.68	1021977	$37,208.82	1021978	$650,281.18	1021977	$34,225.32	1021978
5	12/31/2012	$97,945.96	1024872	$5,049.79	1025171	$146,099.96	1024872	$18,215.79	1025171	$143,341.47	1024872	$7,544.28	1025171	$112,209.96	1024872	$5,905.79	1025171
6	1/31/2013	$247,012.45	1027782	$13,000.66	1027783	$171,857.95	1027782	$9,045.16	1027783	$277,354.97	1027782	$14,597.63	1027783	$544,019.97	1027782	$28,632.63	1027783
7	2/28/2013	$193,356.21	1032025	$10,176.64	1032275	$71,194.21	1032025	$4,178.65	1032275	$453,493.20	1032025	$24,299.64	1032275	$207,865.21	1032025	$17,687.64	1032275
8	3/31/2013	$521,403.55	1033020	$27,547.56	1033021	$268,223.05	1033020	$14,238.06	1033021	$3,401,008.12	1033020	$179,123.48	1033021	$3,265,861.31	1033020	$172,008.47	1033021
9	4/30/2013	$296,122.67	1040057	$14,795.93	1040058	$100,986.17	1040057	$4,762.43	1040058	$173,708.67	1040057	$8,589.93	1040058	$119,444.67	1040057	$5,733.93	1040058
10	5/31/2013	$239,661.31	1045607	$13,436.65	1045608	$273,272.31	1045607	$15,205.64	1045608	$129,426.38	1045607	$7,624.79	1045608	$85,587.66	1045607	$5,343.29	1045608
11	7/7/2013	$1,067,389.06	1050792	$56,200.38	1050960	$1,166,721.06	1050792	$61,428.38	1050960	$123,662.42	1050792	$6,500.02	1050960	$137,182.40	1050792	$6,200.01	1050960
12	8/9/2013	$668,364.71	1054167	$36,309.48	1054168	$714,809.71	1054167	$39,364.48	1054168	$65,152.21	1054167	$4,971.38	1054168	$21,452.21	1054167	$2,871.98	1054168
13	8/31/2013	$233,274.10	1060205	$10,292.40	1060206	$225,199.13	1060205	$9,867.41	1060206	$202,874.11	1060205	$8,692.40	1060206	$202,874.11	1060205	$8,692.41	1060206
14	9/31/2013	$144,669.32	1064295	$8,102.45	1064296	$142,769.32	1064295	$8,002.46	1064296	$111,700.83	1064295	$6,367.23	1064296	$113,600.83	1064295	$6,467.23	1064296
15	10/31/2013	$43,946.45	1069034	$2,974.48	1069035	$43,946.45	1069034	$2,974.48	1069035	$49,367.15	1069034	$3,259.78	1069035	$53,751.39	1069034	$3,490.53	1069035
16**	12/31/2013	$46,544.75		$2,327.24		$46,544.75		$2,327.24		$46,544.75		$2,327.24		$46,544.75		$2,327.24	
TOTAL		$5,597,913.21		$295,267.49		$5,357,155.23		$283,385.50		$7,146,708.70		$377,572.47		$6,723,592.91		$355,303.24	
GRAND TOTAL		$5,893,180.70				$5,640,540.72				$7,524,281.17				$7,078,896.15			

T132/134				Progress Payment No.													
Contract Cost Category Description	Contract Cost Category No.	Corresponding Bid Item No.	Cost Estimates (Submitted 11-2012)	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
Mobilization and Demobilization	1	1	$290,262.61	$ 145,131.30	$ -	$ -	$ -								$ 72,565.65	$ 217,696.95
Chain-Link Fence and Gates	2	8, 9, 10	$11,909.20	$ 1,087.09	$ 2,183.82	$ -	$ -			$ 2,079.93	$ 419.32			$ 3,690.05		$ 9,460.21
Pipe Bollards	3	11, 12, 13	$67,175.38	$ -	$ -	$ -	$ 17,781.68		$ 28,430.04					$ 12,684.97	$ 6,373.69	$ 65,270.38
Pavement (including striping)	4	14, 15, 16, 42	$37,178.77	$ -	$ 961.87	$ -	$ 59.38	$ 181.69				$ 419.33	419.32	$ 733.81		$ 2,775.40
Relocation of utilities	5	17	$6,709.15	$ -	$ -	$ -	$ -			$ 500.00				$ 8,418.29	$ 8,418.29	$ 17,336.58
Transformers	6	21	$709,593.23	$ -	$ -	$ -	$ -					$ 632,247.57			$ 77,345.66	$ 709,593.23
Switchgear assembly(s)	7	25	$2,105,417.86	$ -	$ -	$ -	$ -							$ 2,105,417.86		$ 2,105,417.86
Ductbanks and raceways	8	29	$765,573.51	$ -	$ -	$ 24,242.11	$ 12,856.36							$ 469,609.46	$ 258,865.58	$ 765,573.51
Conductors	9	33	$692,948.22	$ -	$ -	$ -	$ 73,622.29	$ 453,871.78						$ 14,127.01	$ 148,497.14	$ 690,118.22
SPO Receptacles	10	37	$453,919.50	$ -	$ -	$ -	$ 107,933.60							$ 235,120.03	$ 110,827.88	$ 453,881.51
SPO Vaults	11	n/a	$0	$ -	$ -	$ -	$ -									$ -
All other electrical work	12	41	$89,190.97	$ -	$ -	$ -	$ -								$ 80,903.47	$ 80,903.47
Commissioning and testing	13	45, 46	$37,831.79	$ -	$ -	$ -	$ -									$ -
Demolition	14	4	$8,408.06	$ -	$ -	$ -	$ -						$ 1,105.25	$ 4,417.50	$ 1,443.55	$ 6,966.30
Soil, excavation, fill and waste handling	15	2, 5, 6, 7	$67,641.20	$ -	$ -	$ 631.67	$ 2,672.02			$ 7,702.15	$ 3,052.14	$ 559.00	$ 1,397.50	$ 4,104.11	$ 4,005.66	$ 24,124.25
Other costs*	16	3, 43, 44	$19,219.67	$ 262.08	$ 1,048.30	$ 611.52	$ 988.94	$ 611.52	$ 611.52	$ 611.52	$ 262.08	$ 611.51	$ 349.42	$ 1,223.02	$ 4,203.98	$ 11,395.41
Change order #1									$ 54,000.00				$ 74,712.25	$ 149,424.50	$ 74,712.25	$ 352,849.00
Change order #2											$ (538.75)					$ (538.75)
Total Berth Cost			**$5,362,979.10**	**$ 146,480.47**	**$ 4,193.99**	**$ 25,485.30**	**$ 215,914.27**	**$ 454,664.99**	**$ 83,041.56**	**$ 10,893.60**	**$ 3,194.79**	**$ 633,837.41**	**$ 77,983.74**	**$ 3,008,970.61**	**$ 848,162.80**	**$ 5,512,823.53**
			Cost Breakdown													
			Labor ($)	$0.00	$0.00	$0.00	$0.00		$0.00	$0.00	$0.00			$284,182.74	$361,657.80	$645,840.54
			Labor (man-hours)	0.00	0.00	0.00	0.00		0.00	0.00	0.00			4,307.50	5,114.50	9,422
			Materials	$0.00	$0.00	$0.00	$111,012.00	$337,365.00	$0.00	$0.00	$0.00	$632,236.00	$632,236.00	$2,192,548.46	$99,012.00	$4,004,409.46
			Equipment	$0.00	$0.00	$0.00	$0.00		$0.00	$0.00	$0.00			$134,039.34	$40,860.00	$174,899.34
			Other	$0.00	$0.00	$0.00	$0.00		$0.00	$0.00	$0.00					

T136				Progress Payment No.													
Contract Cost Category Description	Contract Cost Category No.	Corresponding Bid Item No.	Cost Estimates (Submitted 11-2012)	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
Mobilization and Demobilization	1	1	$290,262.61	$ 145,131.30	$ -	$ -	$ -								$ 72,565.65	$ 217,696.95
Chain-Link Fence and Gates	2	8, 9, 10	$11,909.20	$ 1,087.08	$ 2,183.81	$ -	$ -			$ 2,079.93	$ 419.32				$ 5,501.79	$ 11,271.93
Pipe Bollards	3	11, 12, 13	$67,175.38	$ -	$ -	$ -	$ 17,781.68		$ 28,430.04				$ 3,186.85	$ 3,186.85	$ 5,346.24	$ 57,931.66
Pavement (including striping)	4	14, 15, 16, 42	$37,178.77	$ -	$ 961.87	$ -	$ 59.38	$ 181.69				$ 419.32	$ 419.32	$ 733.81		$ 2,775.39
Relocation of utilities	5	17	$6,709.15	$ -	$ -	$ -	$ -			$ 500.00						$ 500.00
Transformers	6	20	$709,593.23	$ -	$ -	$ -	$ -					$ 709,593.23				$ 709,593.23
Switchgear assembly(s)	7	24	$1,779,834.87	$ -	$ -	$ -	$ -					$ 1,779,834.87				$ 1,779,834.87
Ductbanks and raceways	8	28	$394,105.50	$ -	$ -	$ 22,252.90	$ 12,632.40					$ 60,033.12	$ 207,355.60	$ 59,825.60	$ 32,007.88	$ 394,107.50
Conductors	9	32	$471,591.80	$ -	$ -	$ -	$ 60,230.87	$ 312,140.78							$ 99,222.91	$ 471,594.56
SPO Receptacles	10	36	$226,959.75	$ -	$ -	$ -	$ 71,485.25								$ 155,474.51	$ 226,959.76
SPO Vaults	11	n/a	$0	$ -	$ -	$ -	$ -									$ -
All other electrical work	12	40	$79,665.13	$ -	$ -	$ -	$ -					$ 63,090.13			$ 8,287.50	$ 71,377.63
Commissioning and testing	13	45, 46	$37,831.79	$ -	$ -	$ -	$ -									$ -
Demolition	14	4	$8,408.06	$ -	$ -	$ -	$ -					$ 4,417.50	$ 1,425.00			$ 5,842.50
Soil, excavation, fill and waste handling	15	2, 5, 6, 7	$67,641.20	$ -	$ -	$ 631.67	$ 2,672.02			$ 7,702.15	$ 3,052.14	$ 1,927.04	$ 4,589.59	$ 61,315.98	$ 3,549.65	$ 85,440.24
Other costs*	16	3, 43, 44	$19,219.67	$ 262.08	$ 1,048.30	$ 611.52	$ 988.94	$ 611.52	$ 611.52	$ 611.52	$ 262.08	$ 611.53	$ 349.44	$ 1,223.02	$ 4,203.98	$ 11,395.45
Change order #1									$ 54,000.00			$ 79,107.00	$ 39,553.50	$ 307,582.50	$ 184,897.88	$ 665,140.88
Change order #2											$ (538.75)					$ (538.75)
Total Berth Cost			**$4,208,086.09**	**$ 146,480.46**	**$ 4,193.98**	**$ 23,496.09**	**$ 165,850.54**	**$ 312,933.99**	**$ 83,041.56**	**$ 10,893.60**	**$ 3,194.79**	**$ 2,699,033.74**	**$ 256,879.30**	**$ 433,867.76**	**$ 571,057.99**	**$ 4,710,923.80**
			Cost Breakdown													
			Labor ($)	$0.00	$0.00	$0.00	$0.00		$0.00	$0.00	$0.00	$55,296.00	$84,161.00	$61,236.00	$240,434.00	$441,127.00
			Labor (man-hours)	0.00	0.00	0.00	0.00		0.00	0.00	0.00	875.00	1,291.00	922.00	3,398.00	$6,486.00
			Materials	$0.00	$0.00	$0.00	$111,012.00	$337,365.00	$0.00	$0.00	$0.00	$980,643.00	$29,654.00			$1,458,674.00
			Equipment	$0.00	$0.00	$0.00	$0.00		$0.00	$0.00	$0.00	$63,990.00			$22,400.00	$86,390.00
			Other	$0.00	$0.00	$0.00	$0.00		$0.00	$0.00	$0.00					$0.00

T138				Progress Payment No.													
Contract Cost Category Description	Contract Cost Category No.	Corresponding Bid Item No.	Cost Estimates (Submitted 11-2012)	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
Mobilization and Demobilization	1	1	$290,262.61	$ 145,131.30	$ -	$ -	$ -								$ 72,565.65	$ 217,696.95
Chain-Link Fence and Gates	2	8, 9, 10	$11,909.20	$ 1,087.08	$ 2,183.81	$ -	$ -			$ 2,079.93	$ 419.32		$ 9,057.68			$ 14,827.82
Pipe Bollards	3	11, 12, 13	$67,175.38	$ -	$ -	$ -	$ 17,781.68		$ 28,430.04			$ 6,373.69	$ 10,376.28			$ 62,961.69
Pavement (including striping)	4	14, 15, 16, 42	$37,178.77	$ -	$ 961.88	$ -	$ 59.38	$ 181.69				$ 419.32	$ 419.32	$ 733.81		$ 2,775.40
Relocation of utilities	5	17	$6,709.15	$ -	$ -	$ -	$ -			$ 500.00		$ 6,000.00				$ 6,500.00
Transformers	6	19	$709,593.23	$ -	$ -	$ -	$ -		$ 630,787.23		$ 78,806.00					$ 709,593.23
Switchgear assembly(s)	7	23	$1,921,221.76	$ -	$ -	$ -	$ -				$ 1,921,221.76					$ 1,921,221.76
Ductbanks and raceways	8	27	$599,461.62	$ -	$ -	$ 54,000.00	$ 12,763.20		$ 16,341.92	$ 76,146.78	$ 264,709.72	$ 20,448.00	$ 136,800.00	$ 18,252.00		$ 599,461.62
Conductors	9	31	$518,338.89	$ -	$ -	$ -	$ 43,910.07	$ 332,611.54			$ 16,360.21	$ 48,863.61	$ 15,448.26	$ 61,145.19		$ 518,338.88
SPO Receptacles	10	35	$340,439.63	$ -	$ -	$ -	$ 71,485.25					$ 59,684.22	$ 209,271.16			$ 340,440.63
SPO Vaults	11	n/a	$0	$ -	$ -	$ -	$ -									$ -
All other electrical work	12	39	$81,156.80	$ -	$ -	$ -	$ -			$ 22,603.63		$ 41,978.17	$ 4,143.75	$ 8,287.50	$ 4,143.75	$ 81,156.80

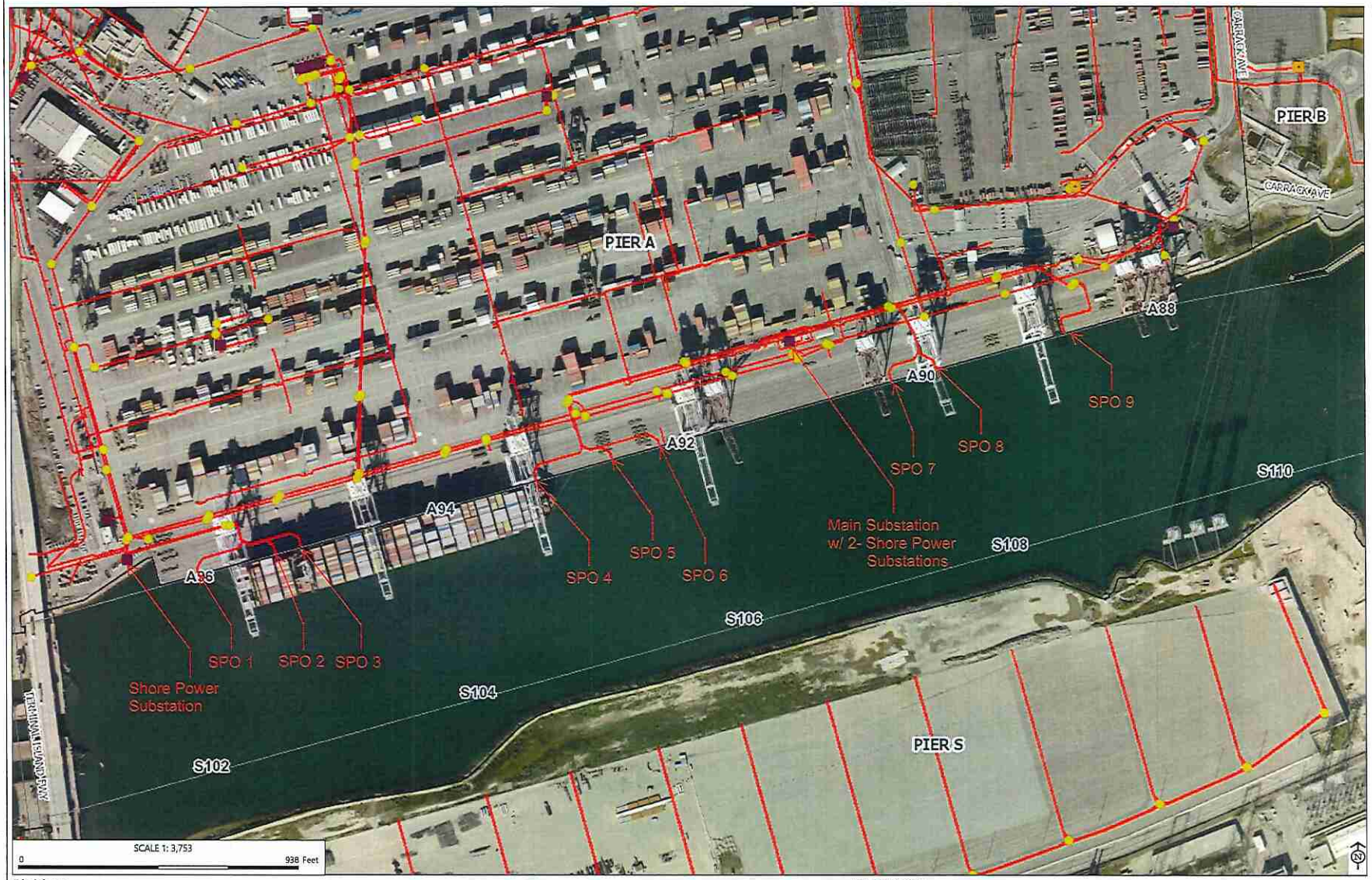
Commissioning and testing	13	45, 46	$37,831.79	$ -	$ -	$ -	$ -								$ 25,331.79	$ 25,331.79
Demolition	14	4	$8,408.06	$ -	$ -	$ -	$ -			$ 6,413.55	$ 663.15	$ 663.15					$ 7,739.85
Soil, excavation, fill and waste handling	15	2, 5, 6, 7	$67,641.20	$ -	$ -	$ 631.67	$ 2,672.02			$ 9,982.21	$ 5,332.19	$ 559.00	$ 1,397.50		$ 3,549.65	$ 24,124.24
Other costs*	16	3, 43, 44	$19,219.67	$ 262.07	$ 1,048.31	$ 611.52	$ 988.94	$ 611.52	$ 611.52	$ 611.52	$ 262.08	$ 611.53	$ 349.44	$ 1,223.02	$ 4,203.98	$ 11,395.45
Change order #1									$ 54,000.00	$ 76,738.07	$ 229,568.21	$ 167,154.96	$ 117,932.76			$ 645,394.00
Change order #2											$ (538.75)					$ (538.75)
Total Berth Cost			**$4,716,547.74**	**$ 146,480.45**	**$ 4,194.00**	**$ 55,243.19**	**$ 149,660.54**	**$ 333,404.75**	**$ 730,170.71**	**$ 195,075.69**	**$ 2,516,803.89**	**$ 352,755.65**	**$ 505,196.15**	**$ 89,641.52**	**$ 109,794.82**	**$ 5,188,421.36**
			Cost Breakdown													
			Labor ($)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$50,304.00	$0.00	$56,707.73	$72,835.00	$67,948.60	$16,565.00	$264,360.33
			Labor (man-hours)	0.00	0.00	0.00	0.00	0.00	0.00	780.00	0.00	844.50	1,132.00	968.50	83.00	$3,808.00
			Materials	$0.00	$0.00	$0.00	$98,312.00	$337,365.00	$0.00	$3,300.00	$1,560,128.00	$16,704.00	$16,352.17			$2,032,161.17
			Equipment	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$11,736.00	$0.00	$24,728.56	$5,859.12	$14,780.00	$2,060.00	$59,163.68
			Other	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00			$0.00

T140				Progress Payment No.												
Contract Cost Category Description	Contract Cost Category No.	Corresponding Bid Item No.	Cost Estimates (Submitted 11-2012)	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
Mobilization and Demobilization	1	1	$290,262.61	$ 145,131.30	$ -	$ -		$ -		$ 2,079.93	$ 8,962.79				$ 72,565.65	$ 217,696.95
Chain-Link Fence and Gates	2	8, 9, 10	$11,909.20	$ 1,087.08	$ 2,183.81	$ -		$ -		$ 20,963.67						$ 14,313.61
Pipe Bollards	3	11, 12, 13	$67,175.38	$ -	$ -	$ -	$ 17,781.68	$ -	$ 28,430.04	$ 27,172.49		$ 54,764.29	$ 419.32	$ 27,906.30	$ 27,172.49	$ 67,175.39
Pavement (including striping)	4	14, 15, 16, 42	$37,178.77	$ -	$ 961.88	$ -	$ 59.38	$ 181.69		$ 500.00	$ 2,000.00					$ 138,637.84
Relocation of utilities	5	17	$6,709.15	$ -	$ -	$ -										$ 2,500.00
Transformers	6	18	$709,593.23	$ -	$ -	$ -		$ 709,593.23								$ 709,593.23
Switchgear assembly(s)	7	22	$3,939,255.79	$ -	$ -	$ -		$ 3,939,255.79								$ 3,939,255.79
Ductbanks and raceways	8	26	$349,501.65	$ -	$ 27,978.60	$ 171,418.70	$ 71,690.70	$ 15,839.94	$ 14,400.00	$ 33,200.00	$ 7,636.36	$ 7,337.35				$ 349,501.65
Conductors	9	30	$413,138.96	$ -	$ -	$ -	$ 60,019.96	$ 269,851.81		$ 44,170.98				$ 39,096.22		$ 413,138.97
SPO Receptacles	10	34	$226,959.75	$ -	$ -	$ -	$ 71,485.25			$ 50,839.26	$ 33,150.00		$ 71,485.25			$ 226,959.76
SPO Vaults	11	n/a	$0	$ -	$ -	$ -										$ -
All other electrical work	12	38	$86,714.11	$ -	$ 10,520.87	$ 7,013.91	$ 63,125.21				$ (10,520.87)	$ 14,917.49		$ 1,657.50		$ 86,714.11
Commissioning and testing	13	45, 46	$37,831.79	$ -	$ -	$ -										$ -
Demolition	14	4	$8,408.06	$ -	$ -	$ -										$ -
Soil, excavation, fill and waste handling	15	2, 5, 6, 7	$67,641.20	$ -	$ 3,420.09	$ 1,087.68	$ 3,356.04			$ 7,702.15	$ 46,839.32	$ 559.00	$ 1,397.50		$ 3,549.65	$ 67,911.43
Other costs*	16	3, 43, 44	$19,219.67	$ 262.07	$ 4,193.21	$ 611.52	$ 988.94	$ 611.52	$ 611.52	$ 611.52	$ 262.08	$ 611.53	$ 349.44	$ 1,223.02	$ 4,203.98	$ 14,940.35
Change order #1									$ 322,607.18	$ 125,957.90	$ 48,051.03					$ 496,616.11
Change order #2											$ 37,469.88					$ 37,469.88
Total Berth Cost			**$6,271,499.30**	**$ 146,480.45**	**$ 49,258.46**	**$ 180,131.81**	**$ 288,507.16**	**$ 4,935,333.98**	**$ 366,048.74**	**$ 313,197.90**	**$ 173,850.59**	**$ 78,189.66**	**$ 73,651.51**	**$ 69,883.04**	**$ 107,491.77**	**$ 6,782,025.07**
			Cost Breakdown													
			Labor ($)	$0.00	$50,213.00	$83,884.00	$112,676.45	$9,223.00	$18,706.00	$81,661.70	$78,025.00	$1,525.00	$1,603.00	$102,950.80	$12,790.00	$553,257.95
			Labor (man-hours)	0.00	806.00	1315.00	1781.00	142.00	288.00	485775.25	1625.50	24.00	24.00	983.00	209.00	$492,972.75
			Materials	$0.00	$57,192.02	$234,135.00	$209,862.30	$3,283,875.00	$633,225.00	$9,724.00	$0.00				$15,519.42	$4,443,532.74
			Equipment	$0.00	$14,329.00	$12,861.00	$26,711.80	$2,087.00	$7,001.00	$20,809.32	$48,121.29	$1,365.00		$30,480.00	$11,430.00	$175,195.41
			Other	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00					$0.00

		T132/134				T136				T138				T140			
Progress Payment No.	Period Ending	Paid		Retention		Paid		Retention		Paid		Retention		Paid		Retention	
		Amount	Check No.	Amount	Check No.	Amount	Check No.	Amount	Check No.	Amount	Check No.	Amount	Check No.	Amount	Check No.	Amount	Check No.
1	8/31/2012	$139,156.45	1013550	$7,324.02	1013369	$139,156.44	1013550	$7,324.02	1013369	$139,156.43	1013550	$7,324.02	1013369	$139,156.43	1013550	$7,324.02	1013369
2	9/30/2012	$3,984.29	1017157	$209.70	1017158	$3,984.28	1017157	$209.70	1017158	$3,984.30	1017157	$209.70	1017158	$46,795.54	1017157	$2,462.92	1017158
3	10/31/2012	$24,211.30	1018355	$1,274.26	1018356	$22,321.28	1018355	$1,174.80	1018356	$52,481.02	1018355	$2,762.16	1018356	$171,125.20	1018355	$9,006.60	1018356
4	11/30/2012	$205,118.56	1025282	$10,795.70	1025283	$157,558.00	1025282	$8,292.53	1025283	$142,177.50	1025282	$7,483.03	1025283	$274,081.79	1025282	$14,425.36	1025283
5	12/31/2012	$431,931.73	1027736	$22,733.25	1027737	$297,287.29	1027736	$15,646.70	1027737	$316,734.52	1027736	$16,670.24	1027737	$4,688,567.28	1027736	$246,766.70	1027737
6	1/31/2013	$78,889.48	1032234	$4,152.08	1032235	$78,889.48	1032234	$4,152.08	1032235	$693,662.16	1032234	$36,508.54	1032235	$347,746.30	1032234	$18,302.44	1032235
7	2/28/2013	$10,348.91	1038592	$544.68	1038593	$10,348.90	1038592	$10,893.59	1038593	$185,321.91	1038592	$9,753.78	1038593	$297,538.00	1038592	$15,659.89	1038593
8	3/31/2013	$3,035.05	1042462	$159.74	1042463	$3,035.05	1042462	$159.74	1042463	$2,390,963.70	1042462	$125,840.19	1042463	$165,158.06	1042462	$8,692.53	1042463
9	4/30/2013	$602,145.54	1046397	$31,691.87	1046398	$2,564,082.05	1046397	$134,951.69	1046398	$335,117.86	1046397	$17,637.78	1046398	$74,280.17	1046397	$3,909.48	1046398
10	5/31/2013	$74,084.55	1052050	$3,899.19	1052051	$244,035.33	1052050	$12,843.96	1052051	$479,936.35	1052050	$25,259.81	1052051	$69,968.94	1052050	$3,682.57	1052051
11	6/30/2013	$2,858,522.08	1059654	$150,448.53	1059655	$412,174.36	1059654	$21,693.39	1059655	$85,159.44	1059654	$4,482.09	1059655	$66,388.90	1059654	$3,494.14	1059655
12	9/30/2013	$796,744.51	1069922	$42,408.14	1069923	$533,494.96	1069922	$28,552.90	1069923	$95,294.96	1069922	$5,489.74	1069923	$93,107.06	1069922	$5,374.59	1069923
TOTAL		$5,228,172.45		$275,641.16		$4,466,367.42		$245,895.10		$4,919,990.15		$259,421.08		$6,433,913.67		$339,101.24	
GRAND TOTAL		$5,503,813.61				$4,712,262.52				$5,179,411.23				$6,773,014.91			

ATTACHMENT C
Maps of Container Terminal Shore Power Infrastructure

Port of Long Beach



Port ATLAS

Port of LONG BEACH
The Green Port

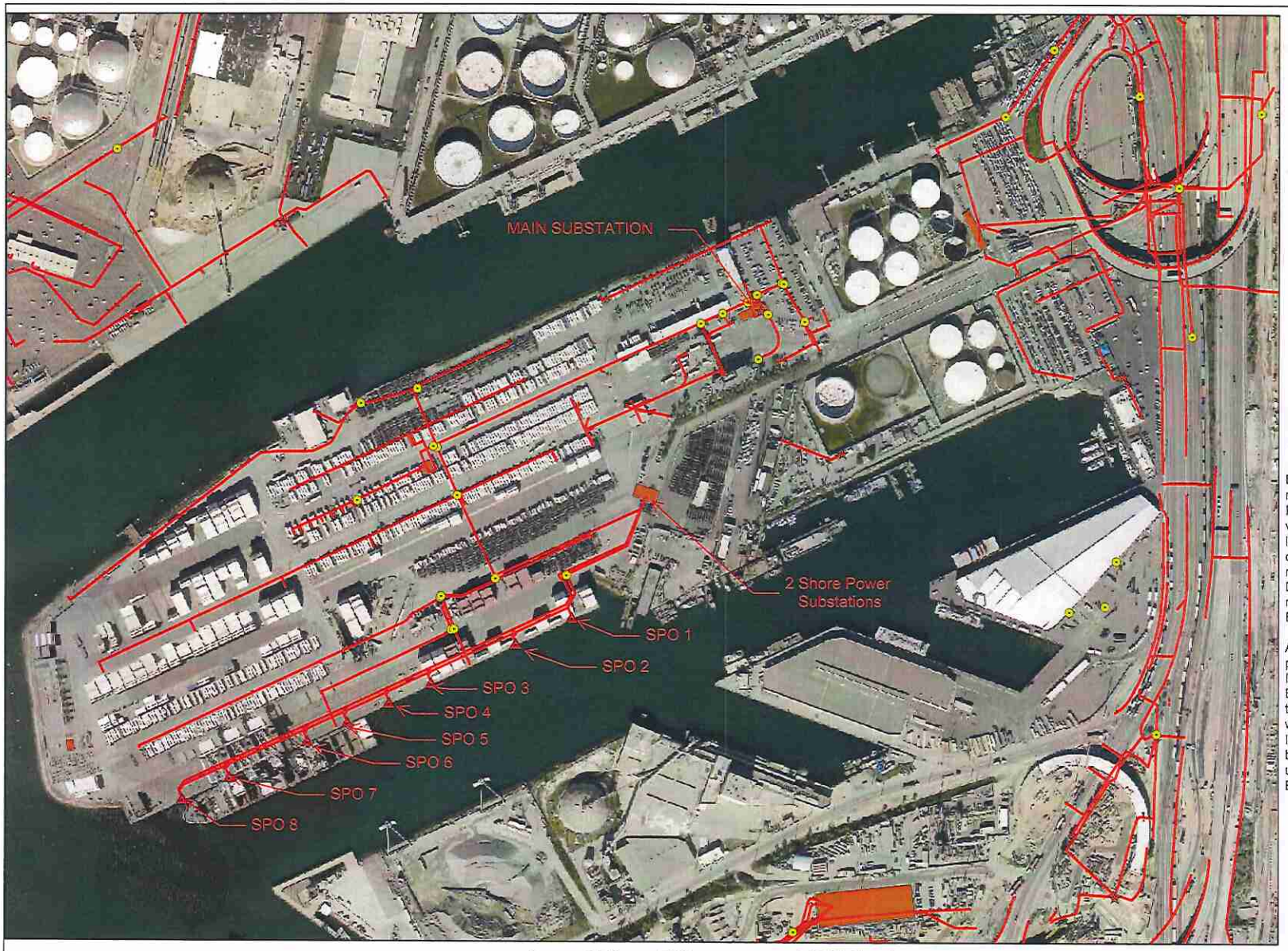
Legend

- Electric Junction
  - Maintenance Hole
  - Substation
  - Transformer
- Electric Meter
- Active Electric Line
- Abandoned Electric Line
- POLB Roads
- Railroad Track
- Pierhead Line
- Piers

Disclaimer:
All information contained and referenced herein is for reference only. It is compiled from data provided from various sources and as such the relative location and size of topological features is only representative of the time the data was recorded. The Long Beach Harbor Department does not assume any responsibility for its accuracy or completeness. Field verification is recommended.

Author / Notes:

03/27/2019



PORT OF LONG BEACH
PIER C

Port of LONG BEACH
The Green Port

- Maintenance Hole
- Shore Power Outlet
- Transformer
- Active Electric Line
- Substation

Disclaimer: All information contained and referenced herein is for reference only. It is complied from data provided from various sources and as such the relative location and size of topological features is only representative of the time the data was recorded. The Long Beach Harbor Department does not assume any responsibility for its accuracy or completeness. Field verification is recommended.

Aerial Photo: This is a proprietary dataset provided courtesy of the Los Angeles Region Imagery Acquisition Consortium (LAR-IAC), Eagle View Technologies, Inc. Use other than what is allowable under license or by written pression from Eagle View Technologies, Inc. will be considered unauthorized and may be punishable by law. Permission for external use may be given with written permission from Eagle View Technologies, Inc.

N
W E
S

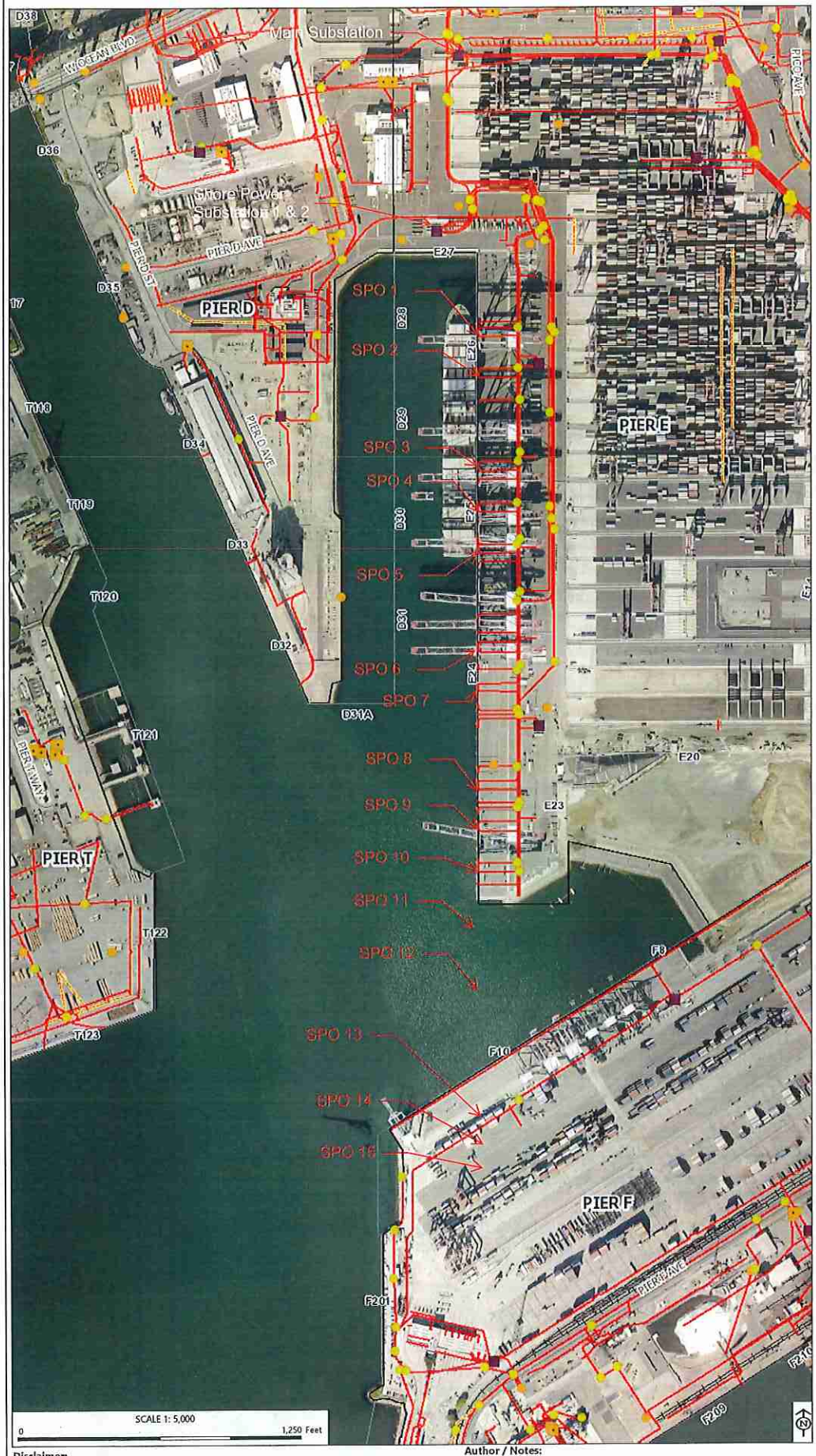
0 250 500 1,000 Feet

NDSR 19-1010 JLT 4/3/19 Aerial Photo: LARIAC March 2017 4-in

Port of Long Beach

Port ATLAS

Port of LONG BEACH
The Green Port



Legend

- Electric Junction
- Maintenance Hole
- Substation
- Transformer
- Electric Meter
- Active Electric Line
- Abandoned Electric Line
- POLB Roads
- Railroad Track
- Pierhead Line
- Piers

Disclaimer:

All information contained and referenced herein is for reference only. It is compiled from data provided from various sources and as such the relative location and size of topological features is only representative of the time the data was recorded. The Long Beach Harbor Department does not assume any responsibility for its accuracy or completeness. Field verification is recommended.

Author / Notes:

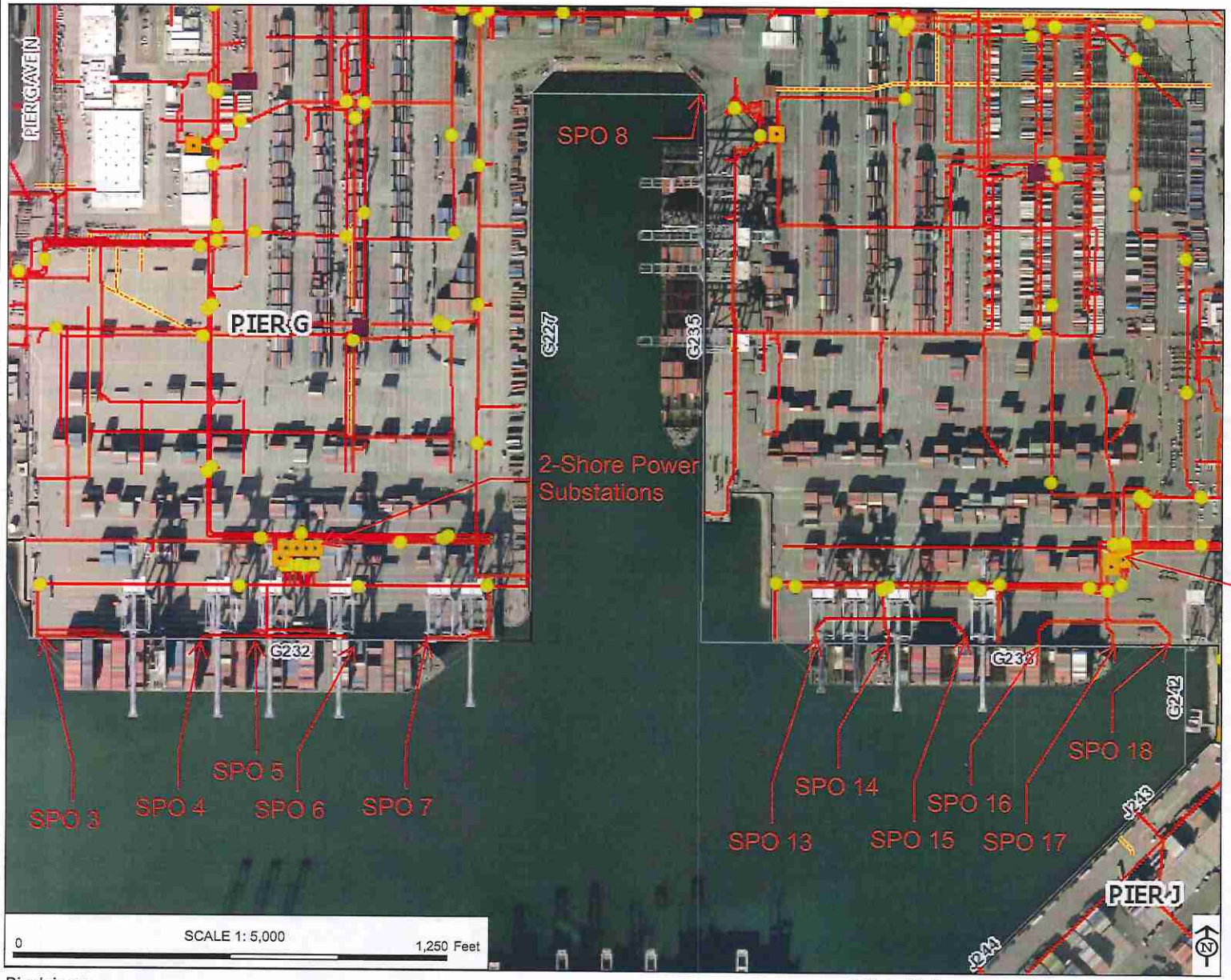
SPOs 11 thru 15 on
Phase 3 not complete

04/04/2019

Port of Long Beach

Port ATLAS

Port of LONG BEACH
The Green Port



Legend

- Electric Junction
  - Maintenance Hole
  - Substation
  - Transformer
- Electric Meter
- Active Electric Line
- Abandoned Electric Line
- POLB Roads
- Railroad Track
- Pierhead Line
- Piers

2-Shore Power Substations

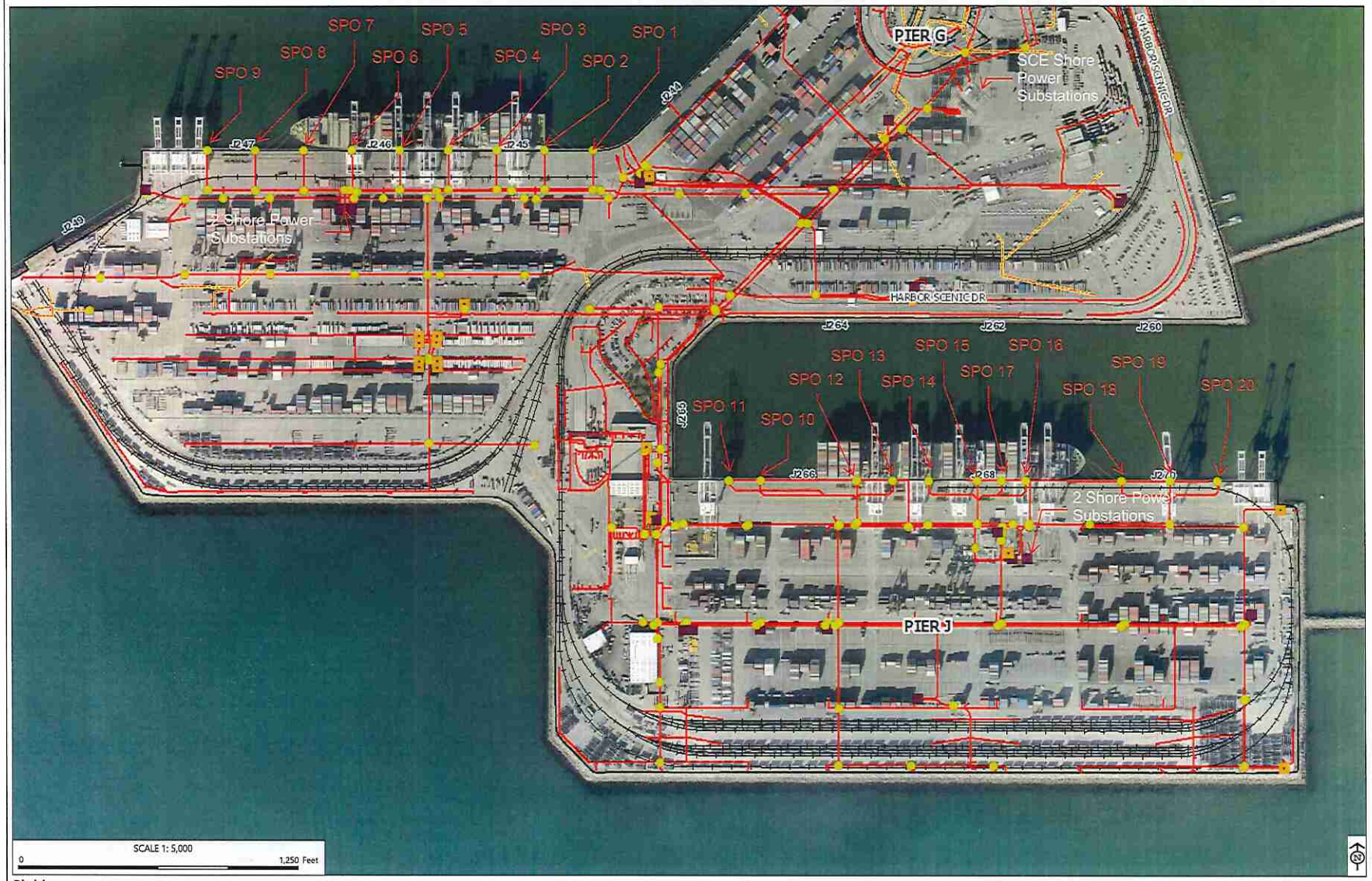
Disclaimer:

All information contained and referenced herein is for reference only. It is compiled from data provided from various sources and as such the relative location and size of topological features is only representative of the time the data was recorded. The Long Beach Harbor Department does not assume any responsibility for its accuracy or completeness. Field verification is recommended.

Author / Notes:

04/09/2019

Port of Long Beach



Port ATLAS

Port of LONG BEACH
The Green Port

Legend

- Electric Junction
  - Maintenance Hole
  - Substation
  - Transformer
- Electric Meter
- Active Electric Line
- Abandoned Electric Line
- POLB Roads
- Railroad Track
- Pierhead Line
- Piers

Disclaimer:
All information contained and referenced herein is for reference only. It is compiled from data provided from various sources and as such the relative location and size of topological features is only representative of the time the data was recorded. The Long Beach Harbor Department does not assume any responsibility for its accuracy or completeness. Field verification is recommended.

Author / Notes:

04/09/2019

Port of Long Beach

Port ATLAS

Port of LONG BEACH
The Green Port

Legend

- Electric Junction
- Maintenance Hole
- Substation
- Transformer
- Electric Meter
- Active Electric Line
- Abandoned Electric Line
- POLB Roads
- Railroad Track
- Pierhead Line
- Piers

Disclaimer:
All information contained and referenced herein is for reference only. It is compiled from data provided from various sources and as such the relative location and size of topological features is only representative of the time the data was recorded. The Long Beach Harbor Department does not assume any responsibility for its accuracy or completeness. Field verification is recommended.

Author / Notes:

04/04/2019

ATTACHMENT D
Port of Long Beach Vessel Visits by Berth

Container Vessel Visits Subject to the New At-Berth and At Anchor Regulation

ITS		LBCT		Pacific Container Terminal		SSA Terminals Pier A		SSA Terminals Pier C		TTI	
Berth	Visits	Berth	Visits	Berth	Visits	Berth	Visits	Berth	Visits	Berth	Visits
G232	53	E24	34	J245 (includes reefer)	52	A92	43	C60	1	T132	1
G235	25	E26	49	J266	65	A94	104	C62	81	T134	124
G236	68	F8	19	J270	21	A96	78	Total Visits	82	T136	55
Total Visits	146	Total Visits	102	Total Visits	138	Total Visits	225			T138	12
										T140	43
										Total Visits	235

RoRo Vessel Visits Subject to the New At-Berth and At Anchor Regulation			
Toyota Logistics		**SSA-Crescent**	
Berth	Visits	Berth	Visits
B83	104	F204	3
Total Visits	**104**	F205	44
		F207	60
		Total Visits	**104**

Tanker Vessel Visits Subject to the New At-Berth and At Anchor Regulation					
Tesoro Pier B		**Tesoro Pier T**		**Chemoil**	
Berth	Visits	Berth	Visits	Berth	Visits
B77	6	T121	204	F209	65
B78	65	**Total Visits**	**204**	**Total Visits**	**65**
B84	4				
B84A	76				
B86	49				
Total Visits	**200**				

Comments on Revised Draft Regulatory Concept, April 10, 2019

April 10, 2019

Bonnie Soriano
California Air Resources Board
1001 I Street
Sacramento, California 95812

Subject: Comments on Revised Draft Regulatory Concept

Dear Ms. Soriano:

Thank you for the opportunity to provide comments on the updated regulatory concepts for the At-Berth Regulation Amendments. The industry coalition appreciates that in revising the regulatory concepts staff was attempting to address issues raised on the original regulatory concept, such as redundancy and control over unforeseen events. Unfortunately, as described below, the proposed concept does not fundamentally address these flaws. As one example, responsibility for matters beyond a carrier's control, such as weather, are not addressed but laid at the feet of terminal operators.

Industry Proposal
The industry coalition proposal submitted for CARB's consideration addresses all of the issues described below. The proposal submitted is consistent with the emissions reduction goals set by CARB staff proposal, streamlines compliance methodologies for currently regulated fleet, expands regulatory framework to include reporting requirements and evaluation benchmarks for currently unregulated vessels, and creates new compliance and reporting requirements for ports and marine terminal operators. In light of the issues raised below, we urge CARB staff to re-examine the industry proposal that avoids the problems discussed and meets the goals outlined by CARB staff.

Requirements in 2020
The industry coalition remains concerned that the current proposal does not address immediate implementation issues with the current regulation. As has been previously discussed with CARB staff, the existing At-Berth regulation has fundamental problems that makes compliance beginning in 2020 likely impossible. The maritime industry has been raising issues with the structure of the existing rule for several years and has requested amendments to address those concerns. CARB staff have partially addressed those concerns by issuing multiple advisories. But now that the opportunity exists to fully address issues with the existing rule and eliminate the use of the advisories, the draft proposal does not contain any provisions to address the failings of the existing rule in 2020. CARB's first priority should be to address the current failings of the existing rule before expanding the rule.

Infrastructure

We appreciate the effort undertaken by CARB staff to evaluate the necessary infrastructure to support the proposed regulatory concept. This analysis is a necessary step in understanding the impact of the proposed concept. Unfortunately, the analysis raises a number of concerns.

The analysis is inconsistent with the analysis prepared by the ports of Long Beach and Los Angeles. In a separate comment letter dated February 6, 2019, the two ports provide an analysis that demonstrates that an additional $200 million dollars of infrastructure would be necessary to under the original regulatory concept. Yet, the ports conclude, that investment would not ensure 100% compliance. While the updated regulatory concept does create a five percent allowance for terminal incident events, there is no demonstration that such an allowance would obviate the need for additional infrastructure as the CARB analysis essentially finds.

The analysis was based on discussions with terminal operators, but it does not appear that the discussion was based on the detailed requirements of the revised regulatory concept. Discussions with terminal operators following the CARB workshops indicated that their response to discussions with CARB staff was based on their "we will make it work" culture that defines stevedoring. The specifics of the regulatory proposal have given several terminal operators pause about their ability to meet the requirements.

This is not surprising giving the outstanding issues already being experienced as described in CARB's latest enforcement report on the At-Berth Regulation (2017 Annual Enforcement Report, June 2018). The report identified 327 instances that Scenario 1 (Equipped vessel not able to receive power from shore) were used in 2015 and another 284 instances in 2016, the most recent year that CARB has published data. Yet, CARB's analysis for container terminals found additional vaults are needed at only one terminal and only one shared barge-based emission control. It is inconceivable that such little infrastructure would be necessary when existing infrastructure is already strained beyond existing needs.

Redundancy

When CARB staff released their original regulatory concept, the industry coalition raised concerns regarding the redundancy of infrastructure required by the regulatory concept. One of the primary concerns was that of infrastructure redundancy. The original At-Berth Regulation required the investment in shore power as means of compliance. The original rule only allowed alternative technologies if they were adopted early. As no alternative technologies were available within the constraints of the original rule, industry made an investment totaling billions of dollars in supporting shore power. It is important to note that this investment is ongoing.

There is no dedicated California vessel fleet. Vessels are regularly moved into and out of California service to meet the needs of vessel maintenance and changing trade flows. As a result, shore power

equipment must be retrofitted onto vessels entering California service. In addition, shoreside infrastructure requires ongoing investment in the form of costly maintenance.

As a result of these sunk and ongoing costs, a regulatory requirement that would force carriers and terminal operators to maintain new and additional equipment to remain in compliance is concerning. The original regulatory concept, in essence, required back up control equipment throughout California ports. In the long-term, this would likely necessitate the abandonment of shore power in favor of capture and control systems. While capture and control systems are less than preferable from both an economic and environmental perspective, offering less emissions control (and increased greenhouse gas emissions) for higher costs, the flexibility offered is likely the means of remaining in compliance while only supporting a single control technology pathway.

TIEs and Redundancy

The revised regulatory concept attempts to resolve the redundancy issue through the introduction of a concept termed "Terminal Incident Events" (TIEs). While TIEs would provide a five percent buffer in some situations, it does not eliminate the need for redundant equipment. It has not been demonstrated that a terminal can remain in compliance within the five percent margin provided by TIEs. The data available, such as CARB's most recent enforcement report and the analysis conducted by the ports of Long Beach and Los Angeles, would indicate that a five percent margin is an insufficient margin. It is quite possible that all TIEs would be used simply managing scheduling problems that arise from weather, prior port delays, and unscheduled vessels calls that would impact berth assignments and ability to reach a shore power outlet. As a result, if industry always wants to ensure compliance (which we expect is CARB's goal), industry will need to begin investing in alternative technologies.

As previously mentioned, supporting shore power requires ongoing investment, as a result of needed maintenance and vessel redeployments. If the amended At-Berth Regulation requires the investment in alternative technologies, the industry will likely gravitate over time to the technology that provides greater flexibility. While this is more expensive than shore power alone, it would be more cost-effective than supporting both pathways simultaneously, likely resulting in less reductions of criteria and toxic pollutants and an increase in greenhouse gas emissions. Simply put, a five percent margin cannot ensure the industry can remain in compliance with the proposed regulatory concept and would necessitate the investment of a redundant technology control pathway.

TIEs are an Inadequate Substitute for Vessel or Terminal Checklist Approaches

TIEs are an unworkable solution to the problem of inadequate infrastructure. The terminal operator typically has no control over the issues that impact berth availability. The terminal operator will plan vessel berth assignments around schedules provided by the ocean carrier. The vessel schedule can be impacted by issues outside the vessel and/or terminal's control:

- Vessel delayed arrival due to weather
- Vessel delayed arrival due to prior port delays

- Vessel early arrival due to quicker turnaround at prior ports
- Vessel departure delay due to the union dispatching insufficient labor
- Vessel arrival/departure delay due to tide
- Unscheduled vessel arrival (extra loaders)

None of these factors are within the control of the terminal operator in any fashion, yet the terminal operator would be liable in each of these circumstances for the number of chance occurrences that impact their facility in addition to the 5% TIE buffer. One of the fundamental problems of the existing At-Berth Regulation is that is holds ocean carriers responsible for issues outside their control. CARB's draft regulatory concept does not resolve this issue. The concept turns the issue on its head and holds terminal operators accountable for issues outside their control. Questions of enforceability plague the existing rule as a result of these issues. TIEs only shift this problem to terminal operators.

In addition, TIEs ignore the relationship that landlords/port authorities may have with terminals in ensuring a proper connection. In several ports, port staff are responsible for providing power, energizing the shore power connection, and maintaining infrastructure. TIEs ignore this fundamental relationship and place responsibility solely with the terminal operator with the expectation that can manage other, independent entities. As an example, if a port is responsible for maintaining shore power infrastructure and there is an equipment failure, it will be the port's responsibility to conduct repairs. The terminal operator has no ability to influence the speed of its public works contracting process or establish a schedule for repairs. Yet, the draft regulatory concept would hold the terminal operator responsible for this equipment failure. Should an equipment failure occur after a terminal has exhausted its annual TIE allocation, the terminal would be non-compliant as a result of actions by others – an untenable situation.

In a similar situation, CARB proposes to hold terminal operators accountable for the commissioning requirements established by port authorities. Terminal operators would not have any control if vessels, after their first visit, make changes to their electrical equipment that would trigger a port authorities' requirements for re-commissioning. Likewise, a port authority may modify shoreside equipment that necessitates re-commissioning. In these instances, CARB is proposing to hold terminal operators accountable for the actions of others.

Finally, TIEs constrain a terminal operator's ability to grow. Terminal operators compete vigorously for cargo. The decision of a single ocean carrier can result in the shift of dozens of vessel calls between terminals. The ability of terminal operator to capture business will be directly constrained by basing their number of TIEs to a prior year's cargo volume. This is particularly true when so many reasons that a terminal operator would use a TIE are for events outside their ability to control or influence.

Need for Flexibility

The revised draft regulatory concept still does not incorporate any meaningful flexibility for ocean carriers. Ocean carriers must regularly make changes to vessels serving California. The worldwide

container fleet is not retrofitted for shore power. A vessel substitution due to maintenance needs or changing trade flows would likely mean a replacement with a vessel that does not support shore power. An ocean carrier needs time to make the replacement vessel ready to connect to shore power. Unfortunately, without a massive shift away from electrification toward alternative technologies, alternative technologies are not a viable solution for the long-term and have a number of drawbacks. The alternative technology is substantially more expensive at its current level of utilization and is expected to become more expensive as the use of shore power increases and the number of alternative technology users supporting high fixed costs drop. The very large container and cruise vessels cannot use the current alternative technology due to the particular structure and constraints of those vessels, leaving those vessels without a viable alternative to shore power. In addition, the technology, whether barge-based or land-based increases greenhouse gas emissions in all cases. Finally, to facilitate peak events (such as extra loaders), there may be a need for a dozen such systems that sit idle most of the year – there is no way to capitalize such an investment with no prospect of return. Rather than pinning regulatory success on such technology, CARB should revise the proposal in a way that recognizes the dynamic nature of international trade and develop an approach consistent with the principles laid out in the industry proposal.

Responsibilities Under the Proposed Regulatory Concept

The coalition of maritime industries strongly disagrees with an approach that establishes an indirect source rule (ISR) for the At-Berth Regulation, making terminal operators responsible for the emissions of third-party vessel operators that call their facilities. CARB staff has stated that their intention was not to develop an ISR but was to establish requirements to facilitate additional infrastructure. The proposed regulatory concept does not do this. Instead, it makes terminal operators directly liable for emissions from vessels.

In making terminal operators liable for vessel emissions, the proposed regulatory concept makes terminal operators liable for issues outside their control, such as weather, delays at other ports, and schedule changes by ocean carriers. Infrastructure, by its nature, is limited. While a terminal operator can ensure that vessels are connected based on a pro forma schedule for a given set of vessels, schedule, and infrastructure, if any of those parameters change the terminal operator may no longer be able to complete a connection. If arriving vessels are delayed due to weather or delays at a prior port by even a couple of hours, the terminals infrastructure is immediately impacted. Similarly, if ocean carriers add a one-time vessel service to respond to changing trade flows, that will immediately impact a terminal operators infrastructure availability – something that the terminal operator was unable to plan for. Despite the fact that scheduling impacts have been raised as a primary reason why shore power connections are unable to be made (particularly at ports constrained by tight tide windows), the proposed regulatory concept ignores the issue and places responsibility on the terminal operator.

Conclusion

The draft concept commits the same error of the original At-Berth Regulations by holding parties responsible for issues outside their control. As a result of the dilemma that such responsibility poses,

the draft concept requires significant investment in redundant technology as the only means that carriers and terminal operators can ensure regulatory compliance at all times. Finally, the proposed concept provides no accommodation for the known variability in international trade that occurs regularly. With no means of accommodating the changing vessel fleet, ocean carriers are left to rely on alternatives that do not exist or where they do are unreliable in their availability. The industry proposal submitted to CARB addresses all of these concerns, achieves the emission reductions that CARB is seeking, and does not require the complexity of the proposed concept. We look forward to continuing to work with you on the development of the regulatory amendments.

Sincerely,

California Association of Port Authorities
Pacific Merchant Shipping Association
Cruise Lines International Association
Western States Petroleum Association

Industry Coalition Alternative Proposal for Amendments to At-Berth Regulations, February 15, 2019

February 15, 2019

Cynthia Marvin
California Air Resources Board
Delivered via email to Cynthia.marvin@arb.ca.gov

Re: Alternative Proposal for Amendments to At-Berth Regulations

Dear Ms. Marvin:

Thank you and all of the ARB staff for giving us the opportunity to develop an Alternative Proposal for moving forward with Amendments to the At-Berth Regulations for Oceangoing Vessels. We are pleased to present this Alternative Proposal to you today.

As you and your team are well aware the existing regulations on vessels at-berth within the container, cruise, and refrigerated sectors of the maritime industry have resulted in significant levels of emissions reductions well in excess of predictions, created a tremendous and globally unprecedented level of private and public investment in vessel fleets and on-shore cold-ironing infrastructure, and the rule is still being phased-in, with even stricter compliance on the horizon starting in 2020.

The Alternative Proposal builds on this strong foundation to increase compliance and expand the current rule into currently unregulated sectors. It consists of provisions meant for immediate action to address compliance issues for currently regulated fleets and outlines the next steps necessary to evaluate the basis upon which additional investments may or may not be justified in addressing the emissions of vessels while at berth.

The Alternative Proposal is a true compromise document that took two months of negotiation amongst all the parties to craft. It represents a result that is as close to consensus as possible about the best way to boost and improve compliance within the existing regulations and set a true foundation for a discussion on how, if, and when to further reduce emissions from vessels at-berth in the near future. As a true compromise document, none of our signatory organizations or their memberships agree with every aspect of the Proposal, but all of the signatory organizations commit their resources and attention to working with CARB to improve the current regulation for existing regulated fleets and facilitate the process for evaluating future rule expansions consistent with the principles described here.

We very truly look forward to immediately improving the current rule and working to achieve the most cost-effective and successful future emissions reductions from the waterfront as possible.

Sincerely,

California Association of Port Authorities
Pacific Merchant Shipping Association
World Shipping Council
Cruise Lines International Association
Western States Petroleum Association

2019 At-Berth Regulation - Alternative Proposal

Executive Summary

All signatory parties to this Alternative Proposal share the California Air Resources Board (CARB) goal of reducing health impacts related to waterborne-related goods movement emissions impacting local residents. We would like to thank CARB staff for the opportunity to develop the following Alternative Proposal as we are moving forward with Amendments to the At-Berth Regulations for Oceangoing Vessels and are pleased to present the following.

Existing at-berth regulations have resulted in significant emissions reductions well in excess of original agency projections. This success has resulted from the collaboration of many key public and private stakeholders, and has included an unprecedented level of worldwide investment in vessel fleets and shore-side power infrastructure. This Alternative Proposal establishes additional compliance procedures for the current Shore Power Rule as the last emission reduction target is reached in 2020, while offering a path forward toward potential increased emission reductions from existing and new vessel classes in the years to follow.

Highlights

- Requires that every shorepower-equipped vessel plug-in while at a berth which is able to provide shoreside power to that vessel;
- Is consistent with the emissions reductions goals set by CARB staff proposal;
- Improves and streamlines compliance methodologies for currently regulated fleet;
- Expands regulatory framework to include reporting requirements and evaluation benchmarks for currently unregulated vessels;
- Creates new compliance and reporting requirements for ports and marine terminal operators;
- Establishes a feasibility and cost-effectiveness framework for evaluating potential new shore power requirements and infrastructure needs;
- Reinvests non-compliance fees in new Port infrastructure or waterfront emissions reductions; and
- Establishes prioritization dialogue for investment of private and state Incentives dollars.

This Alternative Proposal builds on California's strong regulatory foundation for reducing vessel emissions while at berth. It outlines a program that will increase compliance and bring currently unregulated vessels into the regulatory framework.

All of the signatory parties commit to continuing this dialogue and to serious consideration of amendments to create and perfect an achievable rule and set of standards that meet the needs of industry, the state, and local public health interests.

Background – Current Regulatory Benefits and Industry Achievements

CARB currently administers the world's most comprehensive At Berth ocean-going vessel regulation. At the time of its adoption this rule was predicted to result in tremendous, unprecedented air quality benefits and also billions of dollars of new investments in vessel and port electrical infrastructure. Under the current At-Berth regulation, CARB staff estimated (in the original 2007 ISOR) that:

- "… the proposed regulation would reduce hoteling diesel PM and NOx emissions from container ships, passenger ships, and refrigerated cargo ships by 50 percent and 75 percent relative to levels expected to be emitted in 2014 and 2020, respectively." (pg. 14)

- "…approximately 1,100 tons of diesel PM and 61,700 tons of NOx will be removed from California's air between 2006 and 2020 due to the implementation." (pg. 15)

- "For the container-ship category, the regulatory period is 2009-2030 to account for ship turnover. Total emissions reductions to 2030 are 2,600 tons of diesel PM and 140,000 tons of NOx." (pg. 16, Table 4)

- "In addition, hoteling CO2 emissions are expected to be reduced by 122,000 to 242,000 metric tons in 2020." (pg. 14)

- "… total statewide costs for affected businesses and port authorities to comply with the proposed regulation to be approximately $1.8 billion, in 2006 dollars." (pg. 21)

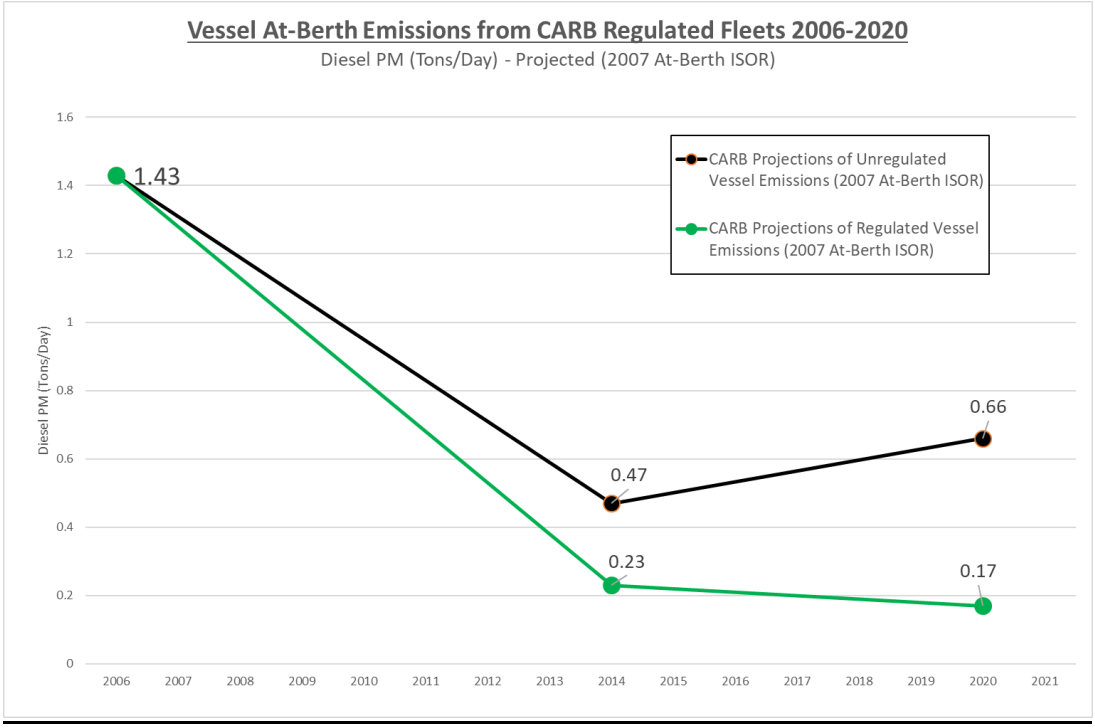
- "Annually, the costs are expected to vary from $30 million to $137 million. … the high end of the range represents a year when capital expenditures are being made for shoreside infrastructure and for retrofitting a considerable number of ships to meet the 2020 milestone." (pg. 21)

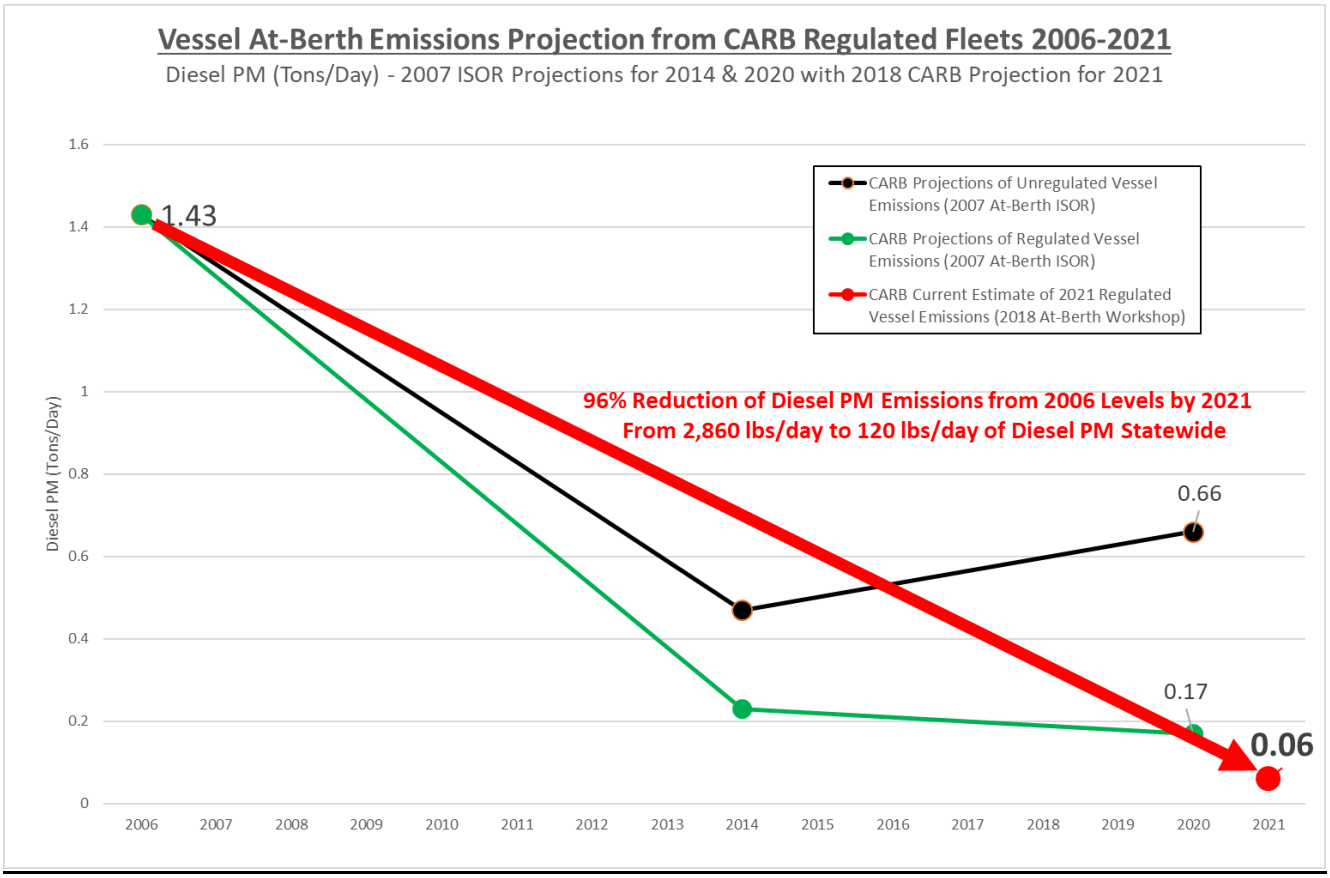
- "The total costs to a typical ship company complying with the proposed regulation, including capital and ongoing costs are estimated to be about $34 million. This cost would be distributed over the years 2009 to 2020 for passenger ship companies and reefer ship companies and to 2030 for container ship companies." (pg. 21)

- "Similarly, the total costs to a typical terminal operator complying with the proposed regulation, including capital and ongoing costs, are estimated to be about $11 million. … With 31 terminals and 35 vessel fleets affected by the proposed regulation, the costs to a typical business would be $26 million." (pp. 21-22)

- "The costs to be expended by the port authorities to add shore-power equipment to their facilities ranges from $4 million to $86 million. … Staff assumes that the landlord ports will work with their tenants, the terminal lessees, to provide the shoreside infrastructure necessary to meet the requirements of the proposed regulation. Furthermore, staff assumes that the landlord ports will eventually recover their capital costs through modifications to terminal leases, while the non-landlord ports will recover their capital costs through fees collected from the carriers." (pp. 22-23)

The results of the current rule and the resulting estimated $1.8 billion investment by the regulated components of the maritime industry have been impressive – with total Diesel PM projected by CARB staff to be reduced by 96% since 2006 in 2021. (see below charts based on CARB data, Attachment A)


Vessel At-Berth Emissions from CARB Regulated Fleets 2006-2020
Diesel PM (Tons/Day) - Projected (2007 At-Berth ISOR)
Diesel PM (Tons/Day)
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
1.43
0.47
0.23
0.66
0.17
CARB Projections of Unregulated Vessel Emissions (2007 At-Berth ISOR)
CARB Projections of Regulated Vessel Emissions (2007 At-Berth ISOR)


Vessel At-Berth Emissions Projection from CARB Regulated Fleets 2006-2021
Diesel PM (Tons/Day) - 2007 ISOR Projections for 2014 & 2020 with 2018 CARB Projection for 2021
Diesel PM (Tons/Day)
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
1.43
0.66
0.17
0.06
96% Reduction of Diesel PM Emissions from 2006 Levels by 2021
From 2,860 lbs/day to 120 lbs/day of Diesel PM Statewide
CARB Projections of Unregulated Vessel Emissions (2007 At-Berth ISOR)
CARB Projections of Regulated Vessel Emissions (2007 At-Berth ISOR)
CARB Current Estimate of 2021 Regulated Vessel Emissions (2018 At-Berth Workshop)

Alternative Proposal Overview

The Alternative Proposal establishes a path forward to increase compliance and continue to ensure further emission reductions from vessels while at-berth in California ports. The Proposal includes measures to ensure compliance and emissions reductions consistent with current CARB emissions goals, expand investments in port infrastructure, and increase vessel compliance.

CARB currently regulates Container, Passenger and Refrigerated vessel fleets and the ports they visit. CARB has also determined currently unregulated vessel fleets include Ro-Ro, Auto Carrier, Liquid Bulk and Tanker vessels and the ports they visit.

Improves the Currently Regulated Vessel Program

The following outcomes will be assured through a series of amendments to the existing rule:

- Improves and streamlines compliance methodologies for the currently regulated fleet in 2020.
- Creates new compliance and reporting requirements for ports and marine terminal operators.
- Requires that when a terminal is able to provide shorepower to a shore power-equipped vessel that the vessel must plug-in while at berth, subject to exceptions or exemptions.
- Reinvests non-compliance fees in new Port infrastructure or waterfront emissions reductions.
- Prioritizes cost-effective investment of private and CARB Incentives dollars.
- Establishes a consensus regulatory framework for the evaluation of future rule expansions.

With respect to currently Regulated Vessel Fleets and Ports, the Alternative Proposal would update and improve current vessel compliance mechanisms applicable immediately to the 2020 fleet requirements, establish new and expanded marine terminal and port compliance requirements, and create a framework for new investment in at-berth infrastructure.

With respect to currently Unregulated Vessel Fleets, these fleets would be included in the amendments as well. The Alternative Proposal would establish reporting compliance methodologies and evaluation benchmarks consistent with the current staff proposal for Bulk vessels for all vessel types and meet all of CARB's SIP requirements, the Climate Change Scoping Plan, and the AB 617 Blueprint.

Builds a Framework to Include Future Vessel Types and Fleets

During the November 2018 work sessions held with the Industry Coalition and its members, CARB indicated that to be viable, an Alternative Proposal should at least meet and achieve the following principles:

- Emissions reduction goals of the current CARB staff proposal must be met
- All parties to a successful at-berth connection must have substantive roles to play in the new regulatory framework for the currently Regulated Vessel Fleets: vessels, marine terminal operators, ports, and equipment providers.
- If a "check-list" approach is applied to currently Regulated Vessel Fleets, non-compliance must have consequences.
- Vessel Fleet rules should not include complicated credit or trading schemes.

Alternative Proposal – Substantive 2020 Effective Amendments
*All provisions **E**ffective Immediately upon Adoption at December 2019 CARB Board Meeting*

FOR CURRENTLY REGULATED VESSEL FLEETS AND ASSOCIATED TERMINALS and PORTS:

- CONNECTING EQUIPPED VESSELS – When a Shorepower-Equipped Berth is available and able to safely Connect a Shorepower-Equipped Vessel, the connection must be made.
  No time-based rules (including 3&5-hour rule). Commissioning is presumed to be a Connection. Use updated definitions for vessel connected, plugged, and able to work.

- PORTS and MARINE TERMINALS ARE REQUIRED TO PLAN & REPORT – all Ports and Marine Terminal Operators must comply with recordkeeping, reporting rules and submit Terminal Plans with subsequent updates beginning in 2021 for currently regulated fleets. Updates must include description and timeline of all infrastructure installations planned at specific-berths.

Accelerated Transition to New Requirements & Improve Compliance Over Current Rule

- Enforce Vessel Fleet Compliance against Vessel Compliance Checklist (to be developed)
  Vessel Fleet Compliance would be determined on an Annual Fleet-Average Basis by Port
  2020 – 80% compliance w/ checklist
  2031*– 85% compliance w/ checklist *(dependent on feasibility and rulemaking)
  Vessel Fleet Compliance reporting would occur on an Annual Basis
  Update and improve current reporting requirements and avoid usage of old technology or applications (i.e. approve uses of automated technologies).

- Enforce Marine Terminal compliance against Terminal Compliance Checklist (to be developed)
  Marine Terminal Compliance would be determined on an Annual Berth-Average Basis
  2022 – 80% compliance w/ checklist
  2031* – 90% compliance w/ checklist *(dependent on feasibility and rulemaking)
  Marine Terminal Compliance reporting would occur on an Annual Basis
  Marine Terminal 30-day Reports for non-connection, equipment, & electrical issues

- At-Berth Infrastructure Incentive Funding Applications by Ports remain eligible for GGRF/VW Incentives independent of Vessel or Terminal Checklist compliance status

- Conform and maintain existing exemptions and exceptions plus add new and clarifying exceptions for Vessel and Marine Terminal safety and force majeure situations

- Maintain existing regulatory thresholds for minimum number of calls for Regulated Fleets on a port by port basis (including treating LA/LB as one port for Fleet thresholds)

FOR ALL CURRENTLY UNREGULATED VESSEL FLEETS AND ASSOCIATED MARINE TERMINALS and PORTS:

- BULK CARGO, RO-RO & TANKER VESSEL FLEETS ARE REQUIRED TO REPORT – all vessels must report General Visit Information Annually beginning in 2021

- PORTS and MARINE TERMINALS ARE REQUIRED TO PLAN & REPORT – all Ports and Marine Terminal Operators serving currently unregulated fleets must comply with recordkeeping, reporting rules and submit Terminal Plans with subsequent updates beginning in 2024

FOR OPERATORS OF ALTERNATIVE EMISSIONS CONTROL STRATEGIES:

- Certification must demonstrate cost-effectiveness and Emissions Control greater than Vessel Fleet Average Basis standard

Alternative Proposal - Procedural Provisions to Guide Consideration of Post-2020 Amendments
Guidelines for Process to Run Concurrently with and Subsequent to Adoption of 2020 Rule Amendments

APPLICABLE TO ALL AT BERTH RULE EXPANSION AMENDMENTS FOR THE CURRENTLY REGULATED FLEET AND CURRENTLY UNREGULATED FLEET

- Conduct a feasibility study to identify cost effective emission control programs for all vessel categories based on reasonable implementation deadlines, safety concerns, and technological feasibility. This feasibility study should be conducted in cooperation with all industry stakeholders, be based on data which is made publicly available during study development, and include a detailed evaluation of all of the following:

    (i) the status and timing of rule implementation in light of port/terminal infrastructure planning and any future infrastructure development potentially necessary to provide at-berth emissions controls, with future infrastructure designation to include rigorous cost estimates of any necessary electrical infrastructure modifications or alternatives,
    (ii) the existing shore-side electrical infrastructure, including electrical sub-station and off-terminal electric utility infrastructure, and present availability of alternatives,
    (iii) the feasibility of alternative at-berth emission control technologies to capture emissions from ships that cannot plug in to shore power, including vessel types that can't use the alternatives in each vessel category and for different engine sizes, and including currently unregulated vessel fleets,
    (iv) the number and types of alternative control technologies that would be needed at each California port,
    (v) navigation, safety and harbor logistical considerations, especially for barge systems,
    (vi) cost effectiveness of various rule expansion scenarios and alternative programs based on a detailed estimate of the additional emission reductions to be gained with possible expansion of the rule, including an assessment of additional costs on a cost per ton of emissions reduced basis under all possible additional infrastructure scenarios,
    (vii) determine how the marginal cost of various potential port emission control programs compare to other potential efforts to reduce emissions from other sources at ports which could be more cost-effective investments for control programs.
    (viii) opportunity costs as at-berth regulations impose substantial infrastructure obligations on the industry, funds may need to be diverted from other important air quality programs, including zero- and/or near-zero emissions vehicles and equipment, to ensure compliance as soon as possible.

- Evaluate emission control programs for all key source categories that operate in and around ports in order to prioritize incentive funding from GGRF/VW and other sources of incentive funds and maximize total emission reduction per dollar, with the most long-term residual emissions benefits, and facilitating highest cost-effectiveness. For programs that operate throughout California, evaluate ports within regional context (versus other regional potential sources of prioritized health risk or criteria pollutant evaluation) instead of by comparing ports against each other.

SUBSEQUENT ACTION FOR CURRENTLY REGULATED VESSEL FLEETS, MARINE TERMINALS, and PORTS:

For Implementation After Current Rulemaking (2021 and beyond):

- Establish regular feasibility "check-in" steps as part of the rule, 2022, 2025, 2028, 2031, to assess whether the proposed implementation deadlines remain viable or can be accelerated through additional amendments to the rule.

- Any acceleration would require providing vessels with at least 18 months' notice in advance of a future rule effective date.

CONCURRENT AND SUBSEQUENT ACTIONS FOR CURRENTLY UNREGULATED VESSEL FLEETS, MARINE TERMINALS, and PORTS:

During Rulemaking (2019-2020):

- Immediately disclose the Bulk Vessel cost-effectiveness calculations which led to their exclusion from emissions reductions.

- Compare Bulk Vessel cost-effectiveness with other vessel cost-effectiveness calculations for Tankers and Ro-Ro's.

- Contrast DPM reductions from the Ro-Ro and Tanker fleets with other sources of emissions at and near Ports and Terminals.

- Conduct actual emissions profiles for all bulk, ro-ro, and tanker terminals, individually by actual operating Port facilities, not "Port Complex" entities.

- Evaluate all bulk, ro-ro, and tanker terminals, individually for shore-based alternative emissions controls, and water-based alternative emissions controls.

After Rulemaking (2021 and beyond):

- Establish program staff calendar and deliverable to the Board for future discussion of whether or not these vessel fleets are good subjects for statewide rulemaking or if their emissions are best off-set through incentives, MOUs, or alternative emission reduction strategies. Discussion required in context of SIP, AB 617, and Scoping Plans.

- Establish 2025, 2028 and 2031 as target dates for full reviews of Bulk, Ro-Ro, and Tanker Reporting Data and Terminal infrastructure plans and application of new evaluation of Cost-Effectiveness Data and Emissions.

PRIORITIZATION OF AWARDING PORT (AT BERTH OR ALTERNATIVE) INCENTIVES AND USE OF NON-COMPLIANCE FEES:

During Current Rulemaking and After Rulemaking (2019 and beyond)

- Prioritize Port projects and emissions reductions alternatives for receipt of GHG Reduction Fund and VW Settlement Fund proceeds

- Take a multi-pronged approach towards incentives for new At-Berth or alternative emissions reductions programs at Ports which is reflective of need for multiple strategies and approaches, and which acknowledges need for demonstrations to help establish cost-effectiveness and feasibility goals

- Utilize non-compliance fee revenues to build pooled funding which can be reinvested into shorepower infrastructure or other port-related air quality programs in accordance with prioritization based on cost-effectiveness

Attachment A

Data References

2007 ISOR, pg. 6-7:

3. EMISSIONS INVENTORY

Hotelling emissions are associated with the use of diesel-fueled auxiliary engines on ocean-going ships to power the vessels' electrical systems while the ships are docked. These emissions are a function of how often the ship visits a California port, how long the ship is at berth, the emissions rate of the engines, and the typical operating load of the auxiliary engines while the ship is at berth.

ARB staff estimates that in 2006, the statewide hotelling emissions from approximately 2000 ocean-going vessels was 1.8 tons per day (TPD) of diesel PM emissions, and 21.1 TPD of NOx emissions. Table I presents hotelling emissions for the six major categories of ocean-going vessels that visit California ports—container ships, passenger ships, reefer ships, vessel carriers, bulk ships, and tankers. As can be seen in this table, hotelling emissions from the three affected ship categories, container ships, passenger ships, and reefer ships, represent over 80 percent of total statewide hotelling emissions.

Table 1: Estimated 2006 Hotelling Emissions by Ship Category

Ship Category	2006 Emissions, Tons/Day	
	NOx	PM
Container	13.8	1.1
Passenger	2.8	0.2
Reefers	0.9	0.1
Tanker	2.0	0.2
Bulk/General	1.0	0.1
Vehicle Carriers	0.6	0.1
Totals	21.1	1.8

Table 2: Estimated 2006 Hotelling Emissions by Port (Tons per Day)

Port	NOx	PM
Los Angeles/Long Beach	14.3	1.2
Oakland	2.6	0.2
San Diego	1.1	0.1
Hueneme	0.7	0.1
San Francisco	0.5	0.1
Other Ports	1.2	0.2
Total	21.1	1.8

As can be seen in this table, most of the shipping activities and hotelling emissions occur at the largest ports in California: Los Angeles and Long Beach followed by Oakland. The six ports affected by the proposed regulation account for over 90 percent of total hotelling emissions at California ports.

Staff developed growth factors for each ship category to project future hotelling emissions. In general, the growth in vessel hotelling emissions is directly proportional to the growth in vessel visits, ship size, berthing times, and, in the case of container ships, the number of refrigerated containers aboard.

Hotelling emissions from ocean-going ships are predicted to increase from 2006. Container ship and passenger ship emissions are expected to double by 2020. Reefer ship emissions are expected to decline at the Ports of Long Beach and Los Angeles, slightly increase at the Port of Hueneme, and triple at the Port of San Diego by 2020.

Table 3 presents projected 2014 and 2020 emission estimates for container ships, passenger ships, and reefer ships. In December 2005, the Board adopted an auxiliary engine fuel regulation that would limit the sulfur content of fuel used with auxiliary engines starting in 2007. At the time this staff report was published, the regulation had been challenged in federal district court and is undergoing appeal at the Ninth Circuit Court of Appeals. The future emission projections were based on the assumption that the auxiliary engine regulation would ultimately be upheld and the auxiliary engines would be operating on low-sulfur fuel.

2007 ISOR, Appendix B, pg. B-19:

III. EMISSION ESTIMATES

Using the revised methodology we can estimate emissions associated with container, cruise, and reefer vessels operating at ports subject to the proposed Shore Power Regulation. Table III-1 provides auxiliary engine hotelling emissions estimates by vessel type; we estimate covered emissions sources emit about 17 tons/day NOx and 1.5 tons/day PM in 2006. Assuming existing controls (without the benefit of the proposed regulation) we estimate NOx emissions will grow in 2020 to approximately 37 tons/day, and in 2020 PM emissions will grow to approximately 0.6 tons/day. As the data suggest, ARB's auxiliary engine regulation that was adopted in 2005 will generate significant reductions in future years.

Table III-1 Auxiliary Engine Hotelling Emissions by Vessel Type without Shore Power Regulation

Emissions - 2006 (tons/day)				
Vessel Type	**NO_x**	**PM_{10}**	**ROG**	**SO_x**
Container	13.8	1.12	0.32	8.1
Cruise	2.5	0.24	0.06	1.7
Reefer	0.9	0.07	0.02	0.5
Total	**17.1**	**1.43**	**0.40**	**10.33**
Emissions - 2014 (tons/day)				
Vessel Type	**NO_x**	**PM_{10}**	**ROG**	**SO_x**
Container	21.5	0.38	0.52	0.57
Cruise	3.6	0.07	0.09	0.09
Reefer	1.0	0.02	0.03	0.03
Total	**26.1**	**0.47**	**0.63**	**0.69**
Emissions - 2020 (tons/day)				
Vessel Type	**NO_x**	**PM_{10}**	**ROG**	**SO_x**
Container	30.8	0.55	0.75	0.82
Cruise	5.2	0.09	0.12	0.13
Reefer	1.3	0.02	0.03	0.04
Total	**37.3**	**0.66**	**0.91**	**0.99**

2007 ISOR, pg. 15:

Figure 1: Projected Diesel PM Emissions with and without the Proposed Regulation

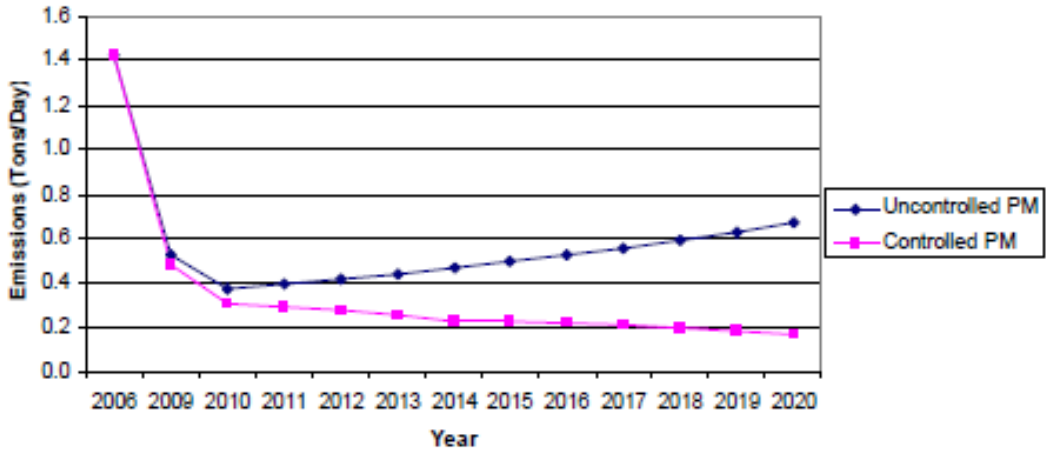
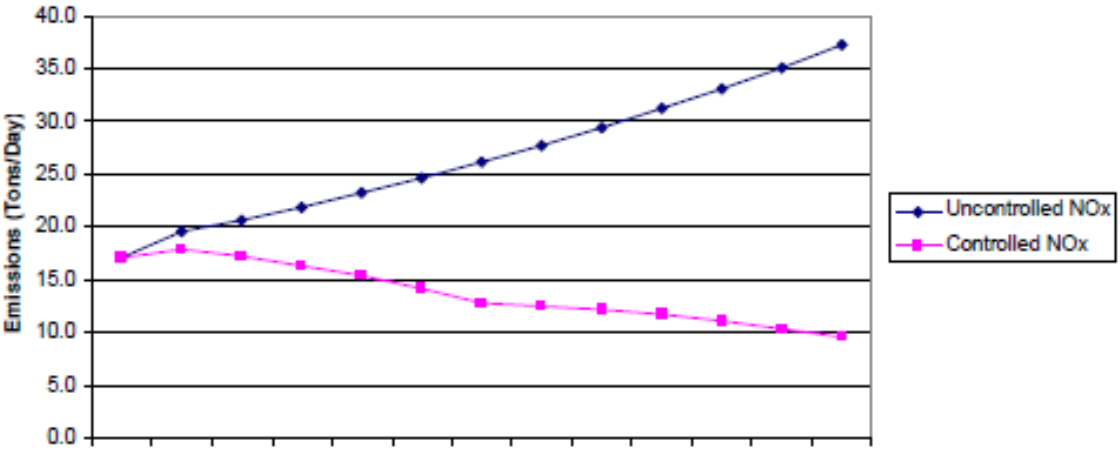


Figure 2: Projected NOx Emissions with and without the Proposed Regulation



CARB, ""CARB Draft At Berth Emissions Estimates (from Aux Engines and Boilers) under Existing Regulation and Draft Regulatory Concept (11/8/2018)" ("2018 Emissions Estimates")

2018 Emissions Estimates, DPM Inventory A:1-AE:23

2016 At-Berth Existing Rule Diesel PM (DPM) Emissions (Tons/Year)
Auxiliary Engine Emissions DPM (Tons/Year)

Air Basin	San Francisco Bay Area Air Basin						South Coast Air Basin		South Central Coast Air Basin	Sacramento Valley Air Basin	San Diego Air Basin	San Joaquin County Air Basin	North Coast Air Basin	
Ships	Carquinez MTC	Rodeo MTC	Oakland	Redwood City	Richmond MTC	San Francisco	Long Beach	Los Angeles	Hueneme	Sacramento	San Diego	Stockton MTC	Eureka	Total (TPY)
Container/Reefer	0.0	0.0	4.9	0.0	0.0	0.1	5.7	7.0	0.7	0.0	0.1	0.0	0.0	18.5
Tanker	2.7	1.1	0.0	0.0	3.6	0.1	4.1	1.8	0.1	0.0	0.5	0.5	0.0	14.5
Cruise	0.0	0.0	0.0	0.0	0.0	1.9	1.8	0.8	0.0	0.0	0.8	0.0	0.0	5.2
Roro	0.6	0.0	0.0	0.0	0.5	0.0	0.7	0.6	0.9	0.0	1.5	0.0	0.0	5.0
Bulk/General	0.3	0.0	0.1	0.1	0.2	0.0	0.6	0.7	0.1	0.4	0.1	1.0	0.0	3.7
Total	3.6	1.1	5.0	0.1	4.3	2.1	12.9	10.9	1.8	0.4	3.0	1.5	0.0	46.8

2021 At-Berth Existing Rule DPM Emissions (Tons/Year)
Auxiliary Engine Emissions DPM (Tons/Year)

Air Basin	San Francisco Bay Area Air Basin						South Coast Air Basin		South Central Coast Air Basin	Sacramento Valley Air Basin	San Diego Air Basin	San Joaquin County Air Basin	North Coast Air Basin	
Ships	Carquinez MTC	Rodeo MTC	Oakland	Redwood City	Richmond MTC	San Francisco	Long Beach	Los Angeles	Hueneme	Sacramento	San Diego	Stockton MTC	Eureka	Total (TPY)
Container/Reefer	0.0	0.0	4.0	0.0	0.0	0.2	5.9	6.1	0.2	0.0	0.1	0.0	0.0	16.5
Tanker	2.6	1.1	0.0	0.0	3.5	0.1	4.4	2.0	0.1	0.0	0.6	0.5	0.0	14.9
Cruise	0.0	0.0	0.0	0.0	0.0	2.0	1.6	0.7	0.0	0.0	0.9	0.0	0.0	5.2
Roro	0.7	0.0	0.1	0.0	0.6	0.0	0.9	0.8	1.0	0.0	1.7	0.0	0.0	5.9
Bulk/General	0.4	0.0	0.1	0.1	0.2	0.0	0.8	0.9	0.1	0.5	0.2	1.2	0.0	4.3
Total	3.7	1.1	4.1	0.1	4.3	2.3	13.7	10.5	1.4	0.5	3.5	1.7	0.0	46.9

2021 At-Berth Draft Regulatory Concepts DPM Emissions (Tons/Year)
Auxiliary Engine Emissions DPM (Tons/Year)

Air Basin	San Francisco Bay Area Air Basin						South Coast Air Basin		South Central Coast Air Basin	Sacramento Valley Air Basin	San Diego Air Basin	San Joaquin County Air Basin	North Coast Air Basin	
Ships	Carquinez MTC	Rodeo MTC	Oakland	Redwood City	Richmond MTC	San Francisco	Long Beach	Los Angeles	Hueneme	Sacramento	San Diego	Stockton MTC	Eureka	Total (TPY)
Container/R	0.0	0.0	1.6	0.0	0.0	0.2	1.7	2.1	0.1	0.0	0.0	0.0	0.0	5.6
Tanker	2.6	1.1	0.0	0.0	3.5	0.1	4.4	2.0	0.1	0.0	0.6	0.5	0.0	14.9
Cruise	0.0	0.0	0.0	0.0	0.0	0.6	0.8	0.4	0.0	0.0	0.3	0.0	0.0	2.1
Roro	0.7	0.0	0.1	0.0	0.6	0.0	0.9	0.8	1.0	0.0	1.7	0.0	0.0	5.9
Bulk/Genera	0.4	0.0	0.1	0.1	0.2	0.0	0.8	0.9	0.1	0.5	0.2	1.2	0.0	4.3
Total	3.7	1.1	1.8	0.1	4.3	0.9	8.6	6.2	1.3	0.5	2.8	1.7	0.0	32.9

Attachment B

Policy & Procedural Context for Alternative Proposal

In addition to the existing Regulations, CARB is operating under or has adopted multiple policy positions with respect to the consideration of updates to the scope, breadth, and applicability of the At-Berth Rules. These include all of the following*:*

Executive Order B-32-15, Sustainable Freight Action Plan, Action G-3 (pg. C-53)(adopted 2016):

3. At-Berth Regulation Amendments
Overview: The goal of this proposed measure is to further reduce emissions from ships. ARB staff would develop and propose amendments to the current At-Berth Regulation and look for additional reductions from additional vessel fleets or types.
…
Proposed Actions: ARB would evaluate how the current At-Berth Regulation can be amended to achieve further emissions reductions by including smaller fleets and/or additional vessel types (including roll-on/roll-off vehicle carriers, bulk cargo carriers, and tankers). In addition, there are two companies with portable emissions capture and control systems that have successfully demonstrated performance and may now be used for compliance with the current Regulation on certain container vessels. If one or both systems prove to be feasible and cost-effective on additional vessel types, the technology could help support an ARB staff proposal to expand the scope of the Regulation to include additional vessel types and/or smaller fleets. ARB staff anticipate bringing this measure to the Board in 2017.

Estimated Cost: ARB will estimate costs from this action during the measure development process for the Proposed 2016 State Strategy for the State Implementation Plan. See http://www.arb.ca.gov/planning/sip/sip.htm.

Benefits: This action is anticipated to provide criteria pollutant and greenhouse gas emissions reduction benefits. ARB will quantify emissions reductions from this action during the measure development process for the Mobile Source Strategy and Proposed 2016 State Strategy for the State Implementation Plan. See http://www.arb.ca.gov/planning/sip/2016sip/2016mobsrc.htm and http://www.arb.ca.gov/planning/sip/sip.htm.

2016 State Implementation Plan (Resolution 17-7, Attachment A, "Proposed New SIP Measures and Schedule"), Mobile Source Strategy (pg. 84), (adopted 2017)

Measure Title: At-Berth Regulation Amendments
Measure Overview: The goal of this measure concept is to further reduce emissions from ships at berth and to advance the commercialization of near-zero and zero emission technologies. ARB staff would develop and propose amendments to the current At-Berth Regulation to include other vessel fleets and types.
…
Description of Measure and Commitment: In December 2007, ARB approved the Airborne Toxic Control Measure for Auxiliary Diesel Engines Operated on Ocean-Going Vessels At-Berth in a California Port Regulation (Regulation). The Regulation was designed to reduce emissions from diesel auxiliary engines on container ships, passenger ships, and refrigerated cargo ships while at berth at California's major seaports. The Regulation is also limited to fleets of 25 or more vessels (five or more for passenger ships).

ARB would investigate whether the Regulation can be amended to include smaller fleets and/or additional vessel types (including roll-on/roll-off vehicle carriers, bulk cargo carriers, and tankers). In addition, there are two companies working on portable systems. One company has successfully demonstrated that its system can provide durable performance and may now be used for compliance with the Regulation on specified vessel types. If one or

both systems become commercially available and are cost-effective, the technology could help support an ARB staff proposal to expand the scope of the Regulation to include additional vessel types and/or smaller fleets. ARB staff needs to investigate the feasibility and cost-effectiveness of expanding shore-power or alternative At-Berth technologies to additional vessel fleets and types not currently covered by the existing Regulation.

Climate Change Scoping Plan Update (pp. 73-74, 78-80, Appendix H) (adopted 2017)

Transportation Sustainability

California's population is projected to grow to 50 million people by 2050. How and where the State grows will have important implications for all sectors of the economy, especially the transportation sector. …

Transportation also enables the movement of freight such as food, building materials, and other consumable products, as well as waste and recyclables. The California freight system includes myriad equipment and facilities, and is the most extensive, complex, and interconnected system in the country, with approximately 1.5 billion tons of freight valued at $2.8 trillion shipped in 2015 to, through, and within California. Freight dependent industries accounted for over $740 billion of California's GDP and over 5 million California jobs in 2014.

…

Efforts to Reduce Greenhouse Gases

The measures below include some required and new potential measures to help achieve the State's 2030 target and to support the high-level objectives for the transportation sector. Some measures may be designed to directly address GHG reductions, while others may result in GHG reductions as a co-benefit. …

Ongoing and Proposed Measures – Sustainable Freight

• Implement the California Sustainable Freight Action Plan:

• 25 percent improvement of freight system efficiency by 2030.

• Deployment of over 100,000 freight vehicles and equipment capable of zero emission operation, and maximize near-zero emission freight vehicles and equipment powered by renewable energy by 2030.

…

[Table H3-2. Vehicle Technology and Fuel Description]

2016 Mobile Source Strategy

The Mobile Source Strategy identifies actions to be undertaken to simultaneously meet air quality standards, achieve GHG emission reduction targets, decrease toxics health risk, and reduce petroleum consumption from transportation emissions by 2031. More information on the Mobile Source Strategy can be found at: https://www.arb.ca.gov/planning/sip/2016sip/2016mobsrc.htm

The California Sustainable Freight Action Plan

The California Sustainable Freight Action Plan (Action Plan) is a multi-State agency effort to improve freight system efficiency by 25 percent by 2030, and to deploy over 100,000 freight vehicles and equipment capable of zero emission operation, and maximize near-zero emission freight vehicles and equipment powered by renewable energy by 2030.

The Action Plan Includes recommendations on: • A long-term 2050 Vision and Guiding Principles for California's future freight transport system. • Targets for 2030 to guide the State toward meeting the Vision. • Opportunities to leverage State freight transport system investments. • Actions to initiate over the next five years to make progress towards the Targets and the Vision. • Pilot projects to achieve on-the-ground progress in the near-term. • Additional concepts for further exploration and development, if viable. More information on can be found at: http://www.dot.ca.gov/casustainablefreight/

AB 617 Community Air Protection Blueprint, Appendix D (pp. D-3-4, D-6, D-8-10) (adopted 2018)

II. STATEWIDE EMISSION REDUCTION STRATEGIES

Identifying specific strategies for reducing criteria air pollutants and toxic air contaminants in communities with high cumulative exposure burdens is critical for implementing strong statewide actions to ensure new emissions reductions. The strategies outlined in this section reflect actions that CARB and air districts are already taking to deliver new reductions in communities. This includes new strategies from existing air quality and climate plans, early action incentive funding appropriated by the Legislature, and additional community-focused actions (e.g., new regulatory measures, targeted enforcement activities, other new tools and resources).

FOUNDATIONAL STRATEGIES IN CARB AIR QUALITY AND CLIMATE PLANS
CARB's Governing Board has adopted several comprehensive air quality and climate plans in recent years, including the State Strategy for the State Implementation Plan, the California Sustainable Freight Action Plan, California's 2017 Climate Change Scoping Plan, and the Short-Lived Climate Pollutants Reduction Strategy. Each of these plans includes a suite of emissions reduction strategies that will address many of the sources that are concentrated within heavily impacted communities like cars, trucks, freight sources, and other equipment. Together they provide a foundation for additional emissions reductions needed to deliver healthful air in communities with high cumulative exposure burdens.

Table D-1, Table D-2, and Table D-3 provide lists of new CARB strategies associated with these plans. CARB staff have already begun developing regulations, policies, and incentive programs to implement these strategies. This is an ongoing process that will begin achieving emissions reductions in the near-term and providing benefits that support community-level actions, with a focus on zero emission technologies where the technologies are now feasible. New regulations cover the following range of sources:

- For communities heavily impacted by freight sources –

o Expanded standards for clean operation for ships while they are in port.

…

[Table D-1 "State Strategy for the State Implementation Plan Measures and Schedule (*Approved 2017*)"]
At-Berth Regulation Amendments

…

[Table D-2 Summary of California's 2017 Climate Change Scoping Plan Update Measures (*Approved 2017*)]
Mobile Source Strategy (Cleaner Technology and Fuels [CTF] Scenario)* …
California Sustainable Freight Action Plan* …
*These measures and policies are referred to as "known commitments."

Addendum to the adoption of Resolution 17-7

Furthermore, in addition to the existing Regulations and multiple policy positions regarding potential At-Berth Rule amendments, there was additional procedural, non-policy direction given to the staff by the Board in an Addendum to the adoption of Resolution 17-7, which was the motion to approve the state SIP in March 2017.

This additional direction in the Addendum was that "within 18 months of this date, ARB staff shall develop At-Berth regulation amendments that achieve up to 100% compliance by 2030 for LA Ports and Ports that are in or adjacent to areas in the top 10% of those defined as most impacted by CES."

This is not an adoption of a policy or amendment of a plan, including the SIP, but just a direction to staff to develop and work on the preparation of a proposal for the Board for future consideration. The Alternative Proposal is consistent with this direction and seeks to work with staff to place a set of amendments before the Board which will be an increase in compliance beyond 80%.

Port of Los Angeles and Port of Long Beach Comments on Proposed Draft Regulatory Language, “Control Measure for Ocean-Going Vessels Operating At Berth and At Anchor”, February 6, 2019

SAN PEDRO BAY PORTS

CLEAN AIR ACTION PLAN

February 6, 2019

Bonnie Soriano
Chief, Freight Activity Branch
California Air Resources Board
1001 "I" Street
Sacramento, CA 95814

SUBJECT: PORT OF LOS ANGELES AND PORT OF LONG BEACH COMMENTS ON PROPOSED DRAFT REGULATORY LANGUAGE, "CONTROL MEASURE FOR OCEAN-GOING VESSELS OPERATING AT BERTH AND AT ANCHOR"

Dear Ms. Soriano:

The Port of Long Beach and Port of Los Angeles (Ports) appreciate this opportunity to provide comments on the California Air Resources Board (CARB) proposed draft regulatory language, "Control Measure for Ocean-Going Vessels Operating At Berth and At Anchor."

We value the partnership we have built with CARB and credit this positive relationship in large part to helping us achieve very significant emissions reductions at the Ports and throughout the freight industry over the last decade. Likewise, we appreciate CARB's willingness to continue to work with us to find solutions for overcoming the various challenges to meet our common emissions goals.

As described in the 2017 Clean Air Action Plan (CAAP) Update, the Ports' support increased efforts to capture at-berth emissions from ships and to obtain more emissions reductions from non-regulated vessels, and we are committed to working with CARB to achieve these goals.

The purpose of this comment letter is to assist CARB in the development of a feasible at-berth regulation that maximizes public health benefits, and also to communicate the challenges associated with implementing the draft regulatory language as currently proposed.

Port of LONG BEACH
The Green Port
Port of Long Beach | Environmental Planning
4801 Airport Plaza Drive | Long Beach, CA 90815
562.283.7100

THE PORT OF LOS ANGELES
Port of Los Angeles | Environmental Management
425 S. Palos Verdes Street | San Pedro, CA 90731
310.732.3675

The following summarizes comments of the Ports regarding proposed components of the draft regulation:

- **A Requirement to Control 100% of Visits Is Not Realistic** – Requiring 100% of vessel visits to use at-berth controls will require redundant systems to ensure coverage at all times, leading to skyrocketing costs for Ports, terminal operators, and ship owners with little additional emissions benefit. We urge reconsideration of such an absolute goal, even in light of your proposed use of exceptions, including terminal safety and emergency events, equipment failure, and physical and spatial constraints.

- **The Proposed Implementation Timelines Are Too Aggressive** – Of particular concern to the Ports, and our respective engineering staffs, is the implementation timeline for the proposed at-berth regulation. Expansion of shore power infrastructure, either through additional shore power outlets (SPOs) or via cable reel management systems, to meet the updated regulation requirement of 100% compliance for container, refrigerated cargo (reefer vessels) and cruise ships by 2021 will be a near impossible task for the Ports or the terminal operators to achieve due to the requisite planning and construction process for capital construction projects. The Port of Long Beach has estimated both the cost and timeline required to maximize compliance with the proposed draft regulation in the attached document, "Potential Strategies and Costs to Address the At-Berth Regulation" (Attachment A). The potential completion date for infrastructure required at the Port of Long Beach to accommodate the proposed regulations for container terminals is December 2025 at the earliest, depending on the extent of infrastructure required. Port of Los Angeles Engineering staff estimates the timelines and costs would be similar.

  Further, given the lack of proven and available shore power or alternative options for at-berth controls that can be utilized by Tankers and Auto/Ro-Ros, it is highly unlikely that technically feasible, cost-effective technologies will be available for implementation by 2025. Additional time is needed to allow for the necessary capital improvements and/or technology advancements that will be required.

  The Ports also believe that adequate time should be built into the schedule for submittal of terminal operator and Port plans, well in advance of the compliance deadline, in order to provide ample opportunity to adjust their plan given CARB feedback. It would also be helpful to see more details on what the required elements of such plans would be in the regulation.

- **A Technology Feasibility Assessment Process Is Needed** – As you know, the CAAP relies on a process for preparing regular feasibility assessments to assess the state of technology development and its readiness to be deployed in the marketplace to support efforts to achieve air quality benefits consistent with our CAAP goals. Given the reliance of the proposed regulatory amendment on emerging technologies, we believe a similar process would be appropriate and helpful for understanding the state of the technologies that would be needed to meet the requirements of the proposed regulatory language. This feasibility assessment should include an evaluation of:

  (i) The state of technology for both shore power and alternative emission control devices and deployment readiness;
  (ii) the requisite timeline for design, build, testing, and deployment of shore power and alternative control technologies for each California port and identification of any associated constraints such as wharf space;
  (iii) safety and navigation of harbor waters space due to applications of new technologies for unregulated vessel types;
  (iv) number and types of alternative control technologies, which would be needed at each California port;
  (iv) and the availability of incentives to encourage early demonstration of such technologies.

  Attachment A provides very useful information about the many technical challenges associated with the compliance options available today. These include immaturity of shore power for the non-container fleet, the safety concerns associated with using shore power and alternative emission control technologies to control emissions from tankers, and the navigability, space, and wharf integrity challenges associated with alternative emission control technologies. It is our finding that alternative compliance options may increase greenhouse gases, and cable reel management systems, which are needed for instances where ships do not line up with their requisite shore power outlet, are not in the shore power standard today (IEC/IEEE-80005), posing safety risks to ships and terminal equipment.

  In order to accelerate the development and deployment of shore power and alternative control options, including infrastructure, for non-container terminals and vessels, the Ports would like to see CARB prioritize funding in their investment plan, as they did for the currently regulated fleet through Proposition 1B in 2006. This funding would assist with economic feasibility and ensure this regulation is not an unfunded state mandate.

- **A Cost Effectiveness Assessment Is Needed** – An increase in at-berth control levels for currently regulated fleets and the addition of at-berth control requirements for other vessel categories will result in considerable costs to ports, terminals, and shipping lines. The Ports of Long Beach and Los Angeles have already spent more than $400M in infrastructure to meet the current shore power rule. Both Ports estimate that it would take at least another $100M per port to bring their container terminal infrastructure to a level to meet the 100% requirement proposed by the at-berth rule. Additional costs, which have not yet been defined, will be associated with implementing at-berth controls for Tankers and Auto/Ro-Ros. In addition, millions more dollars would be needed to outfit unregulated ships for shore power.

  While we fully support the goal of increased control of ocean-going ship emissions, we recommend a study be undertaken to determine how the marginal cost of bringing container ship emission controls from 80% to 100% under the proposed rule compares with other potential efforts to reduce emissions from ocean-going ships, including transiting or maneuvering movements. We also wonder whether emissions reductions from other sources at ports could be identified as more cost-effective investments for control programs, such as incentive programs to retrofit or replace harbor craft engines as an example. Further, we encourage a discussion among stakeholders to determine the sequencing of emission control programs for all of the key source categories that operate in and around ports, in order to identify where money should be spent first to move forward with cleaning the air regionally and throughout California.

- **Compliance Comes First** - The proposed At-Berth Regulatory language imposes a substantial infrastructure obligation on the Ports and their tenants. As a result, should the regulation be adopted as is, the Ports and their tenants will need to align their priorities and resources to ensure compliance with the regulation is achieved. As a result, the Ports may need to divert funds from other CAAP commitments, including zero-emissions terminal equipment and near-zero and zero-emissions trucks. We urge a discussion among key stakeholders to consider the trade-offs of investing in one program versus another, based on overall local, regional and state air quality needs.

- **The Best Practices Checklist Is a Concept Worth Pursuing** – The Ports acknowledge that a major goal of this rule-making is to assign roles and responsibilities so that CARB may apportion compliance enforcement if multiple parties are at fault when a vessel fails to connect to shore power. Previously, CARB had suggested development of a "best

practices checklist" which the vessel owner, the terminal operator, and the Ports would follow to maximize compliance. The Ports support exploration of this concept.

The Ports thank CARB staff for the consideration of our comments. The Ports agree that more can be done to increase at-berth emission reductions over the next decade in parallel to our efforts to advance zero-emissions terminal equipment and trucks; it is a matter of finding the balance among all of these CAAP commitments by establishing realistic timeframes and implementation objectives with approved and verified technologies.

We look forward to meeting with the CARB in the future to further discuss the proposed amendments to the At-Berth Regulation. Please feel free to contact us with any questions or concerns regarding this letter.

Sincerely,

CHRISTOPHER CANNON
Director of Environmental Management

Port of Los Angeles

HEATHER TOMLEY
Acting Managing Director of Environmental Affairs and Planning
Port of Long Beach

CC: CARB – Cynthia Marvin (Cynthia.Marvin@arb.ca.gov)
Angela Csondes (Angela.Csondes@arb.ca.gov)
Nicole Light (Nicole.Light@arb.ca.gov)
Kaylin Huang (Kaylin.Huang@arb.ca.gov)

Potential Strategies and Costs to Address the At-Berth Regulation

Background

In August 2018 the California Air Resources Board (CARB) released draft regulatory concepts and the associated preliminary cost analysis for the Control Measure for Ocean Going Vessels At Berth and At Anchor Regulation (At-Berth Regulation). If adopted, CARB would require control of emissions from container and refrigerated cargo vessels for 100% of visits to the Port of Long Beach beginning in 2021. Roll-on roll-off (RoRo) vessels will need to reduce auxiliary engine emissions for 100% of visits beginning January 1, 2025. Tanker vessels must control auxiliary engine emissions through an interim CARB approved technology beginning January 1, 2025. All vessel visits for tankers must control auxiliary engine emissions through a CARB approved emission control beginning January 1, 2031. In addition to the auxiliary engine reduction requirements for all tankers, tanker vessels with steam driven product pumps are required to reduce their tanker auxiliary boiler emissions.

About This Assessment

In response to the proposed regulatory amendments, the Port of Long Beach (Port) has conducted a preliminary analysis of the infrastructure needed at each container terminal, the assumptions and caveats related to each method proposed to maximize compliance, the time required to design and install the necessary infrastructure, and the costs for each solution. The Port also estimated the hours of control required and operational costs for both container and non-container vessels visits to meet the proposed regulatory language requirements should alternative compliance strategies such as barge and land-based emission control technologies be utilized. This document outlines the Port's findings, which includes content from a third party analysis and in-house expertise.

Assumptions

In assessing the potential options for complying with the proposed regulation, the Port made several assumptions. First, the Port assumed that ships would meet the following requirements:

- All ships calling the Port will have shore power equipment available on both sides of the vessel.
- All shipside shore power equipment meets the IEC/IEEE 80005-01 standard, including "sufficient cable length to reach the shore side supply point (considering the tide loading conditions, etc.) plus 10 meters."
- Vessels calling the Port are equipped with 60 Hertz (Hz) operation.[1]

Ships not meeting these requirements may not be able to plug into shore power; however, this is outside of the Port's control.

Additionally, the Port assumed that all potential strategies must comply with the IEC/IEEE 80005-01 shore power standard and the National Electrical Code at least by the time the

[1] To provide infrastructure for 50 Hz ships would require complete duplication of the 60 Hz shore power infrastructure, including installation of transformers, substations, and SPOs. This solution is cost and operationally prohibitive. It is estimated only 1-2% of vessels which call the Port are equipped with 50 Hz operation.

regulation takes effect, that is, by January 1, 2020. Only strategies that have been proven and certified by these standards agencies have been deemed fit for deployment.

Potential Shore Power Compliance Strategies for Container Vessels

The Port evaluated three potential strategies for maximizing shore power usage.

- Installation of additional shore power outlets (SPOs)
- Cable-reel management system – currently under development and assumed to be approved and certified by 2021
- A combination of the above

Although other potential strategies exist, including cable chains with SPOs mounted on the face of the wharf and moveable transformers, these technologies are unproven and cost prohibitive.

Shore Power Outlet (SPOs) Installations

Installing additional shore power outlets is the only strategy that fully complies with IEC/IEEE 80005-1 and National Electrical Code, and it is the only strategy that is proven and ready for execution today. The Port already has installed 78 SPOs at all of its container terminals. At some terminals, these SPOs are spaced approximately every 200 feet. At other terminals, the SPOs are spaced at varying intervals according to berthing analyses performed several years ago based on the strings of vessels information provided by the terminal operators and shipping lines.

Per the IEC/IEEE 80005-1 code, ships at berth must provide enough cable to reach the SPO plus 10 meters. Given this requirement, the Port would need to install SPOs every 64 feet at container terminals in order to ensure that every compliant ship can meet an SPO.

Unfortunately, this solution is implausible. Each SPO vault measures roughly 12 feet across and requires significant cuts into the wharf's edge. Additionally, the placement of SPO vaults has limitations, such as the presence of mooring anchors and fender systems or vaults for water lines. Thus, installing SPOs every 64 feet would compromise the structural integrity of the wharf and pose significant operational and safety impacts. In other words, there is a physical limit to the number of new SPOs the Port can install.

As stated earlier, additional SPOs do not solve connectivity issues for ships with inadequate cable length, cables on the opposite side of the vessel, or 50 Hz ships. Further, upstream electrical constraints may impede connection. One transformer serves multiple SPOs; only one ship can connect to that transformer at any given time. Thus, while additional SPOs may appear to provide more opportunities for ships to connect, as long as those SPOs are tied to a single transformer, the connectivity is limited by the upstream equipment. Each new SPO requires additional equipment at the substation. Each substation can only accept a limited amount of additional equipment at which point another substation need be installed. The space requirements along the wharf and inside the terminal along with the costs make this option unfeasible.

In summary, even with additional SPOs, there are likely to be instances in which a ship cannot connect.

Cable Reel Management Systems

A potential strategy to maximize shore power compliance at container terminals is a cable reel management system. Cable reel management systems provide additional cable length between the SPO and ship-side connection point. In theory, these systems should be able to close the gap between a ship and an SPO that is out of reach. The Port and its operators have purchased a few 100' cable management systems. These systems were limited to 100' in length due to space constraints; however, these systems have not yet been successfully deployed due to limitations of the technology and conflicts with current code.

First, 100' of cable is not long enough to facilitate ship connections 100% of the time. In order to achieve 100% compliance, cable reels of up to 600' would be required.

Second, the cable reel system is not a proven, approved technology in the shore power standard (IEC/IEEE 80005-1). The system also does not comply with the National Electrical Code, which does not allow for exposed high-voltage cables. This lack of certification raises issues about safety and labor's willingness to employ the system. It is unclear when the cable reel management system will be adopted under the shore power standard. If this system has not been adopted by January 1, 2020, the Port will be unable to use this strategy.

Third, if the cable reel management system is approved, some terminals may not have sufficient space between the cranes and guard timber to accommodate the cable reel system. This will necessitate wharf upgrades and cable-containment strategies. Custom cable extensions may need to be fabricated for a ship that does not line up with an existing SPO, which could require additional cable extensions at each berth.

Lastly, cable reel management systems may interfere with shore power communications systems, and thus, some ships may not be able to connect.

The Port analyzed the cost and timeframe for deploying cable reel management systems. Additional costs will be incurred by the tenant each time the cable reel system is deployed, removed and stored and are not included in the table below.

Costs and anticipated timeline per pier for cable reel systems are summarized in Table 3 below.

Table 3. Deployment of Cable Reel Management Systems

	Cost	Expected Completion Date
Pier A	$3,000,000	May 2021
Pier C	$2,000,000	May 2021
Pier E	$3,000,000	May 2021
Pier G	$3,000,000	May 2021
Pier J	$4,000,000	May 2021
Pier T	$4,000,000	July 2021
All Container Terminals	$19,000,000	July 2021

*This table estimates a start date for design as January 1, 2020 when the regulation would go into effect.
**Assume $1 million per each 200 linear foot Cable Reel Management System and 1 per berth were used for the estimates which includes equipment, additional mobile platform for the existing wharf, and soft costs.

In summary, absent changes to the National Electrical Code and IEC/IEEE 80005-1 standard, cable reel management systems are not a solution port-wide, and even with these changes, require significant infrastructure improvements and may not be a solution for every terminal

SPOs and Cable Reel Management Systems

The Port analyzed a combination of new SPOs and cable reel management systems. This option utilizes additional SPOs to ensure a maximum of 200 feet between SPO installations and one 100-foot, cable reel management system at each berth to provide the needed extension from the shipside shore power equipment to the designated terminal SPOs.

A major challenge with this option is that it still would require the installation of an additional 67 SPOs. This strategy does not eliminate the challenges detailed above under the subsection "Shore Power Outlet (SPOs) Installations" nor subsection "Cable Reel Management Systems." Therefore, issues such as a limited upstream transformation and lack of standardization for cable reel management systems will also interfere with successful deployment of this strategy. Therefore at this time this option is not feasible.

Costs and anticipated timeline per pier for SPOs every 200 feet, combined with one 100-foot cable reel system at each berth are summarized in Table 4 below.

Table 4. Deployment of SPOs approximately every 200 feet, combined with one 100-foot cable reel system

Deployment of SPO every 200 feet and one cable reel per berth	**Cost**	**Expected Completion Date**
Pier A	$15,750,000	Dec. 2025
Pier C	$10,500,000	Dec. 2025
Pier E	$13,450,000	Dec. 2025
Pier G	$17,050,000	Dec. 2025
Pier J	$13,800,000	Dec. 2025
Pier T	$23,300,000	Dec. 2025
All Container Terminals	$93,850,000	Dec. 2025

*This table estimates a start date for design as January 1, 2020 when the regulation would go into effect.
** Costs include construction cost and soft cost to plan, design, and construct additional SPOs at each terminal. Pier G includes a new transformer to provide the power to one berth.

Additional Strategies

The Port also evaluated additional strategies not related to landside infrastructure that could improve shore power compliance. These strategies are likely to be undertaken by the terminal operators and shipping lines, not the Port itself.

- Worker training
- Alternative compliance systems for ships not capable of connecting to the landside infrastructure

Worker Training

The Port believes training of workers responsible for plugging and unplugging ships will improve shore power compliance. Assuming a ship can make a physical connection, with the requisite training, workers would be more likely to successfully troubleshoot connection problems as they occur, and provide the needed adjustment of the circuit breaker settings and other components involved in connection.

With or without training, Port terminals are going to continue to face situations where shore power connection is simply not possible, even after implementation of any of the pathways described above.

Alternative Compliance

Terminal operators may opt to invest in emission capture and control devices, rather than investing in additional shore power.

Container Terminals

It is estimated the container terminals will require an additional 15,000 hours of emissions control time.

Annual operating costs alone could be $23.2 million[2] dollars per year.

Non-Container Terminals

It is estimated the non-container terminals will require an additional 42,000 hours of emission control time.

Annual operational costs alone could be $39.4 million dollars per year.

The terminal operators may decide to design and construct their own emissions capture and control system to ensure the system is always available, and there will be significant upfront costs on the order of $5,000,000-$10,000,000.

Limitations of Alternative Control Systems

Alternative control systems face two key challenges for deployment in the timeframe proposed by CARB:

- Lack of available units
- Lack of wharf space for barge-based system berthing

Lack of Available Units

As of today, only two barge-based systems have been certified and a land-based system has yet to be tested. Many more systems would be required to help meet the 100% compliance deadline of 2021 for the regulated fleet and 2025 for the unregulated fleet. There are currently no production

[2] Operating costs used in this document only include the hourly labor cost to operate the emission capture and control systems. The Port assumed $1,000 per hour for barge-based systems, and $1,100 per hour for land-based systems, which is consistent with CARB assumptions. Any increases in these costs over time are not accounted for, nor are any capital or other operational/maintenance costs.

facilities manufacturing these systems. It is doubtful such systems can be certified, cost effective, and commercially available in such a short amount of time.

Lack of Wharf Space

One significant barrier to deploying barge-based systems is the lack of berth space for units that are not in use. The Port of Long Beach only has 2,000 linear feet of wharf space – equivalent to two berths – that are open and could be available for barge-based systems:

- D52, which is used for temporary berthing. 600' linear feet.
- T124, which is really designed for OGVs and thus would require fender installations and wharf modifications to accommodate barges. 1,400 linear feet.

All other space is leased out, which means the Port will be limited in its storage capacity for emissions capture and control systems.

Summary of Findings

The Port cannot identify a single method to ensure 100% shore power, but has established internal consensus that a mix of methods may be required to maximize shore power compliance for container vessels.

The most promising way to maximize compliance at a container terminal is for the Port to install additional SPOs with additional support from cable reel management systems.

Table 5. Comparison of Three Strategies to Maximize At-Berth Compliance

Strategy	Cost for all Container Terminals	Timeline (Design, Bid and Award, Construction)	State of Technology	Remaining Challenges
Additional SPOs Every 64 Feet	----------	----------	Established/Proven	• Wharf Integrity • Operation and safety • Physically impossible to install at 64'
Cable Reel Management System	Approx. $20 million	2 Years	Unproven	• No Standard • Electrical Code Issues • Requires additional mobile platform to the existing wharves • Moderate Cost
SPOs + 1 Cable Reel System	Approx. 94 million	5 Years	Unproven	• Timeline • High Cost • No Standard • Electrical Code Issues • Requires additional mobile platform to the existing wharves

In all of these scenarios, the Port is apt to spend millions of dollars on infrastructure beyond the roughly $200 million already spent on shore power. Additionally, the timeframe for completing these projects is likely to go well past January 1, 2021.

It is unclear what strategy non-container terminal operators will choose for regulatory compliance. Given shore power is an unproved technology for the proposed non-container vessel categories and the stringent timeline proposed, the Port assumed in this assessment that ships and terminals would opt for alternative compliance through emission capture and control systems. Should the non-container industry choose this strategy, it is clear industry will bear millions of dollars in operating costs per year.

Path Forward

The Port will need to produce a more detailed berthing analysis prior to entering the formal design process upon adoption of the proposed At-Berth Regulation. This analysis will directly inform decision-makers, including terminal operators and Port staff, and the design of each container terminal shore power compliance plan. In addition, the Port should continue to work with IEC/IEEE on the effort to update the current shore power regulation for container ships to ensure the cable reel management systems are safe, and standardized pieces of equipment

Comments on Preliminary At-Berth Cost Analyses Presented at "Workgroup Meetings to Discuss Costs of Proposed Amendments to the Ocean-Going Vessel At-Berth Regulation", September 14, 2018

PMSA
PACIFIC MERCHANT SHIPPING ASSOCIATION

September 14, 2018

Angela Csondes
California Air Resources Board
P.O. Box 2815
Sacramento, CA 95812

Submitted via e-mail to angela.csondes@arb.ca.gov

Subject: **Comments on Preliminary At-Berth Cost Analyses Presented at "Workgroup Meetings to Discuss Costs of Proposed Amendments to the Ocean-Going Vessel At-Berth Regulation"**

Dear Ms. Csondes:

The Pacific Merchant Shipping Association (PMSA) appreciates the opportunity to submit comments on the preliminary cost analysis presented by California Air Resources Board (CARB) staff during the August 15 and 16, 2018 "Workgroup Meetings to Discuss Costs of Proposed Amendments to the Ocean-Going Vessel At-Berth Regulation." However, PMSA remains concerned that the preliminary cost data contains a number of inconsistencies that substantively reduce the data's value as the basis for regulatory decision making, raise fundamental questions with respect to accuracy, and are presented in the context of numerous outstanding unknowns with respect to the proposed rule.

Vessel Modification Costs Are Underestimated

PMSA appreciates the effort that CARB staff undertook to collect data on the cost of complying with the At-Berth Regulation. Indeed, PMSA has endeavored, and is continuing in its efforts, to provide CARB with the most data possible in response to the Vessel Cost Surveys circulated amongst vessel owners and operators and we incorporate our correspondence to that end by reference.

With respect to the limited vessel cost data that you included in the initial report, there is a surprising and significant variability in the responses from ocean carriers on the cost of shore power retrofits and new builds. For example, the cost of retrofits among 14 containership responders ranges from a low of approximately $250,000 to a high of approximately $1,750,000. This range is surprisingly large and reflects a number of unreasonably low estimates. During previous meetings with CARB staff and PMSA and its members, initial discussions indicated that costs were upwards of $1 million per vessel; and, we know from discussions with ocean carriers and ports, that cable reels represent the most expensive portion of these installation costs, at between $300,000 and $600,000. Yet, half the responses indicate the cost of retrofit at $500,000 or less. PMSA believes that actual costs are still relatively in line with the original estimate used for the current regulation, where "In the cost-effectiveness analysis, staff

used $1,500,000 as the cost to add shore-power equipment to each vessel, which is ¾ of highest reported cost." (ISOR, Appendix E, page E-2).

The variability in the responses from bulk and Ro-Ro vessel operators is also substantial. The high value response for Ro-Ro vessels is five times the value of the low value. The high value response for bulk vessels is over four times the value of the low response. The most likely reason for these significant variances appears that there may have been issues in interpreting the questionnaire among the responders. These unbelievably low costs will skew any analysis in which they are used. CARB staff should exclude any costs below $600,000 from their analysis.

Application of Vessel Costs to Affected Fleets to Find Total Container Vessel Costs Raise Questions

It is fundamentally unclear how CARB came to the conclusion that only 20 additional container vessels are necessary to be addressed in order to comply with an expanded At-Berth Rule statewide. This number is surprisingly small and likely unrealistic. It was disclosed during the meeting that one of the assumptions that CARB staff have made to arrive at this number was that 94% of all container vessels calling California will have already been retrofitted by 2021. There is no discussion of this assumption in the cost workgroup background, there was no data cited to support this assumption, nor were there any questions posed in the vessel surveys which would lend credence one way or the other to such an assumption.

CARB estimates that only 10 additional container and reefer vessels are required to be retrofitted in order to reach the 100% compliance figure and 10 additional ships would use Capture & Control technology. How these assumptions are made are unclear, but moreover the baseline assumption that only 20 ships are going to be responsible for 248 additional visits is also not likely to be realistic. On average, those 20 vessels would then each need to have just over 12 visits a year. The only way that would be possible would be if they were in a high frequency service calling both San Pedro Bay and Oakland. However, those are the vessels that are most likely to be already outfitted for shore power in order to meet current regulatory requirements, especially after the implementation of the 2020 standards. It is far more likely that the vessels that have not been retrofitted for shore power are infrequent visitors to California ports. CARB staff needs to provide the basis for the estimate of how only 20 additional vessels would provide 248 port calls and, most likely, revise the number of vessels significantly upwards using assumptions for infrequent visitors.

The estimate of the number of additional vessel retrofits also appears to assume that the fleet serving California ports is static. As PMSA and its members have discussed with CARB staff, the fleet is not static and redeployments occur as a normal part of vessel operations. As a result, for any one vessel currently calling California, multiple vessels will need to be retrofitted as maintenance needs and changing trade volumes require existing shore power-capable vessels are rotated out of California service and different non-shore power capable vessels are rotated into California service.

In addition, because CARB's staff concept at this point is to eliminate fleet-based compliance and its related applicability thresholds, and to substitute a 100% compliance standard across all container vessels operating statewide, CARB must demonstrate what new costs are associated with the capture of

smaller container fleets, if any. Under the present concept of total statewide costs presented by staff at only 20 total vessels, it is unrealistic to conclude that there are any smaller fleets which are currently not participating that might be included in this cost basis.

No matter which numbers are utilized, CARB staff should demonstrate how the annualized costs for compliance with a 100% rule, as outlined in staff's proposed concepts, would only reach $7.5 million per year at Full Implementation for the entire container and refrigerated vessel fleets. For a rule with outsized capital and operational costs, which CARB initially pegged at approximately $1.8 billion through 2020 for all vessels and terminals impacted, this is an unrealistically low expectation of annualized costs (see related comments below). The carrying costs on existing capital alone will dwarf this number, not including the costs of additional retrofits and new-builds.

Port and Marine Terminal Infrastructure Is Unrealistically Low

One of the more troubling aspects of CARB's preliminary cost analysis is the complete dearth of estimates of the well-known, significant additional infrastructure necessary to support 100% shore power use by containerships and refrigerated vessels statewide. According to the preliminary cost estimates, the only additional infrastructure necessary across the entire State to accomplish this goal is the improvement of one, single berth. This is just simply not a credible conclusion. CARB's own enforcement report for 2016 indicates that ocean carriers had to make use of Advisory Scenario 1 ("Equipped vessel not able to receive power from shore") 327 times in 2015 and 284 times in 2016. During numerous meetings over the past year, PMSA and its members repeatedly discussed the insufficient infrastructure at berth as the primary hurdle to increasing the use of shore power for containerships.

One of the primary reasons for this is the rigidity inherent in shore power. As has been demonstrated at terminals to CARB staff, shore power cables must be dropped perpendicular from the vessel to the vault containing the shore power outlet. As a result, if there is a misalignment between the vessel and the berth – as there has been hundreds of times – it is not possible to make the shore power connection. CARB staff needs to work with PMSA, its members, and ports (the owners of this infrastructure) to evaluate how many additional shore power outlets are needed per berth. Short of turning the entire wharf face into a continuous connection point, which appears to be both technically and financially infeasible, it will not be possible to match every berthing position to a connection point.

Added infrastructure will improve the opportunity to connect substantially. The question of how to invest in additional infrastructure and its associated cost will be dependent on the allowance that the regulation will grant for the inevitable berth/vault mismatch. While connections may be feasible the vast majority of time, that fraction of time they are not, even if it is only in a tiny percentage of cases, poses unacceptable regulatory jeopardy for marine terminal operators. In addition, the only way to assess the needed infrastructure cost is to understand what level of regulatory certainty CARB expects from this regulation. In the absence of such an allowance for the rigidity shore power connections impose, it will be impossible to properly assess costs.

Penalty of Doubling Costs on Carriers, Ports, and Terminals Already Invested in Shorepower "Gold Standard" Solutions

A regulatory proposal providing no accommodation for those vessels and terminals which have already invested in the infrastructure necessary to comply with the "gold standard" of shore power would continue to maintain the perverse incentive of keeping a vessel at anchorage in the event of any uncertainty. As CARB is well aware, this results in far greater emissions than would have been avoided – a situation we have seen occur many times under the existing regulation. In addition, such a regulatory concept would necessarily incentivize vessels and marine terminals to move away from shore power and to rely on emission capture systems since, in concept, such systems provide the necessary flexibility to accommodate the provisions of the regulatory concept without the fixed overhead expense.

This would also be counter-productive to the ultimate goals of the regulation, since as CARB has acknowledged, such a move would actually decrease overall Air Quality benefits, mute emission reductions, and increase greenhouse gas (GHG) emissions, but it's the logical outcome of a rule which imposes significant cost impacts on terminals, ports and ocean carriers and then penalizes them for making investments in shore power. The penalty is obvious, these carriers, ports and terminals will be required to pay for TWO solutions to remain compliant instead of just ONE solution. This penalty is not accounted for and is an unreported Cost outcome in the present preliminary cost estimates.
In requiring a standby system, the regulatory proposal imposes new costs for vessel operators and terminals operators that have already invested billions of dollars under the current regulatory framework. Again, the cost analysis does not consider the additional costs that every vessel and terminal operator will experience under the proposed regulatory concept.

An illustration of this problem is clear when examining the Port of Oakland. The Port of Oakland leases container terminal facilities only (no bulk/tanker terminals). In addition, the percentage of vessels using shore power is dramatically increasing. If, as expected and CARB staff intends, all future vessels use shore power, vessels at terminals would still need to have a standby solution in the event of equipment failure or inability to make a shore power connection. Yet, what viable business could exist serving exception cases? Further, it is not unforeseeable that there could be an equipment failure at multiple berths simultaneously; for example, at the point where electricity for the shore power system enters the terminal. In such a scenario, every berth will need an alternative control technology at a port where there would be zero demand for such technology otherwise. Terminal and vessel operators would be pushed to maintain multiple systems to avoid regulatory jeopardy.

State-wide Analysis Is A Flawed Cost Methodology for A Rule With Localized Impacts

In assembling its preliminary cost analysis, CARB staff has aggregated data state-wide despite the fact that each port has very different physical and operational constraints and emissions profiles. These variances are even more critical to assess if the basis for the promulgation of this rule is focused on the need for community impact mitigation or local air basin criteria pollutant compliance purposes. As a result, the costs and benefits of implementing the measure will vary wildly between ports. Without analyses on a port-by-port measure, it will be impossible to weigh the value expanding the rule to each port. Smaller ports more likely need significant infrastructure improvements that this rule would require, but such ports also have much smaller emissions profiles. To the degree that smaller ports

must rely on alternative technologies for compliance under the regulatory proposal, it is likely that nearly all of the GHG emission increases associated with the use of alternative technologies takes place at these smaller ports. Without a port-by-port analysis, it is impossible to understand the cost versus benefits of an expanded rule, both in terms of monetary and potential GHG impact, and make an informed decision.

Alternative Technology Costs Have Not Been Demonstrated With Evidence

The preliminary cost analysis includes a cost of $1,000 per hour for the use of barge-based emission capture systems. The bases for these costs are anecdotal at best and there is significant evidence that they do not represent the true cost for such systems. There is no accommodation for the capital costs of these systems or the associated costs of affiliated infrastructure.

In addition, given the limited marketplace that currently exists and the small number of suppliers that should ever be expected to enter into such a relatively small customer venue, the monopsony factors associated with these costs cannot be underestimated, as there will inevitably be market pressure to drive up costs and reduce customer service.

For instance, there have already been instances when, due to modest vessel schedule changes, a barge-based system has had to leave one vessel it was servicing to provide service to another vessel. If the rule requires that barge-based systems be present for the entire length of the vessel visit, there will need to be more barge-based systems. More systems will require a lower utilization rate per barge and, in turn, will necessitate a higher hourly cost. There have been other instances of ocean carriers competing to schedule the same barge-based system. Yet, such demand has not been sufficient to result in the construction of additional systems. For all these reasons, the cost of $1,000 per hour most likely grossly underestimates the true future cost. CARB staff should conduct a bottom-up approach, estimating the cost to construct and operate such a barge, at a profit, and amortize those costs over the life of the equipment. Such an approach can be based on documented data, rather than anecdotal information.

CARB's cost analysis of these systems should also note whether or not the existing costs reflect actual market pricing or are more reflective of extensive government subsidies for the provisioning of such systems. Industry is unaware of the full extent to which the current system infrastructure and operations are more truly reflective of real-world market conditions or of subsidies. Industry is also unaware of whether there have been any independent evaluations of the quality of services that have been or could be provided by alternative technology systems, or of the financial durability and capitalization strength of such system providers, absent such subsidies. Such an evaluation by a party independent of public agencies, such as CARB or local air districts which are administering the subsidies in question, would be worthwhile evaluations of the true costs of these types of systems.

Preliminary Cost Estimates Must Be Reconciled With The Regulatory Cost Context of the Existing Rule

Under the current At-Berth regulation, the regulated container, cruise, and refrigerated vessel fleets must reach emissions reductions of at least 80% by 2020. To achieve this 80% reduction, CARB

estimated the total cost of compliance to be approximately $1.8 billion to cover the 2014-2020 phase in period.

Compare this scope and scale with the preliminary cost estimate for this amendment: to reach the additional 20% of vessel emissions reductions from these same fleets by 2021, CARB's staff analysis shows a cost of approximately $11.3 million in one year.

This is simply and fundamentally not a credible conclusion.

Even if one were to annualize an average annual cost of the $1.8 billion over the full 6-year phase-in of the current rule's phase-in of participation of vessel fleets at 50% compliance in 2014, then 70% compliance in 2017, and then 80% compliance in 2020 at $300 million per year, it is only one year later that achieving the last 20% compliance benchmark has annualized costs of only $10 million in 2021 under this analysis.

The preliminary cost estimates demonstrate no credible basis or evidence for the belief that the cost for the achievement of the final 20% would be so radically different (order of magnitude smaller!) as to be almost negligible. In the past 10 years none of the many factors of cost that could be the reason for a reduction, including the following, have become appreciably cheaper: equipment costs, equipment technology, port real estate, electrical supply, labor.

Additionally, because the existing rule is pervasive at 80%, the vessels and related port and terminal infrastructure left to retrofit and equip for the final 20% are those for whom it was the most costly to comply in the first place. In other words, the reasonably prudent person at this point must assume that the cheapest vessels for compliance have been addressed first and that the more expensive vessels have been avoided. This would point towards higher average and marginal costs of compliance per unit, not lower.

This is consistent with economic realities known to CARB, other regulators, and regulated entities as the law of diminishing returns. That the marginal and average costs (and resulting cost-effectiveness) for having achieved the first set of first, broad, and significant emissions reductions are almost always much lower that the marginal and average costs for achieving the final, smaller, and potentially less than significant emissions reductions, is so well known as to be a truism.

The staff analysis here presents a theory which (is prima facie and by orders of magnitude) the precise opposite. Without a comprehensive and well-documented explanation as to why this should be the case there is simply no logical basis upon which the public should assume that these costs for the final 20% of compliance should have total costs and average costs which are some 95% lower for the industry than the achievement of the first 80%.

Data and Follow-Up Requests

PMSA requests that CARB provide the underlying spreadsheets that were used generate the tables presented as part of the preliminary cost analysis. Without understanding how the cost analysis was constructed, it will be impossible later to evaluate the cost-benefit analysis.

PMSA also respectfully requests that CARB staff work collaboratively to review and revise the equipment costs that will serve as the basis of the both the economic analysis and cost-benefit analysis through a series of collaborative workshops during this informal rulemaking phase with stakeholders.

Thank you for consideration of these comments. PMSA is available to discuss these comments in more detail with staff at any time.

Sincerely,

Thomas Jelenić
Vice President

PMSA Comments on CARB Proposed At-Berth Regulation Amendment Workshop, October 9, 2017

PMSA
PACIFIC MERCHANT SHIPPING ASSOCIATION

October 9, 2017

Angela Csondes
California Air Resources Board
1001 'I' Street
Sacramento, California 95812

Submitted Electronically to angela.csondes@arb.ca.gov

Comments on CARB Proposed At-Berth Regulation Amendment Workshop

Dear Ms. Csondes:

On behalf of the Pacific Merchant Shipping Association (PMSA) and its members, PMSA would like to thank the California Air Resources Board (CARB) staff for considering PMSA's comments on the proposed At-Berth regulatory amendment concepts. While PMSA continues to have significant concerns regarding the approach CARB is taking on this regulatory amendment process, PMSA does sincerely appreciate that there continues to be a constructive relationship that will allow the maritime industry to inform this rulemaking process.

Policy Basis for Rulemaking

During CARB's recent regulatory workshop on the proposed amendments, staff made clear that their goal was to propose a rule that would require every vessel on every visit to control emissions at-berth. This is a new approach on the part of CARB staff that is not consistent with the provisions proposed as part of the State Implementation Plan (SIP) in the Mobile Source Strategy recently adopted by the CARB Board or in the state's positions as adopted in the Governor's Sustainable Freight Action Plan.

Sustainable Freight Action Plan

The 2016 Sustainable Freight Action Plan included a provision that directed CARB to "develop and propose amendments to the At-Berth Regulation to include other vessel fleets and types." Nowhere in the proposed action does CARB identify an every vessel/every visit regulatory approach. Nor was an across the board sweeping change such as this even contemplated during the creation of the Plan, which goes on to state that "if the systems prove to be feasible and cost-effective on additional vessel types, the technology could help support an ARB staff proposal to expand the scope of the At Berth Regulation to include other vessel types and/or smaller fleets." These technologies have not been demonstrated to be "feasible and cost-effective." In fact, CARB is currently funding a further demonstration project of this technology. If staff is proposing to move forward with an every vessel/every visit regulatory concept despite the current immature state of technology, prior to commercial availability, and without cost-effectiveness criteria, then such a proposal would be inconsistent with the Governor's specific provisions for At-Berth Regulation amendments as outlined in the Sustainable Freight Action Plan. PMSA requests that the draft amendments be consistent with the description of action included in the Sustainable Freight Action Plan.

SIP Mobile Source Strategy
In March 2017, the CARB Board adopted the Mobile Source Strategy for inclusion in the State Implementation Plan (SIP), which lays out the State's enforceable commitments to reduce emissions. That document reiterates the same statements made in the Sustainable Freight Action Plan regarding amendments to the At-Berth Regulation. The Mobile Source Strategy goes on to say for determining the emissions benefit of the proposal that "the amendments were limited to the ports that are currently offering shore power and implementation was assumed to start in 2022 at 10 percent fleet compliance and to increase to 50 percent fleet compliance by 2032." Nowhere does the Mobile Source Strategy propose or model an every vessel/every visit approach, and such a proposal was never discussed or ever suggested in the preparation of the SIP. PMSA would respectfully request that the draft amendments be consistent with the SIP Mobile Source Strategy.

March Board Resolution Addendum Direction to Staff
Also in March, the CARB Board adopted a last-minute amendment to an addendum to a Resolution that was neither created by CARB staff nor circulated to the public prior to its adoption. These addendum additions have since been clarified by CARB to be mere direction to staff (see 9/6/17 Discussion Paper), that they are not amendments to the adopted SIP Mobile Source Strategy or substantive revisions of any other documents, including the Sustainable Freight Action Plan, and that staff will investigate options in future public processes. PMSA agrees with this interpretation of the March Board amendment and addendum actions.

Specifically to this regulatory process, the last-minute addendum amendment directs staff to "develop At-Berth regulation amendments that achieve up to 100% compliance by 2030 for LA Ports and Ports that are in or adjacent to areas in the top 10% of those defined as most impacted by [CalEnviroScreen]." Relying on the wording of the resolution, which did not amend the SIP Mobile Source Strategy, would lead one to the conclusion that the Board direction to staff is to ensure that the regulatory amendments ensure 100% compliance with the proposed At-Berth Strategy contained in the Mobile Source Strategy ONLY at the Ports of LA and Long Beach, and in certain other CalEnviroScreen jurisdictions, NOT for every vessel at every port. Moreover, if one were to interpret "compliance" as meaning "ensure that every vessel on every visit is subject to the rule," this would either be an amendment to the direction required by the SIP Mobile Source Strategy, or it would be a concept which is inconsistent with the SIP Mobile Source Strategy. PMSA requests that the CARB staff apply an interpretation of the last-minute amendments to the uncirculated addendum to the March Board Meeting Resolutions as "direction to staff" as described in the 9/6/17 Discussion Paper. To do otherwise would be inconsistent with the requirements adopted in the SIP Mobile Source Strategy, and that would be an impermissible revision of the SIP, and precisely what the Board specifically clarified in the 9/6/17 Discussion Paper did not occur in March.

To the extent that any portion of the proposed amendments represent significant deviations from the adopted Sustainable Freight Action Plan policy or requirements outlined in the SIP Mobile Source

Strategy, staff needs to explain how they came to the current proposal, what is the air quality need for such an expanded approach (even in places in attainment of federal air quality standards or where reductions would border on the trivial), and what is the basis from deviating from adopting policy that has been subject to the public process.

In addition, CARB staff has not identified any criteria that will inform their development of the limits of the rule. The current approach seems to be "if we can do it, we will". The every vessel/every visit approach is no longer tied to the emission reductions sought as part of mobile source strategy, local air quality needs, technical feasibility, cost-effectiveness, or economic feasibility. Before proceeding CARB should identify the criteria that will determine the scope of the rule; conversely, it should not develop the most restrictive rule imaginable and then identify the criteria post-hoc.

Proposed Amendment Structure

The attachment provides a list of components that PMSA believes can serve as the structure for the At-Berth amendments. The proposed concepts build on those presented at the workshop and add flexibility elements that PMSA believes are necessary to meet the realities of the maritime industry.

CARB is proposing what is being called a "single, flexible compliance pathway". Unfortunately, there is nothing flexible about an every vessel/every visit standard for At-Berth controls. As has been demonstrated over the past several years under the current At-Berth Regulation, different ocean carriers have different operational needs. Some ocean carriers may be able to operate under an "every vessel/every visit" structure, assuming that the appropriate exemptions exist and accommodation is made for inevitable vessel redeployments necessary to meet the needs of changing trade flows. Other carriers, because of more diverse operational needs, may need a fleet average approach.

In order to handle these differences, PMSA believes that a different structure is necessary. In addition, an alternative compliance pathway for ocean carriers that would allow the flexibility of a fleet average approach should also be included. In the attachment, PMSA provides two options that build on the ideas presented by CARB staff, but also address questions of how to handle low call vessels and ports. An alternative compliance pathway is also presented that would provide some fleets the necessary flexibility they require and a mechanism to encourage the deployment of cleaner Tier 2 and Tier 3 vessels, alternatively-fueled vessels, early compliance, or more efficient vessels.

The differences between liner and non-liner vessel services are too fundamentally different to accommodate under a single rule or compliance pathway as proposed by CARB. Many non-liner vessels will only call a California port once ever and others so infrequently as to almost never call. To make such vessels comply with California-specific requirements for a single visit or an exceptionally rare visit does not make economic sense, environmental sense, or regulatory sense. There are also practical considerations, if a vessel is allowed an exemption for a commissioning visit, how would that be handled for vessels that call California once ever or that don't make a return voyage for years at a time? The only way that the same regulatory approach could apply to liner and non-liner services equally, would be to apply similar thresholds to both groups of vessels. In the options that PMSA proposes, a threshold would establish which fleet or vessel is subject to the rule.

The "every vessel/every visit" approach also creates problems with regard to the phase-in proposed by CARB staff. As CARB staff acknowledged, how do you implement an incremental phase-in over multiple years for a single vessel visit? The likely answer is that you cannot and that subjecting a vessel engaged in international trade that will visit California only once or rarely to California-specific rules will likely result in cargo diversion that will have its own environmental impacts, as CARB has seen from PMSA's Greenhouse Gas Route Comparison Tool. Another option hinted at by CARB staff is making the terminal operator select which vessels must comply during a phase-in period, but terminal operators have no basis to make such decisions. Further, in some cases the terminal operator may only provide stevedoring services at a public berth and may not have a contractual relationship with the vessel, and in others such a requirement could prove legally problematic. The only way a phase-in period can be successfully accomplished is from an ocean carrier perspective. As recommended in the attachment, a threshold for being subject to the rule will also allow the implementation of a phase-in period.

Finally, as we have seen during the implementation of the existing rule, the unforeseen realities of the maritime industry and waterfront cargo operations have made implementation of the rule difficult. CARB staff has tried to respond to these realities through the use of an "Advisory" on multiple occasions. CARB staff should determine if a mechanism for administrative adjustments to the rule could be incorporated in an effort to "future proof" the rule should new issues arise.

Determining Compliance

PMSA agrees with CARB staff that the checklist approach to determining compliance of an individual visit may be the best approach. Starting with the shared responsibility approach discussed below and in our August 4, 2017 comment letter, a short checklist of best practices necessary to ensure timely connection to shorepower could ensure that all parties work together to for successful implementation of the regulation.

As previously mentioned, ocean shipping is simply too complex for one size fits all and requires an approach with more flexibility than "every visit". Under an alternative pathway that allows fleet averaging, PMSA recommends that CARB measure compliance in the same manner that it uses to calculate emission reductions achieved from the regulation: total time controlled divided by berthing time. Such an approach is both simple and straightforward and consistent with CARB's emissions inventory methodology.

Shared Responsibility

PMSA has many reservations about the implementation of a "shared responsibility" approach. As we previously commented, not all carriers, stevedores, terminals, and port authorities have the same operating and business models, but all public Port authorities are ultimately responsible for all landside infrastructure and Port operations. If this rule expands applicability to every vessel/every visit at all California ports and harbors, it is important to reiterate that CARB is essentially capturing every conceivable commercial waterfront berthing arrangement and business transaction possible, including many at facilities do not have private marine terminal operators. And, even at most facilities where marine terminal operators are tenants of the public port authority, they cannot control any modification or expansion of the shoreside infrastructure that may be necessary to comply, as these are public works infrastructure projects requiring the port authority's direct involvement.

As CARB's presentation acknowledged, many responsibilities may be modified as a result of a contract. The proposed regulation cannot imagine every contractual permutation and should recognize that these requirements lie with the port authority, or more broadly the facility owner (which would also encompass private facilities), unless contracted to a third party. PMSA refers CARB staff to our comment letter of August 4, 2017 (attached) for our proposal on the breakdown of responsibilities.

If a shared responsibility approach is implemented despite these concerns, it must contain two clear components. First, the ocean carrier and the terminal operator should not be held responsible for matters outside their direct control. Second, if a vessel is unable to connect as a result of issues outside the ocean carrier's control, then that visit should still count as a compliant visit in any compliance calculation under the regulation. To not do so, would be to hold the ocean carrier responsible for the actions of others. The regulation should also consider some sort of *Force Majeure* provision. As CARB knows, there can be industry-wide events, such as the labor slowdown of 2014/2015. In such instances, the regulation should be able to provide broad relief to parties experiencing compliance difficulties that are the result of the event.

Alternative Technology

The workshop presentation continues to point to alternative technologies as necessary to the expansion of the rule. In order for alternative technologies to be a viable solution, CARB must address two issues. If such technology is to be a replacement for shorepower under the future regulatory approach, CARB must define the emission reduction parameters that the technology must meet to be considered a replacement. Will current technology meet the requirements of the future rule? If not, what level of emission reduction will be necessary for the technology to be considered viable?

The second issue that CARB must address is feasibility and cost-effectiveness. As stated earlier, CARB has acknowledged in the Sustainable Freight document and Mobile Source Strategy that these technologies are not currently up to par for meeting future regulatory needs, stating that expansion of the rule is dependent on "if the systems prove to be feasible and cost-effective". How will CARB determine whether the technology has become feasible and cost-effective? Finally, PMSA refers CARB staff to our comment letter of August 4, 2017 (attached) for our concerns regarding alterative technology.

Regulatory Criteria

Given its importance to the final structure of the expanded rule, PMSA reiterates the need for CARB to identify the criteria that will inform their development of the rule. Without criteria, the current deviation from adopted CARB policy is arbitrary. The approach is no longer tied to the emission reductions sought as part of mobile source strategy, local air quality needs, technical feasibility, cost-effectiveness, or economic feasibility. CARB staff must identify what criteria will be used to determine the scope of the rule. Criteria must not be developed after the fact to fit the rule sought by CARB staff.

GHG Leakage and Impacts of Diversion Must Be Analyzed

An analysis commissioned by PMSA and conducted by Starcrest Consulting Group demonstrates that emissions of greenhouse gasses (GHG) increase as certain cargo is diverted from West Coast ports. The

GHG increases are dependent on a number of factors including port of origin, port of destination, inland destination and container vessel sizes moving the cargo. As a result, policy proposals to reduce GHGs could have an opposite effect than intended when shippers and cargo owners, in response to increased costs due to regulation, divert cargo from higher-cost West Coast ports to lower-cost East Coast and Gulf Coast ports. The analysis found that GHG emissions may average up to 22 percent higher, when cargo originating from Asia bypasses California ports in favor of ports on the East Coast and Gulf Coast (see attached infographic, a copy of the report has been previously transmitted and is also available on PMSA's website). CARB must analyze the potential impacts of cargo diversion from California. A poorly crafted regulation could result in the loss of business and increase in GHG emissions, while a well-crafted regulation will retain cargo at California ports while reducing emissions.

Conclusion

Again, PMSA and its members wish to thank CARB staff as they continue to work with the maritime industry on these issues. The complexity of the issues will require further significant discussions. PMSA will meet with CARB at any time to discuss these issues at length. If you have any questions, please contact me (562) 432-4043.

Sincerely,

Thomas Jelenić
Vice President

Attachments: PMSA Regulatory Proposal
Greenhouse Gas Route Comparison Tool Infographic
PMSA Response to CARB At-Berth Regulatory Concepts, August 4, 2017

cc: Cynthia Marvin, California Air Resources Board
Elizabeth Yura, California Air Resources Board
Jonathan Foster, California Air Resources Board
Nicole Light, California Air Resources Board

Regulatory Proposal

The concepts below build off the concepts presented by CARB staff at the regulatory workshop. CARB staff presented an "every vessel/every visit" approach. Given the infrequency of some vessel visits, PMSA does not believe an "every vessel/every visit" approach is feasible nor justified. Instead, PMSA proposes a modified approach for fleets (Option 1) or vessels (Option 2) that make sufficient calls to be subject to the regulation. Even such a modified approach cannot meet all of the diverse needs of today's maritime industry, so PMSA also proposes that the regulation contain an alternative pathway that would allow fleet averaging while maintaining a high rate of compliance.

Primary Pathway Option 1: Simplified Fleet Approach

This approach would set a threshold for a fleet to be subject to the rule and set necessary exemptions to allow flexibility.

- Applicable to fleets with "X" or more vessel calls per year to a California port
- Every visit by subject fleet must be controlled (except for exemptions)
- Exemptions would be applicable in certain, limited circumstances. Though not exhaustive, examples include vessel commissioning, vessel redeployment, equipment failure, other unexpected event, and vessels calling California no more than once per year
- Retain the requirement that if a vessel is capable of connecting and it is at a berth capable of connecting, then the vessel must connect
- Redefined berthing time
    - "Berthing Time" (or Visit) means the period that begins when clearance to work the vessel is granted by Customs and Border Protection (CBP), or other governmental agency, and the gangway is down and safety nets secured. Berthing Time (or Visit) ends when the departure Pilot assumes navigational assistance.
- Compliance based on the principle that neither ocean carriers nor terminal operators would be held responsible for actions outside their direct control and determined by checklist of best practices
- Failure to connect that is not the fault of the ocean carrier would be considered a compliant visit for any compliance calculation under the rule
- Eliminate 3 hour/5 hour rules
- Maintain exemption for natural gas-fueled auxiliary engines

Primary Pathway Option 2: Individual Vessel-based Approach

This approach would set a threshold for an individual vessel to be subject to the rule and set necessary exemptions to allow flexibility.

- Require a vessel to be controlled on its X^{th} visit to a California port, but no sooner than 12 months after the first visit.

- Exemptions would be applicable in certain circumstances. Though not exhaustive, examples include vessel commissioning, vessel redeployment, equipment failure, other unexpected event, and vessels calling California no more than once per year

- Retain the requirement that if a vessel is capable of connecting, it must connect

- Redefine Berthing Time
    - "Berthing Time" (or Visit) means the period that begins when clearance to work the vessel is granted by Customs and Border Protection (CBP), or other governmental agency, and the gangway is down and safety nets secured. Berthing Time (or Visit) ends when the departure Pilot assumes navigational assistance.

- Compliance based on the principle that neither ocean carriers nor terminal operators would be held responsible for actions outside their direct control and determined by checklist of best practices

- Failure to connect that is not the fault of the ocean carrier would be considered a compliant visit for any compliance calculation under the rule

- Eliminate 3 hour/5 hour rules

- Maintain exemption for natural gas-fueled auxiliary engines

Alternative Pathway: Fleet-Averaging Approach

This approach would set a threshold for a fleet to be controlled but would allow exemptions to improve flexibility.

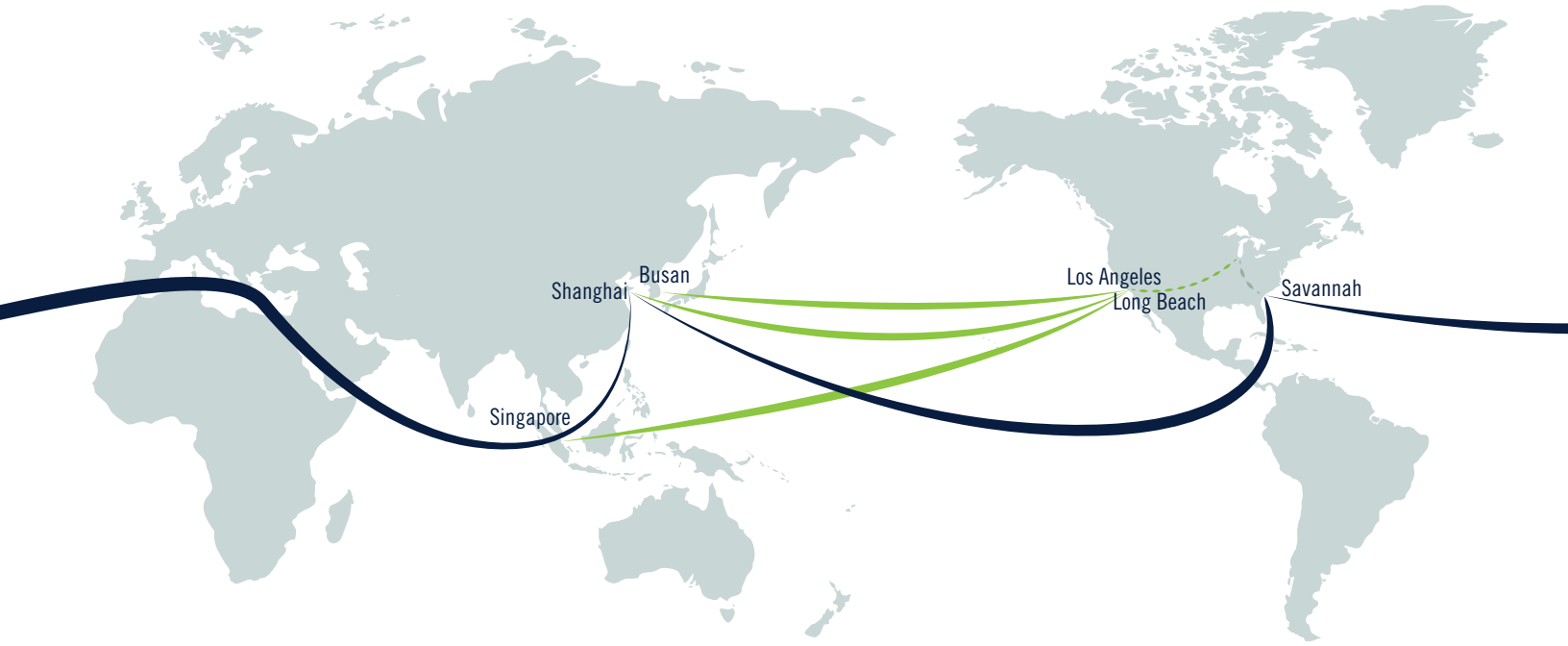
- Allow to fleets with vessels subject to the rule select this compliance option
- Fleet must meet a total time controlled goal of XX%
- Exemptions for commissioning, equipment failure, other unexpected event
- Redefined Berthing Time
    - "Berthing Time" (or Visit) means the period that begins when clearance to work the vessel is granted by Customs and Border Protection (CBP), or other governmental agency, and the gangway is down and safety nets secured. Berthing Time (or Visit) ends when the departure Pilot assumes navigational assistance.
- Compliance based on the principle that neither ocean carriers nor terminal operators would be held responsible for actions outside their direct control and determined by checklist of best practices and meet time-controlled goal as determined by 'total time controlled for all vessels' divided by 'total visit time for all vessels'
- Failure to connect that is not the fault of the ocean carrier would be considered a compliant visit for any compliance calculation under the rule
- Credits to the calculation can be obtained by bringing in Tier 2 or cleaner vessels, alternatively-fueled vessels, more efficient vessels or operations, or early compliance.
- Eliminate 3 hour/5 hour rules
- Maintain exemption for natural gas-fueled auxiliary engines

PMSA
PACIFIC MERCHANT SHIPPING ASSOCIATION

A GLOBAL PERSPECTIVE

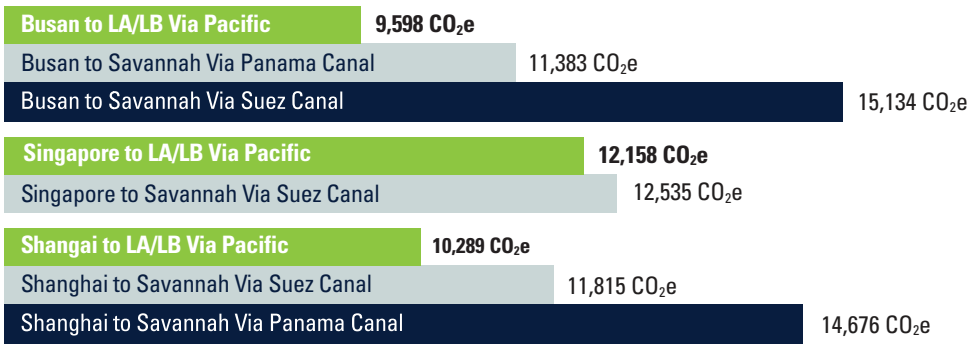
PROPOSED CALIFORNIA POLICIES MAY INCREASE GREENHOUSE GAS EMISSIONS DUE TO CARGO DIVERSION

Ships are the most environmentally-friendly means of moving cargo as they have the smallest greenhouse gas footprint of any transportation mode. California is a destination for cargo thanks to its proximity to Asia. On average, greenhouse gas emissions are **22% higher when shippers bypass a California port** for East Coast or Gulf Coast ports. If California policy proposals do not consider the global impacts of their rules, efforts to reduce GHG emissions in California may have the unintended effect of diverting cargo to other ports.



22%

BYPASSING WEST COAST PORTS IN FAVOR OF EAST AND GULF COAST PORTS WOULD INCREASE EMISSIONS BY 22% ON AVERAGE



As calculated from the Starcrest Greenhouse Gas Route Comparison Tool. The emissions presented in this comparison are estimates of emissions that would result from the diversion of 10,000 TEUs across a string of 8,000-TEU vessels for illustrative purposes.

1 California ports are the most direct route to inland U.S. destinations. Using California ports delivers jobs and prosperity to our communities. It also results in the lowest carbon footprint. **Moving cargo through an East Coast port to Chicago instead of a California port could increase emissions 86%.**

2 Policies that make California ports uncompetitive will drive cargo to other gateways and increase greenhouse gas emissions. **Cargo that moves through a Gulf Coast port instead of a California port on its way to Memphis could increase greenhouse gas emissions by 47%.**

3 California ports have not experienced growth in the past decade and have lost market share to East Coast and Gulf Coast ports. **If California ports had maintained their previous market share from 2006, more than FIVE HUNDRED THOUSAND metric tons of GHG emissions would be avoided annually.**

PMSA Comments on CARB Proposed At-Berth Regulation Amendment Concepts, August 4, 2017

PMSA
PACIFIC MERCHANT SHIPPING ASSOCIATION

August 4, 2017

Angela Csondes
California Air Resources Board
1001 'I' Street
Sacramento, California 95812

Submitted Electronically to angela.csondes@arb.ca.gov

Comments on CARB Proposed At-Berth Regulation Amendment Concepts

Dear Ms. Csondes:

On behalf of PMSA and its members, I would like to thank California Air Resources Board (CARB) staff for considering comments on the proposed regulatory amendment concepts. This rule and others CARB is considering will directly impact the competitiveness of California's maritime industry. As you know, the cargo growth in California has stagnated for the past decade; while CARB's projections called for doubling of cargo volumes at our Ports by 2020, we have actually been losing market share, experiencing no growth while ports around the country have grown strongly. As a result, PMSA puts forward the following thoughts on the proposed regulatory framework in the hope that CARB arrives at a rule that is flexible, predictable, and fair, in order to support the state's environmental goals in a manner which also supports the renewed economic competitiveness of California's maritime industry.

The At-Berth Regulation is complex and unlike any other regulation promulgated by CARB, and, in that it directly regulates the highly varied logistics activity of internationally-flagged ocean-going vessels, is also unique worldwide and unlike any other regulation promulgated by any other public agencies. As such, while we understand that CARB staff has direction to return to their Board with regulatory concepts in just over one year, PMSA asks that CARB staff place the substantive requirements of rule development, and the supporting analysis, above meeting an arbitrary fixed schedule for rule finalization. This rule and others CARB is considering will directly impact the competitiveness of California's maritime industry. PMSA is committed to continuing our current positive working relationship with CARB staff to ensure that this rulemaking process is done as thoroughly and thoughtfully as possible and with the most efficient and cost-effective results.

Proposed Amendment Structure

We are pleased to see that CARB staff is proposing to eliminate the 3-hour rule. The 3-hour rule created substantial compliance problems due to its lack of accommodation for many factors outside the ocean carrier or terminal operator's control. In its place, CARB is proposing to measure compliance on an individual vessel basis. In concept, the proposal provides an opportunity to simplify compliance and reporting. However, staff has also proposed an, as yet undefined, emission reduction threshold for each visit. PMSA is concerned that, depending on how it is structured, such a threshold would duplicate the problems of the existing 3-hour rule through the creation of a variable connection window requirement. This threshold, which would vary by vessel by visit, would be far harder to administer. If the threshold

were based on emission reductions from a hypothetical baseline, every vessel would have a unique maximum connection/disconnection period allowed based upon the hypothetical baseline, auxiliary engine size/load, and forecast berthing time. This would make planning and compliance a nightmare for the regulated community, as well as for CARB.

If such a proposal moves forward, it should be with fleet-wide averaging, not on a single vessel visit. The challenge of determining compliance on a real-time basis would be extremely challenging on a per-vessel visit. Such an approach would also make compliance for short vessel calls nearly impossible. Alternatively, a vessel visit approach could be successful if it were based on a checklist of best practices to determine compliance. In such a way, every vessel would be treated equally. This approach would also provide a clear methodology to avoid the arbitrary penalties that everyone agrees are unworkable under the current 3-hour rule. PMSA would also propose that in the interest of simplicity, that a fleet-averaging approach be based on the time connected to control technology based on a regulatory (e.g., 80% in 2020). Such an approach would be easy to measure and maximize emission reductions.

Visit Definition

PMSA appreciates that CARB staff is revisiting the definition of berthing time. In order to address the many issues that have been discussed, PMSA proposes the following definition:

> "Berthing Time" (or Visit) means the period that begins when clearance to work the vessel is granted by Customs and Border Protection (CBP), or other governmental agency, and the gangway is down and safety nets secured. Berthing Time (or Visit) ends when the departure Pilot assumes navigational assistance.

Updated Baseline

CARB staff has proposed updating the hypothetical baseline from Tier 0 to Tier 1. PMSA opposes this approach. Changing the baseline ignores the reductions that industry has achieved. In addition, measuring from a hypothetical baseline rather than a simpler metric such as emissions reduced or hours connected needlessly complicates reporting. Finally, because the At-Berth regulation is an operational control measure, it should not set different operational controls for different vessels. It will complicate compliance and create confusion.

Exemptions & Exemption Fees

PMSA supports the idea of providing exemptions from controlling emissions in some cases. For instance, both commissioning and re-commissioning of vessels is required by the international standard and often enforced by port authorities. The regulation should provide a clear exemption for these and other mandated activities. In general, fees should not be assessed for actions that ocean carriers do not have discretion over. Exemptions should also address other issues outside the ocean carrier's control, including failure by the utility to provide power or failure by the port to maintain port-wide electrical infrastructure.

One consequence of moving to an every visit approach from a fleet averaging approach is that there is no opportunity to address vessel redeployments and drydocking without penalty. The dynamic nature of the maritime industry means that vessels will be rotated into and out of California service due to changes in trade flows or the need to drydock a vessel. Bringing a replacement vessel into California service will necessitate retrofitting the vessel. As such, CARB should provide an exemption for the initial visit of a vessel rotated into California service.

In other cases, exemption fees in the proposed regulatory concept provide flexibility in the constantly changing maritime industry. Equipment failures are a reality. In addition, such fees provide an opportunity to more quickly level the regulatory playing field between those that are unable or unwilling to comply and the vast majority of ocean carriers that are in compliance.

Initial exemption fees should be moderated to reflect the dynamic nature of the industry and the necessary fleet changes and changes in world-wide trade flows. CARB should consider a structure for "exemption fees" that reflect the ability to mitigate the inability to connect to shoreside power. As discussed later, alternative technologies, like bonnet systems, are not available in all ports and a very limited number of such systems are in existence. The "exemption fee" could reflect whether an alternative technology system was available for use or not in determining fee amount (i.e., a higher fee when such a system is available and compatible but not used versus a lower fee when a compatitable system is not available).

If CARB retains a "fleet average" approach as PMSA recommends, CARB should explore the use of the "fee exemption" as means of addressing the same connections issues by allowing the use of the fee to remove the applicable visit from the fleet average calculation.

Shared Responsibility

PMSA and its members agree that there can be shared responsibility for compliance under the At-Berth Regulation. However, that shared responsibility must reflect the history of the rule, the role of port authorities, and decision by CARB to initially bifurcate the compliance pathway resulting in the industry overwhelming selecting electrification as the compliance option. This will be especially important as CARB extends this rule beyond the discrete applications of container ships, cruise ships, and refrigerated ships. Not all carriers, stevedores, terminals, and port authorities have the same operating and business models, but all public Port authorities are ultimately responsible for all landside infrastructure and Port operations. To the extent that this regulation intends to create new landside liabilities and responsibilities, it should not seek to further limit, isolate, or pick winners and losers between particular landside operating models.

These amendments must also be mindful of the fact that the largest and most glaring obstacle to compliance at present is not a lack of preparation by ocean carriers, or operating restrictions by terminals and stevedores, but it is the inadequate infrastructure necessary to meet compliance with the existing rule. Under the current rule, this will become acute in 2020, much and once fleets are required to meet an every vessel/every visit standard, as proposed in the new regulatory concept, the infrastructure deficiency will be an unavoidable barrier to compliance.

Before trying to write a rule to address the many variable market dynamics of the ever-changing maritime industry, CARB should identify the fundamental responsibilities of infrastructure. Shoreside electrical infrastructure is public infrastructure constructed and owned by the port authority and either operated directly by the port authority, or a public utility, or a marine terminal subject to a lease, or some combination of these and other relationships, contracts and agreements.

As this rule is intended to be expansive to all commercial vessels at all California ports and harbors, it is critical to note that many facilities do not have private marine terminal operators. And, even at most facilities where marine terminal operators are tenants of the public port authority, they cannot control any modification or expansion of the shoreside infrastructure that may be necessary to comply, as these are public works infrastructure projects requiring the port authority's direct involvement. As such, while Port authorities may choose to enter into contracts with stevedoring and marine terminal operators, these will vary from port to port and terminal to terminal. Therefore, if CARB intends a provision of this Rule to apply to landside infrastructure and operations, it should be designated as the responsibility of a port authority. However, PMSA would also note that nothing in this proposed Rule should impose new and distinct requirements on ports that would prohibit them from agreeing to manage the infrastructure or conduct their operations through a third party, either by lease or contract.

Below is the maritime industry's proposed framework for responsibility under the amended rule. As current infrastructure is inadequate to meet future regulatory needs, it is important that these responsibilities be set out clearly.

Ocean Carrier

- Maintain with the Port Authority (or its third party private terminal operator) an up-to-date *pro forma* vessel schedule, which would include vessel arrival time, vessel size, method and point of connection
- Provide a vessel capable of connecting to shoreside power or, for vessels not fitted to receive shoreside power, the Ocean Carrier shall arrange for the use of a CARB-certified alternative technology
- Advise the Port Authority (or its third party private terminal operator) of the operating requirements and specifications of the equipment on its vessels that will receive electrical power transmitted from shoreside facilities to the vessels.
- Equipment provided by Carrier shall be capable of protecting itself against damage in the event of a malfunction of the Port Authority's equipment.

Port Authority

- Provide sufficient shoreside infrastructure capable of providing electrical power compatible with International Electrotechnical Commission ("IEC") standard 80005-1
- In the absence of sufficient shoreside infrastructure, Port Authority shall provide sufficient equipment to extend connection points (e.g., cable management systems) or provide CARB-certified alternative technology
- Provide, as necessary and in conjunction with any third party private terminal operator if applicable, any qualified personnel required to complete the shoreside power connection

- Maintain shoreside electrical equipment as necessary and in conjunction with any 3rd party private terminal operator if applicable
- Confirm availability of berth or necessary equipment to connect Ocean Carrier's vessels based on *pro forma* schedule at the time of receipt of the *pro forma* schedule

As you know, PMSA has raised many times the issue of inadequate infrastructure causing most instances when a vessel is unable to connect. The infrastructure, designed and constructed by the port authorities, is rigid and based for a fleet that has substantially changed. Without substantially more infrastructure or tools that make the existing infrastructure more flexible, like cable management systems, the rule will need to provide allowance for prior port delays, weather delays, or other factors that are outside the control of the Ocean Carrier or Marine Terminal Operator and result in inaccessible shorepower connections.

As every port and every marine terminal within a port is unique, the infrastructure issues will need to be resolved case-by-case. If a port authority is unable or unwilling to install additional infrastructure, other solutions may be possible to implement, such as cable management systems that extend the reach of the shoreside power receptacle. To that end, CARB, in conjunction with the ports and maritime industry, should assess the need for additional infrastructure at California ports to address the ability of Ocean Carriers to meet future compliance levels. Such an assessment would also inform whether the shift to 100% compliance by 2022 is achievable.

Other Vessel Categories & Ports

PMSA is deeply concerned by the proposed expansion of the At-Berth Regulation to other vessel categories. The proposed amendments would also expand the regulation to currently unregulated vessel types. The impact to non-liner services, especially in small ports, will potentially be devastating. In the absence of the scheduled service that is the mainstay containerships, other vessel types can visit any port that provides the most cost-effective service, and the commodities they often carry are extremely price sensitive. In comparison, the hoteling emissions from non-liner ships are relatively small, in line with their much smaller auxiliary engines.

Despite being verified by CARB, the existing technologies are not mature. Making other vessel categories captive to start-up companies will create regulatory and business uncertainty in California. Along with potential economic impacts (discussed further below), price sensitive break bulk, dry bulk, and ro-ro vessels could stop calling California ports. The bulk commodities in particular have very small profit margins and very competitive global markets. California's agricultural industry would be heavily impacted. In addition, most ports in California do not have the financial wherewithal to provide the necessary shoreside infrastructure in relation to the level of maritime business that they service.

Alternative Technologies

The creation of a single compliance pathway will ease the way for the use of alternative technologies. However, the bifurcated pathway of the original rule drove ocean carriers to invest hundreds of millions of dollars to accommodate successful electrification of their vessels – an outcome that was intended and supported by CARB. The availability of alternatives under the regulation should not be used as a reason for port authorities to avoid the construction of additional shoreside infrastructure or to create a

stranded asset problem or to put those carriers who have invested the money to comply with the existing rule at a further competitive disadvantage in the marketplace.

The use of alternative technologies should be viewed as a way to accommodate vessel redeployment or vessels not already outfitted for shoreside electrification equipment. The first goal of the regulation should be to ensure that port authorities have provided sufficient infrastructure in their ports. Failure to provide sufficient shoreside infrastructure should not result in the ocean carriers facing non-compliance and ocean carriers that have elected to retrofit their vessels for shorepower should not be obligated to shoulder additional costs for alternative control technologies. Additionally, alternative technologies also have the potential to exacerbate berth congestion/misalignment issues that terminals and vessels contend with. Some thought will need to be given for conflicts that could arise from using different technologies at the same facility.

Of course, for some of the smaller ports with infrequent vessel calls, alternative technology paths may be the only viable option for compliance. These situations must be directly and fully analyzed and unnecessary costs must be avoided.

Alternative Compliance

One of the limitations of the existing rule is its lack of flexibility and ability to only reduce emissions at berth. An alternative compliance pathway would have the potential to expand the possible scope of emission reductions. The goal of an alternative compliance plan would be to increase flexibility by allowing vessel operators to enter into a voluntary agreement with CARB to reduce emissions using methods beyond those envisioned by the At-Berth Regulation.

For example, ocean-going vessels are responsible for emissions while transiting to ports, anchoring while waiting for a berth, and at berth. Transiting emissions represent a significant opportunity to reduce emissions as compared to other modes of vessel emissions. As a result, it may be possible to reduce emissions significantly from transiting to offset some portion of the required at berth emission reductions, and achieve these results in a much more cost-effective manner. Additionally, a plan that allowed for a voluntary agreement of reductions between ocean carriers could incentivize the reduction of some near-community emissions (and risk reduction) to provide offsetting reductions for other sources further from communities.

Such an alternative compliance pathway should consider the vessel's engine tier, improved vessel efficiency (e.g., as achieved through larger vessels), cleaner than required fuels, engines with lower verified emissions factors, improved cargo operations (e.g., as demonstrated through reduced berth time) and reduced vessel speeds. Surplus reductions achieved through a voluntary compliance pathway could be tracked and used in a mechanism similar to the existing rule's Fleet Emission Credit. An alternative compliance pathway has the potential to incentivize the use of higher tier vessels, the deployment of scrubber systems, and induce operational changes that could have substantial impacts on air quality.

Economic Analysis & Cost effectiveness

PMSA believes that it is important that CARB conduct a thorough economic analysis and evaluation of cost-effectiveness of the proposed rule. The escalation in costs for the proposal will be significant and in excess of the criteria to make this a regulation of significant economic impact to the state. For those already regulated under the rule, adequate infrastructure does not exist to support shorepower for every vessel/every visit. Tens of millions of dollars will need to be spent to add infrastructure, cable management systems, or alternative control technologies.

Cargo has been diverted from west coast ports for the past decade as evidenced by declining market share and strong growth of east coast and gulf coast ports (see attached chart). This is especially important because CARB's economic projections of future container growth at the time of the adoption of the current At-Berth Regulation were exceptionally aggressive, and relied on assumptions that cargo through California's container ports would double by 2020. Our industry is woefully underperforming when compared to these economic forecasts which were used to underpin the existing program's cost-effectiveness and cost-benefit analyses. Revising such rosy scenarios to reflect current conditions in the new economic analysis is crucial for an accurate representation of the regulation's true costs.

As part of CARB's cost-effectiveness and economic analysis, CARB should also analyze the environmental impacts of diversion. Cargo moved through east coast and gulf coast ports will have a higher greenhouse gas footprint than cargo moved through west coast ports. It is important that any regulation does not reduce California greenhouse gas emissions by increasing them elsewhere. Any proposal resulting in cargo diversion would cause California to lose twice: economically and environmentally. Diversion is even more likely for non-containerships.

For all of these reasons, PMSA hopes that CARB will start the first working group meeting on the economic implications that CARB staff previously proposed as soon as possible. PMSA and its members plan to be active members in that working group and any others that CARB convenes on this regulation.

"Every Vessel" Standard and "Up To 100%" Goals and Aspirations

PMSA understands that the CARB Board has given "direction to staff" to seek "up to 100%" emissions reductions as a result of revised At-Berth Regulations. This is an ambitious goal, but one that gives the CARB staff sufficient discretion to explain what level of an aggressive compliance standard of less than 100% is most realistic and achievable. We believe that this does not require CARB to propose an "Every Vessel" standard, and that as a matter of practicality, CARB staff should avoid starting a discussion on setting the new at-berth regulatory discussion with an "Every Vessel" standard. We would recommend that instead of establishing this standard out of the gate, that the final goal for these proposals should initially be listed as "up to 100%" exactly as contemplated by the Board's direction to staff. This will give CARB staff, industry, ports, and the public the opportunity to talk about what the most realistic regulatory standards should actually be during the rule development process. Nothing in the real world is 100% effective or implementable and even if that is a worthy aspirational goal, it is not a realistic regulatory standard, making this a difficult specific starting point for the informal rulemaking. This would be true for a regulatory proposal that impacted a non-economically dynamic, entirely local industry that was controlled by domestic interests. For an industry that will require substantive capital improvements to mobile assets, subject to coordination of multiple layers of tremendously expensive

infrastructure across multiple infrastructure providers, it would still be unrealistic to project levels of 100% emission reductions. Even if 100% compliance is achieved, 100% emissions reductions will not be in any real world application of a rule. We would highly encourage that CARB staff avoid the initial informal rulemaking documents set the wrong expectation and tie your hands to a level of emissions reduction which will not be realistically achievable.

Conclusion

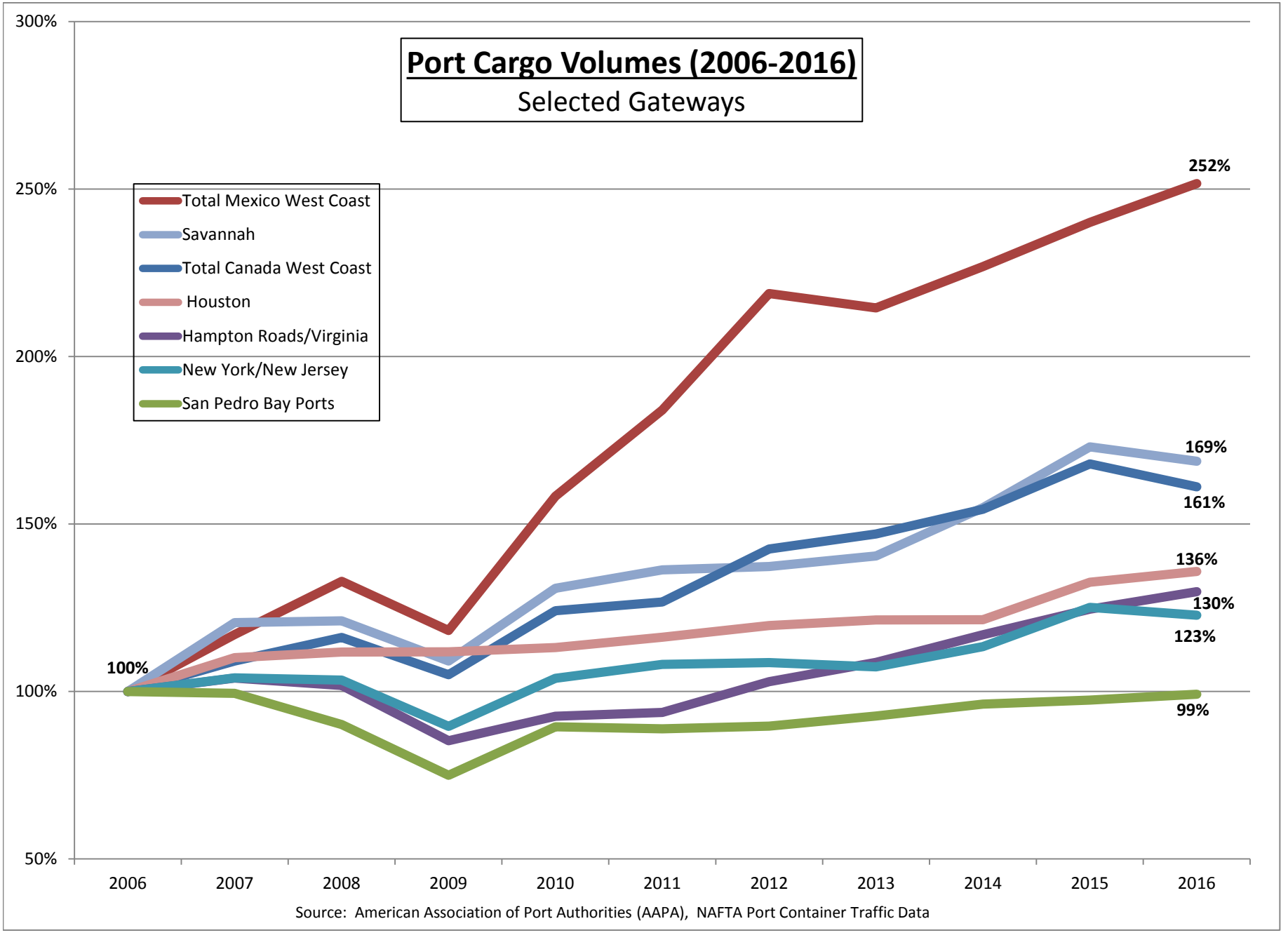
Again, PMSA and its members wish to thank CARB staff for taking the time to discuss these issues. The complexity of the issues will require further significant discussions. PMSA will meet with CARB at any time to discuss these issues at length. If you have any questions, please contact me (562) 432-4043.

Sincerely,

Thomas Jelenić
Vice President

Attachment

cc: Cynthia Marvin, California Air Resources Board
Elizabeth Yura, California Air Resources Board
Jonathan Foster, California Air Resources Board
Nicole Light, California Air Resources Board


Port Cargo Volumes (2006-2016)
Selected Gateways
Total Mexico West Coast
Savannah
Total Canada West Coast
Houston
Hampton Roads/Virginia
New York/New Jersey
San Pedro Bay Ports
300%
250%
200%
150%
100%
50%
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
100%
252%
169%
161%
136%
130%
123%
99%
Source: American Association of Port Authorities (AAPA), NAFTA Port Container Traffic Data

Attachment D:
Alternative Proposal for
Amendments to At-Berth Regulations
February 15, 2019

February 15, 2019

Cynthia Marvin
California Air Resources Board
Delivered via email to Cynthia.marvin@arb.ca.gov

Re: Alternative Proposal for Amendments to At-Berth Regulations

Dear Ms. Marvin:

Thank you and all of the ARB staff for giving us the opportunity to develop an Alternative Proposal for moving forward with Amendments to the At-Berth Regulations for Oceangoing Vessels. We are pleased to present this Alternative Proposal to you today.

As you and your team are well aware the existing regulations on vessels at-berth within the container, cruise, and refrigerated sectors of the maritime industry have resulted in significant levels of emissions reductions well in excess of predictions, created a tremendous and globally unprecedented level of private and public investment in vessel fleets and on-shore cold-ironing infrastructure, and the rule is still being phased-in, with even stricter compliance on the horizon starting in 2020.

The Alternative Proposal builds on this strong foundation to increase compliance and expand the current rule into currently unregulated sectors. It consists of provisions meant for immediate action to address compliance issues for currently regulated fleets and outlines the next steps necessary to evaluate the basis upon which additional investments may or may not be justified in addressing the emissions of vessels while at berth.

The Alternative Proposal is a true compromise document that took two months of negotiation amongst all the parties to craft. It represents a result that is as close to consensus as possible about the best way to boost and improve compliance within the existing regulations and set a true foundation for a discussion on how, if, and when to further reduce emissions from vessels at-berth in the near future. As a true compromise document, none of our signatory organizations or their memberships agree with every aspect of the Proposal, but all of the signatory organizations commit their resources and attention to working with CARB to improve the current regulation for existing regulated fleets and facilitate the process for evaluating future rule expansions consistent with the principles described here.

We very truly look forward to immediately improving the current rule and working to achieve the most cost-effective and successful future emissions reductions from the waterfront as possible.

Sincerely,

California Association of Port Authorities
Pacific Merchant Shipping Association
World Shipping Council
Cruise Lines International Association
Western States Petroleum Association

2019 At-Berth Regulation - Alternative Proposal

Executive Summary

All signatory parties to this Alternative Proposal share the California Air Resources Board (CARB) goal of reducing health impacts related to waterborne-related goods movement emissions impacting local residents. We would like to thank CARB staff for the opportunity to develop the following Alternative Proposal as we are moving forward with Amendments to the At-Berth Regulations for Oceangoing Vessels and are pleased to present the following.

Existing at-berth regulations have resulted in significant emissions reductions well in excess of original agency projections. This success has resulted from the collaboration of many key public and private stakeholders, and has included an unprecedented level of worldwide investment in vessel fleets and shore-side power infrastructure. This Alternative Proposal establishes additional compliance procedures for the current Shore Power Rule as the last emission reduction target is reached in 2020, while offering a path forward toward potential increased emission reductions from existing and new vessel classes in the years to follow.

Highlights

- Requires that every shorepower-equipped vessel plug-in while at a berth which is able to provide shoreside power to that vessel;
- Is consistent with the emissions reductions goals set by CARB staff proposal;
- Improves and streamlines compliance methodologies for currently regulated fleet;
- Expands regulatory framework to include reporting requirements and evaluation benchmarks for currently unregulated vessels;
- Creates new compliance and reporting requirements for ports and marine terminal operators;
- Establishes a feasibility and cost-effectiveness framework for evaluating potential new shore power requirements and infrastructure needs;
- Reinvests non-compliance fees in new Port infrastructure or waterfront emissions reductions; and
- Establishes prioritization dialogue for investment of private and state Incentives dollars.

This Alternative Proposal builds on California's strong regulatory foundation for reducing vessel emissions while at berth. It outlines a program that will increase compliance and bring currently unregulated vessels into the regulatory framework.

All of the signatory parties commit to continuing this dialogue and to serious consideration of amendments to create and perfect an achievable rule and set of standards that meet the needs of industry, the state, and local public health interests.

Background – Current Regulatory Benefits and Industry Achievements

CARB currently administers the world's most comprehensive At Berth ocean-going vessel regulation. At the time of its adoption this rule was predicted to result in tremendous, unprecedented air quality benefits and also billions of dollars of new investments in vessel and port electrical infrastructure. Under the current At-Berth regulation, CARB staff estimated (in the original 2007 ISOR) that:

- "… the proposed regulation would reduce hoteling diesel PM and NOx emissions from container ships, passenger ships, and refrigerated cargo ships by 50 percent and 75 percent relative to levels expected to be emitted in 2014 and 2020, respectively." (pg. 14)

- "…approximately 1,100 tons of diesel PM and 61,700 tons of NOx will be removed from California's air between 2006 and 2020 due to the implementation." (pg. 15)

- "For the container-ship category, the regulatory period is 2009-2030 to account for ship turnover. Total emissions reductions to 2030 are 2,600 tons of diesel PM and 140,000 tons of NOx." (pg. 16, Table 4)

- "In addition, hoteling CO2 emissions are expected to be reduced by 122,000 to 242,000 metric tons in 2020." (pg. 14)

- "… total statewide costs for affected businesses and port authorities to comply with the proposed regulation to be approximately $1.8 billion, in 2006 dollars." (pg. 21)

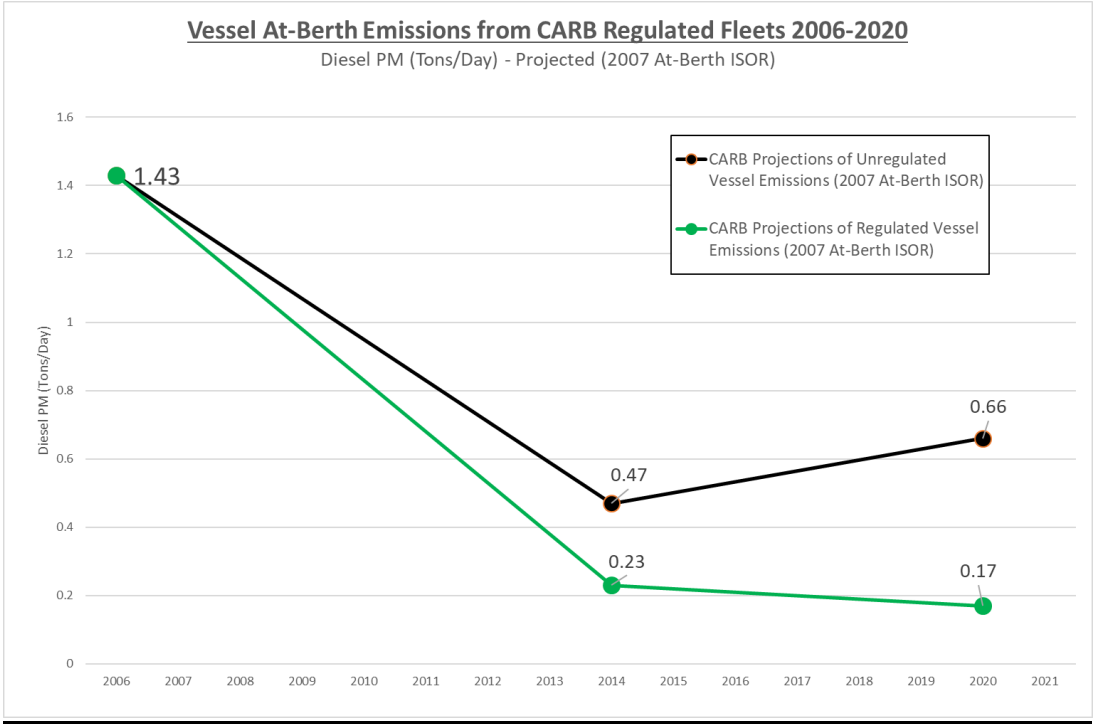
- "Annually, the costs are expected to vary from $30 million to $137 million. … the high end of the range represents a year when capital expenditures are being made for shoreside infrastructure and for retrofitting a considerable number of ships to meet the 2020 milestone." (pg. 21)

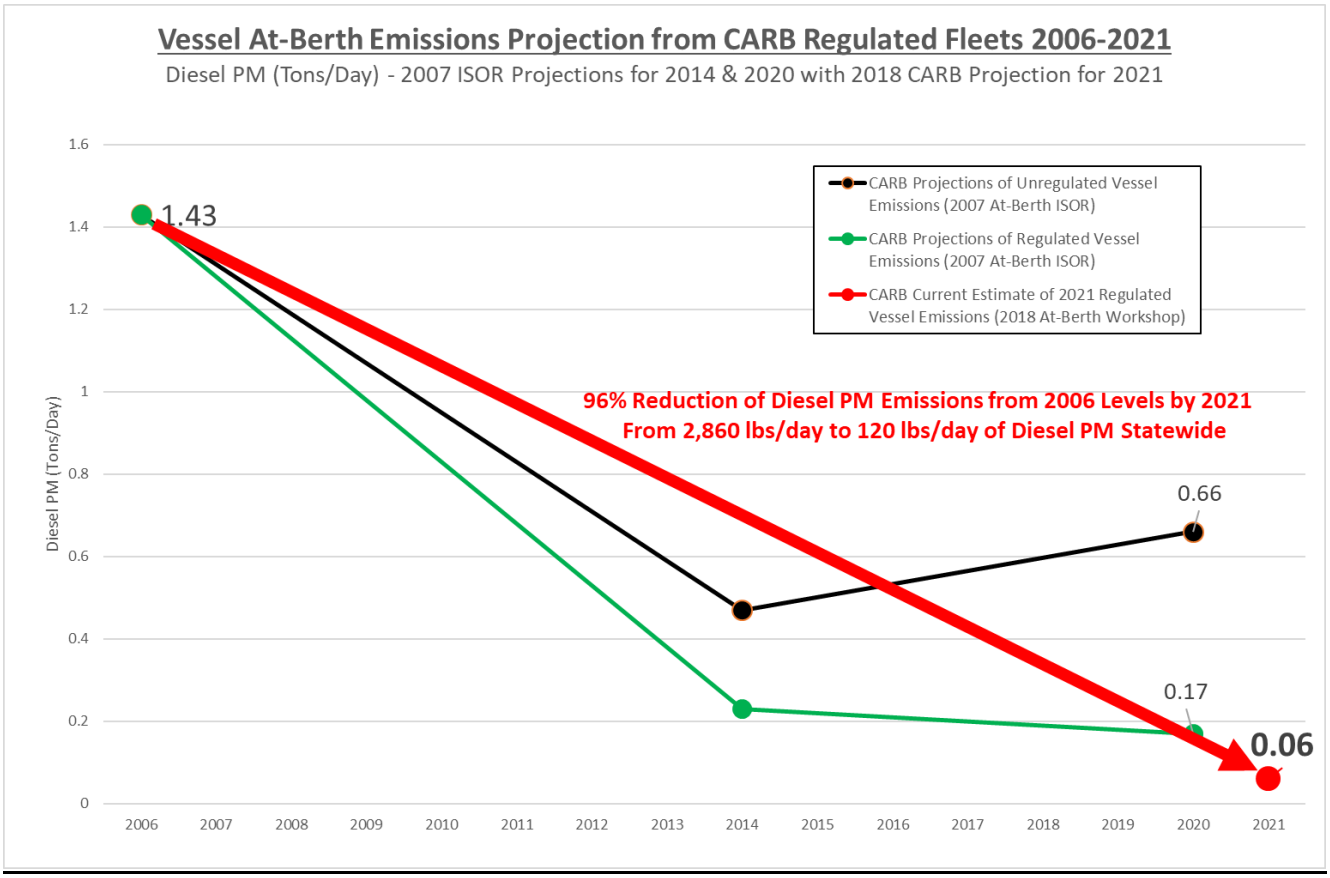
- "The total costs to a typical ship company complying with the proposed regulation, including capital and ongoing costs are estimated to be about $34 million. This cost would be distributed over the years 2009 to 2020 for passenger ship companies and reefer ship companies and to 2030 for container ship companies." (pg. 21)

- "Similarly, the total costs to a typical terminal operator complying with the proposed regulation, including capital and ongoing costs, are estimated to be about $11 million. … With 31 terminals and 35 vessel fleets affected by the proposed regulation, the costs to a typical business would be $26 million." (pp. 21-22)

- "The costs to be expended by the port authorities to add shore-power equipment to their facilities ranges from $4 million to $86 million. … Staff assumes that the landlord ports will work with their tenants, the terminal lessees, to provide the shoreside infrastructure necessary to meet the requirements of the proposed regulation. Furthermore, staff assumes that the landlord ports will eventually recover their capital costs through modifications to terminal leases, while the non-landlord ports will recover their capital costs through fees collected from the carriers." (pp. 22-23)

The results of the current rule and the resulting estimated $1.8 billion investment by the regulated components of the maritime industry have been impressive – with total Diesel PM projected by CARB staff to be reduced by 96% since 2006 in 2021. (see below charts based on CARB data, Attachment A)


Vessel At-Berth Emissions from CARB Regulated Fleets 2006-2020
Diesel PM (Tons/Day) - Projected (2007 At-Berth ISOR)
Diesel PM (Tons/Day)
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
1.43
0.47
0.23
0.66
0.17
CARB Projections of Unregulated Vessel Emissions (2007 At-Berth ISOR)
CARB Projections of Regulated Vessel Emissions (2007 At-Berth ISOR)


Vessel At-Berth Emissions Projection from CARB Regulated Fleets 2006-2021
Diesel PM (Tons/Day) - 2007 ISOR Projections for 2014 & 2020 with 2018 CARB Projection for 2021
Diesel PM (Tons/Day)
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
1.43
0.66
0.17
0.06
96% Reduction of Diesel PM Emissions from 2006 Levels by 2021
From 2,860 lbs/day to 120 lbs/day of Diesel PM Statewide
CARB Projections of Unregulated Vessel Emissions (2007 At-Berth ISOR)
CARB Projections of Regulated Vessel Emissions (2007 At-Berth ISOR)
CARB Current Estimate of 2021 Regulated Vessel Emissions (2018 At-Berth Workshop)

Alternative Proposal Overview

The Alternative Proposal establishes a path forward to increase compliance and continue to ensure further emission reductions from vessels while at-berth in California ports. The Proposal includes measures to ensure compliance and emissions reductions consistent with current CARB emissions goals, expand investments in port infrastructure, and increase vessel compliance.

CARB currently regulates Container, Passenger and Refrigerated vessel fleets and the ports they visit. CARB has also determined currently unregulated vessel fleets include Ro-Ro, Auto Carrier, Liquid Bulk and Tanker vessels and the ports they visit.

Improves the Currently Regulated Vessel Program

The following outcomes will be assured through a series of amendments to the existing rule:

- Improves and streamlines compliance methodologies for the currently regulated fleet in 2020.
- Creates new compliance and reporting requirements for ports and marine terminal operators.
- Requires that when a terminal is able to provide shorepower to a shore power-equipped vessel that the vessel must plug-in while at berth, subject to exceptions or exemptions.
- Reinvests non-compliance fees in new Port infrastructure or waterfront emissions reductions.
- Prioritizes cost-effective investment of private and CARB Incentives dollars.
- Establishes a consensus regulatory framework for the evaluation of future rule expansions.

With respect to currently Regulated Vessel Fleets and Ports, the Alternative Proposal would update and improve current vessel compliance mechanisms applicable immediately to the 2020 fleet requirements, establish new and expanded marine terminal and port compliance requirements, and create a framework for new investment in at-berth infrastructure.

With respect to currently Unregulated Vessel Fleets, these fleets would be included in the amendments as well. The Alternative Proposal would establish reporting compliance methodologies and evaluation benchmarks consistent with the current staff proposal for Bulk vessels for all vessel types and meet all of CARB's SIP requirements, the Climate Change Scoping Plan, and the AB 617 Blueprint.

Builds a Framework to Include Future Vessel Types and Fleets

During the November 2018 work sessions held with the Industry Coalition and its members, CARB indicated that to be viable, an Alternative Proposal should at least meet and achieve the following principles:

- Emissions reduction goals of the current CARB staff proposal must be met
- All parties to a successful at-berth connection must have substantive roles to play in the new regulatory framework for the currently Regulated Vessel Fleets: vessels, marine terminal operators, ports, and equipment providers.
- If a "check-list" approach is applied to currently Regulated Vessel Fleets, non-compliance must have consequences.
- Vessel Fleet rules should not include complicated credit or trading schemes.

Alternative Proposal – Substantive 2020 Effective Amendments
*All provisions **E**ffective Immediately upon Adoption at December 2019 CARB Board Meeting*

FOR CURRENTLY REGULATED VESSEL FLEETS AND ASSOCIATED TERMINALS and PORTS:

- CONNECTING EQUIPPED VESSELS – When a Shorepower-Equipped Berth is available and able to safely Connect a Shorepower-Equipped Vessel, the connection must be made.
  No time-based rules (including 3&5-hour rule). Commissioning is presumed to be a Connection. Use updated definitions for vessel connected, plugged, and able to work.

- PORTS and MARINE TERMINALS ARE REQUIRED TO PLAN & REPORT – all Ports and Marine Terminal Operators must comply with recordkeeping, reporting rules and submit Terminal Plans with subsequent updates beginning in 2021 for currently regulated fleets. Updates must include description and timeline of all infrastructure installations planned at specific-berths.

Accelerated Transition to New Requirements & Improve Compliance Over Current Rule

- Enforce Vessel Fleet Compliance against Vessel Compliance Checklist (to be developed)
  Vessel Fleet Compliance would be determined on an Annual Fleet-Average Basis by Port
  2020 – 80% compliance w/ checklist
  2031*– 85% compliance w/ checklist *(dependent on feasibility and rulemaking)
  Vessel Fleet Compliance reporting would occur on an Annual Basis
  Update and improve current reporting requirements and avoid usage of old technology or applications (i.e. approve uses of automated technologies).

- Enforce Marine Terminal compliance against Terminal Compliance Checklist (to be developed)
  Marine Terminal Compliance would be determined on an Annual Berth-Average Basis
  2022 – 80% compliance w/ checklist
  2031* – 90% compliance w/ checklist *(dependent on feasibility and rulemaking)
  Marine Terminal Compliance reporting would occur on an Annual Basis
  Marine Terminal 30-day Reports for non-connection, equipment, & electrical issues

- At-Berth Infrastructure Incentive Funding Applications by Ports remain eligible for GGRF/VW Incentives independent of Vessel or Terminal Checklist compliance status

- Conform and maintain existing exemptions and exceptions plus add new and clarifying exceptions for Vessel and Marine Terminal safety and force majeure situations

- Maintain existing regulatory thresholds for minimum number of calls for Regulated Fleets on a port by port basis (including treating LA/LB as one port for Fleet thresholds)

FOR ALL CURRENTLY UNREGULATED VESSEL FLEETS AND ASSOCIATED MARINE TERMINALS and PORTS:

- BULK CARGO, RO-RO & TANKER VESSEL FLEETS ARE REQUIRED TO REPORT – all vessels must report General Visit Information Annually beginning in 2021

- PORTS and MARINE TERMINALS ARE REQUIRED TO PLAN & REPORT – all Ports and Marine Terminal Operators serving currently unregulated fleets must comply with recordkeeping, reporting rules and submit Terminal Plans with subsequent updates beginning in 2024

FOR OPERATORS OF ALTERNATIVE EMISSIONS CONTROL STRATEGIES:

- Certification must demonstrate cost-effectiveness and Emissions Control greater than Vessel Fleet Average Basis standard

Alternative Proposal - Procedural Provisions to Guide Consideration of Post-2020 Amendments
Guidelines for Process to Run Concurrently with and Subsequent to Adoption of 2020 Rule Amendments

APPLICABLE TO ALL AT BERTH RULE EXPANSION AMENDMENTS FOR THE CURRENTLY REGULATED FLEET AND CURRENTLY UNREGULATED FLEET

- Conduct a feasibility study to identify cost effective emission control programs for all vessel categories based on reasonable implementation deadlines, safety concerns, and technological feasibility. This feasibility study should be conducted in cooperation with all industry stakeholders, be based on data which is made publicly available during study development, and include a detailed evaluation of all of the following:

    (i) the status and timing of rule implementation in light of port/terminal infrastructure planning and any future infrastructure development potentially necessary to provide at-berth emissions controls, with future infrastructure designation to include rigorous cost estimates of any necessary electrical infrastructure modifications or alternatives,
    (ii) the existing shore-side electrical infrastructure, including electrical sub-station and off-terminal electric utility infrastructure, and present availability of alternatives,
    (iii) the feasibility of alternative at-berth emission control technologies to capture emissions from ships that cannot plug in to shore power, including vessel types that can't use the alternatives in each vessel category and for different engine sizes, and including currently unregulated vessel fleets,
    (iv) the number and types of alternative control technologies that would be needed at each California port,
    (v) navigation, safety and harbor logistical considerations, especially for barge systems,
    (vi) cost effectiveness of various rule expansion scenarios and alternative programs based on a detailed estimate of the additional emission reductions to be gained with possible expansion of the rule, including an assessment of additional costs on a cost per ton of emissions reduced basis under all possible additional infrastructure scenarios,
    (vii) determine how the marginal cost of various potential port emission control programs compare to other potential efforts to reduce emissions from other sources at ports which could be more cost-effective investments for control programs.
    (viii) opportunity costs as at-berth regulations impose substantial infrastructure obligations on the industry, funds may need to be diverted from other important air quality programs, including zero- and/or near-zero emissions vehicles and equipment, to ensure compliance as soon as possible.

- Evaluate emission control programs for all key source categories that operate in and around ports in order to prioritize incentive funding from GGRF/VW and other sources of incentive funds and maximize total emission reduction per dollar, with the most long-term residual emissions benefits, and facilitating highest cost-effectiveness. For programs that operate throughout California, evaluate ports within regional context (versus other regional potential sources of prioritized health risk or criteria pollutant evaluation) instead of by comparing ports against each other.

SUBSEQUENT ACTION FOR CURRENTLY REGULATED VESSEL FLEETS, MARINE TERMINALS, and PORTS:

For Implementation After Current Rulemaking (2021 and beyond):

- Establish regular feasibility "check-in" steps as part of the rule, 2022, 2025, 2028, 2031, to assess whether the proposed implementation deadlines remain viable or can be accelerated through additional amendments to the rule.

- Any acceleration would require providing vessels with at least 18 months' notice in advance of a future rule effective date.

CONCURRENT AND SUBSEQUENT ACTIONS FOR CURRENTLY UNREGULATED VESSEL FLEETS, MARINE TERMINALS, and PORTS:

During Rulemaking (2019-2020):

- Immediately disclose the Bulk Vessel cost-effectiveness calculations which led to their exclusion from emissions reductions.

- Compare Bulk Vessel cost-effectiveness with other vessel cost-effectiveness calculations for Tankers and Ro-Ro's.

- Contrast DPM reductions from the Ro-Ro and Tanker fleets with other sources of emissions at and near Ports and Terminals.

- Conduct actual emissions profiles for all bulk, ro-ro, and tanker terminals, individually by actual operating Port facilities, not "Port Complex" entities.

- Evaluate all bulk, ro-ro, and tanker terminals, individually for shore-based alternative emissions controls, and water-based alternative emissions controls.

After Rulemaking (2021 and beyond):

- Establish program staff calendar and deliverable to the Board for future discussion of whether or not these vessel fleets are good subjects for statewide rulemaking or if their emissions are best off-set through incentives, MOUs, or alternative emission reduction strategies. Discussion required in context of SIP, AB 617, and Scoping Plans.

- Establish 2025, 2028 and 2031 as target dates for full reviews of Bulk, Ro-Ro, and Tanker Reporting Data and Terminal infrastructure plans and application of new evaluation of Cost-Effectiveness Data and Emissions.

PRIORITIZATION OF AWARDING PORT (AT BERTH OR ALTERNATIVE) INCENTIVES AND USE OF NON-COMPLIANCE FEES:

During Current Rulemaking and After Rulemaking (2019 and beyond)

- Prioritize Port projects and emissions reductions alternatives for receipt of GHG Reduction Fund and VW Settlement Fund proceeds

- Take a multi-pronged approach towards incentives for new At-Berth or alternative emissions reductions programs at Ports which is reflective of need for multiple strategies and approaches, and which acknowledges need for demonstrations to help establish cost-effectiveness and feasibility goals

- Utilize non-compliance fee revenues to build pooled funding which can be reinvested into shorepower infrastructure or other port-related air quality programs in accordance with prioritization based on cost-effectiveness

Attachment A

Data References

2007 ISOR, pg. 6-7:

3. EMISSIONS INVENTORY

Hotelling emissions are associated with the use of diesel-fueled auxiliary engines on ocean-going ships to power the vessels' electrical systems while the ships are docked. These emissions are a function of how often the ship visits a California port, how long the ship is at berth, the emissions rate of the engines, and the typical operating load of the auxiliary engines while the ship is at berth.

ARB staff estimates that in 2006, the statewide hotelling emissions from approximately 2000 ocean-going vessels was 1.8 tons per day (TPD) of diesel PM emissions, and 21.1 TPD of NOx emissions. Table I presents hotelling emissions for the six major categories of ocean-going vessels that visit California ports—container ships, passenger ships, reefer ships, vessel carriers, bulk ships, and tankers. As can be seen in this table, hotelling emissions from the three affected ship categories, container ships, passenger ships, and reefer ships, represent over 80 percent of total statewide hotelling emissions.

Table 1: Estimated 2006 Hotelling Emissions by Ship Category

Ship Category	2006 Emissions, Tons/Day	
	NOx	PM
Container	13.8	1.1
Passenger	2.8	0.2
Reefers	0.9	0.1
Tanker	2.0	0.2
Bulk/General	1.0	0.1
Vehicle Carriers	0.6	0.1
Totals	21.1	1.8

Table 2: Estimated 2006 Hotelling Emissions by Port (Tons per Day)

Port	NOx	PM
Los Angeles/Long Beach	14.3	1.2
Oakland	2.6	0.2
San Diego	1.1	0.1
Hueneme	0.7	0.1
San Francisco	0.5	0.1
Other Ports	1.2	0.2
Total	21.1	1.8

As can be seen in this table, most of the shipping activities and hotelling emissions occur at the largest ports in California: Los Angeles and Long Beach followed by Oakland. The six ports affected by the proposed regulation account for over 90 percent of total hotelling emissions at California ports.

Staff developed growth factors for each ship category to project future hotelling emissions. In general, the growth in vessel hotelling emissions is directly proportional to the growth in vessel visits, ship size, berthing times, and, in the case of container ships, the number of refrigerated containers aboard.

Hotelling emissions from ocean-going ships are predicted to increase from 2006. Container ship and passenger ship emissions are expected to double by 2020. Reefer ship emissions are expected to decline at the Ports of Long Beach and Los Angeles, slightly increase at the Port of Hueneme, and triple at the Port of San Diego by 2020.

Table 3 presents projected 2014 and 2020 emission estimates for container ships, passenger ships, and reefer ships. In December 2005, the Board adopted an auxiliary engine fuel regulation that would limit the sulfur content of fuel used with auxiliary engines starting in 2007. At the time this staff report was published, the regulation had been challenged in federal district court and is undergoing appeal at the Ninth Circuit Court of Appeals. The future emission projections were based on the assumption that the auxiliary engine regulation would ultimately be upheld and the auxiliary engines would be operating on low-sulfur fuel.

2007 ISOR, Appendix B, pg. B-19:

III. EMISSION ESTIMATES

Using the revised methodology we can estimate emissions associated with container, cruise, and reefer vessels operating at ports subject to the proposed Shore Power Regulation. Table III-1 provides auxiliary engine hotelling emissions estimates by vessel type; we estimate covered emissions sources emit about 17 tons/day NOx and 1.5 tons/day PM in 2006. Assuming existing controls (without the benefit of the proposed regulation) we estimate NOx emissions will grow in 2020 to approximately 37 tons/day, and in 2020 PM emissions will grow to approximately 0.6 tons/day. As the data suggest, ARB's auxiliary engine regulation that was adopted in 2005 will generate significant reductions in future years.

Table III-1 Auxiliary Engine Hotelling Emissions by Vessel Type without Shore Power Regulation

Emissions - 2006 (tons/day)				
Vessel Type	**NO_x**	**PM_{10}**	**ROG**	**SO_x**
Container	13.8	1.12	0.32	8.1
Cruise	2.5	0.24	0.06	1.7
Reefer	0.9	0.07	0.02	0.5
Total	**17.1**	**1.43**	**0.40**	**10.33**
Emissions - 2014 (tons/day)				
Vessel Type	**NO_x**	**PM_{10}**	**ROG**	**SO_x**
Container	21.5	0.38	0.52	0.57
Cruise	3.6	0.07	0.09	0.09
Reefer	1.0	0.02	0.03	0.03
Total	**26.1**	**0.47**	**0.63**	**0.69**
Emissions - 2020 (tons/day)				
Vessel Type	**NO_x**	**PM_{10}**	**ROG**	**SO_x**
Container	30.8	0.55	0.75	0.82
Cruise	5.2	0.09	0.12	0.13
Reefer	1.3	0.02	0.03	0.04
Total	**37.3**	**0.66**	**0.91**	**0.99**

2007 ISOR, pg. 15:

Figure 1: Projected Diesel PM Emissions with and without the Proposed Regulation

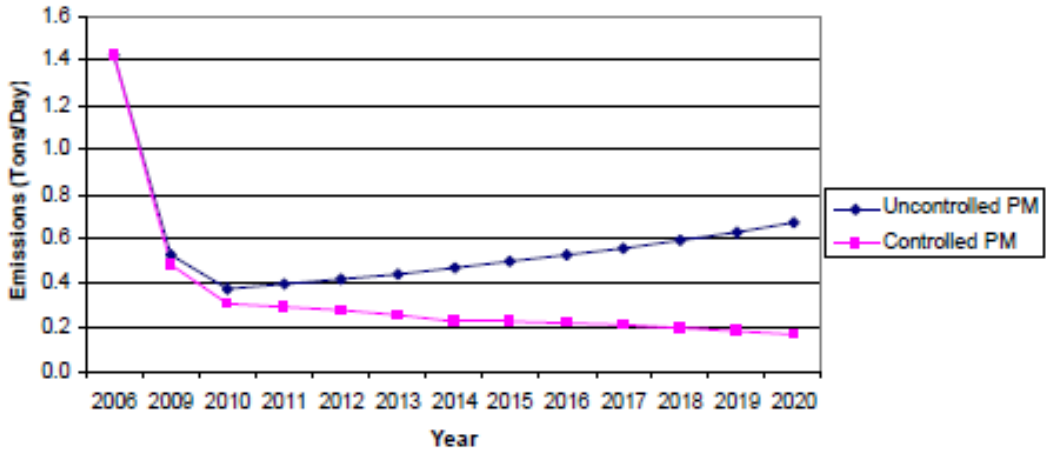
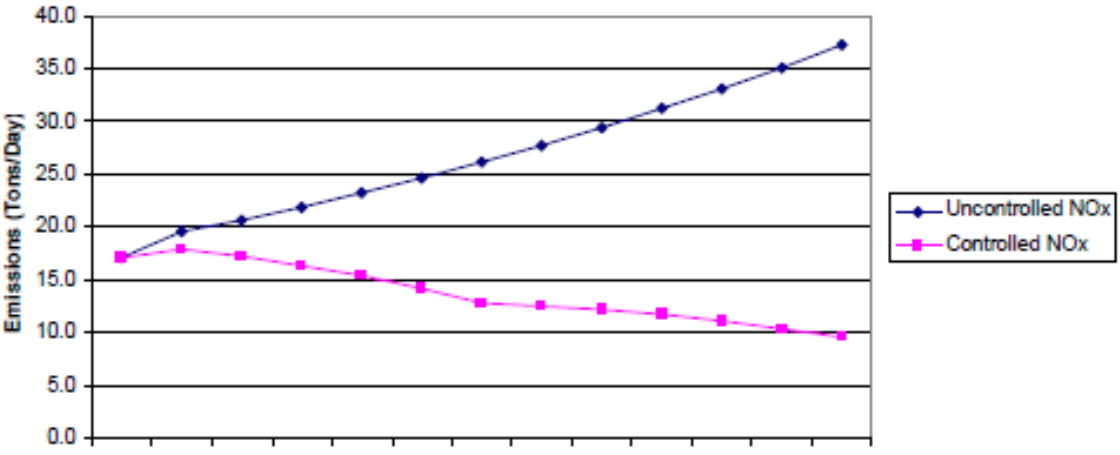


Figure 2: Projected NOx Emissions with and without the Proposed Regulation



CARB, ""CARB Draft At Berth Emissions Estimates (from Aux Engines and Boilers) under Existing Regulation and Draft Regulatory Concept (11/8/2018)" ("2018 Emissions Estimates")

2018 Emissions Estimates, DPM Inventory A:1-AE:23

2016 At-Berth Existing Rule Diesel PM (DPM) Emissions (Tons/Year)
Auxiliary Engine Emissions DPM (Tons/Year)

Air Basin	San Francisco Bay Area Air Basin						South Coast Air Basin		South Central Coast Air Basin	Sacramento Valley Air Basin	San Diego Air Basin	San Joaquin County Air Basin	North Coast Air Basin	
Ships	Carquinez MTC	Rodeo MTC	Oakland	Redwood City	Richmond MTC	San Francisco	Long Beach	Los Angeles	Hueneme	Sacramento	San Diego	Stockton MTC	Eureka	Total (TPY)
Container/Reefer	0.0	0.0	4.9	0.0	0.0	0.1	5.7	7.0	0.7	0.0	0.1	0.0	0.0	18.5
Tanker	2.7	1.1	0.0	0.0	3.6	0.1	4.1	1.8	0.1	0.0	0.5	0.5	0.0	14.5
Cruise	0.0	0.0	0.0	0.0	0.0	1.9	1.8	0.8	0.0	0.0	0.8	0.0	0.0	5.2
Roro	0.6	0.0	0.0	0.0	0.5	0.0	0.7	0.6	0.9	0.0	1.5	0.0	0.0	5.0
Bulk/General	0.3	0.0	0.1	0.1	0.2	0.0	0.6	0.7	0.1	0.4	0.1	1.0	0.0	3.7
Total	3.6	1.1	5.0	0.1	4.3	2.1	12.9	10.9	1.8	0.4	3.0	1.5	0.0	46.8

2021 At-Berth Existing Rule DPM Emissions (Tons/Year)
Auxiliary Engine Emissions DPM (Tons/Year)

Air Basin	San Francisco Bay Area Air Basin						South Coast Air Basin		South Central Coast Air Basin	Sacramento Valley Air Basin	San Diego Air Basin	San Joaquin County Air Basin	North Coast Air Basin	
Ships	Carquinez MTC	Rodeo MTC	Oakland	Redwood City	Richmond MTC	San Francisco	Long Beach	Los Angeles	Hueneme	Sacramento	San Diego	Stockton MTC	Eureka	Total (TPY)
Container/Reefer	0.0	0.0	4.0	0.0	0.0	0.2	5.9	6.1	0.2	0.0	0.1	0.0	0.0	16.5
Tanker	2.6	1.1	0.0	0.0	3.5	0.1	4.4	2.0	0.1	0.0	0.6	0.5	0.0	14.9
Cruise	0.0	0.0	0.0	0.0	0.0	2.0	1.6	0.7	0.0	0.0	0.9	0.0	0.0	5.2
Roro	0.7	0.0	0.1	0.0	0.6	0.0	0.9	0.8	1.0	0.0	1.7	0.0	0.0	5.9
Bulk/General	0.4	0.0	0.1	0.1	0.2	0.0	0.8	0.9	0.1	0.5	0.2	1.2	0.0	4.3
Total	3.7	1.1	4.1	0.1	4.3	2.3	13.7	10.5	1.4	0.5	3.5	1.7	0.0	46.9

2021 At-Berth Draft Regulatory Concepts DPM Emissions (Tons/Year)
Auxiliary Engine Emissions DPM (Tons/Year)

Air Basin	San Francisco Bay Area Air Basin						South Coast Air Basin		South Central Coast Air Basin	Sacramento Valley Air Basin	San Diego Air Basin	San Joaquin County Air Basin	North Coast Air Basin	
Ships	Carquinez MTC	Rodeo MTC	Oakland	Redwood City	Richmond MTC	San Francisco	Long Beach	Los Angeles	Hueneme	Sacramento	San Diego	Stockton MTC	Eureka	Total (TPY)
Container/R	0.0	0.0	1.6	0.0	0.0	0.2	1.7	2.1	0.1	0.0	0.0	0.0	0.0	5.6
Tanker	2.6	1.1	0.0	0.0	3.5	0.1	4.4	2.0	0.1	0.0	0.6	0.5	0.0	14.9
Cruise	0.0	0.0	0.0	0.0	0.0	0.6	0.8	0.4	0.0	0.0	0.3	0.0	0.0	2.1
Roro	0.7	0.0	0.1	0.0	0.6	0.0	0.9	0.8	1.0	0.0	1.7	0.0	0.0	5.9
Bulk/Genera	0.4	0.0	0.1	0.1	0.2	0.0	0.8	0.9	0.1	0.5	0.2	1.2	0.0	4.3
Total	3.7	1.1	1.8	0.1	4.3	0.9	8.6	6.2	1.3	0.5	2.8	1.7	0.0	32.9

Attachment B

Policy & Procedural Context for Alternative Proposal

In addition to the existing Regulations, CARB is operating under or has adopted multiple policy positions with respect to the consideration of updates to the scope, breadth, and applicability of the At-Berth Rules. These include all of the following*:*

Executive Order B-32-15, Sustainable Freight Action Plan, Action G-3 (pg. C-53)(adopted 2016):

3. At-Berth Regulation Amendments
Overview: The goal of this proposed measure is to further reduce emissions from ships. ARB staff would develop and propose amendments to the current At-Berth Regulation and look for additional reductions from additional vessel fleets or types.
…
Proposed Actions: ARB would evaluate how the current At-Berth Regulation can be amended to achieve further emissions reductions by including smaller fleets and/or additional vessel types (including roll-on/roll-off vehicle carriers, bulk cargo carriers, and tankers). In addition, there are two companies with portable emissions capture and control systems that have successfully demonstrated performance and may now be used for compliance with the current Regulation on certain container vessels. If one or both systems prove to be feasible and cost-effective on additional vessel types, the technology could help support an ARB staff proposal to expand the scope of the Regulation to include additional vessel types and/or smaller fleets. ARB staff anticipate bringing this measure to the Board in 2017.

Estimated Cost: ARB will estimate costs from this action during the measure development process for the Proposed 2016 State Strategy for the State Implementation Plan. See http://www.arb.ca.gov/planning/sip/sip.htm.

Benefits: This action is anticipated to provide criteria pollutant and greenhouse gas emissions reduction benefits. ARB will quantify emissions reductions from this action during the measure development process for the Mobile Source Strategy and Proposed 2016 State Strategy for the State Implementation Plan. See http://www.arb.ca.gov/planning/sip/2016sip/2016mobsrc.htm and http://www.arb.ca.gov/planning/sip/sip.htm.

2016 State Implementation Plan (Resolution 17-7, Attachment A, "Proposed New SIP Measures and Schedule"), Mobile Source Strategy (pg. 84), (adopted 2017)

Measure Title: At-Berth Regulation Amendments
Measure Overview: The goal of this measure concept is to further reduce emissions from ships at berth and to advance the commercialization of near-zero and zero emission technologies. ARB staff would develop and propose amendments to the current At-Berth Regulation to include other vessel fleets and types.
…
Description of Measure and Commitment: In December 2007, ARB approved the Airborne Toxic Control Measure for Auxiliary Diesel Engines Operated on Ocean-Going Vessels At-Berth in a California Port Regulation (Regulation). The Regulation was designed to reduce emissions from diesel auxiliary engines on container ships, passenger ships, and refrigerated cargo ships while at berth at California's major seaports. The Regulation is also limited to fleets of 25 or more vessels (five or more for passenger ships).

ARB would investigate whether the Regulation can be amended to include smaller fleets and/or additional vessel types (including roll-on/roll-off vehicle carriers, bulk cargo carriers, and tankers). In addition, there are two companies working on portable systems. One company has successfully demonstrated that its system can provide durable performance and may now be used for compliance with the Regulation on specified vessel types. If one or

both systems become commercially available and are cost-effective, the technology could help support an ARB staff proposal to expand the scope of the Regulation to include additional vessel types and/or smaller fleets. ARB staff needs to investigate the feasibility and cost-effectiveness of expanding shore-power or alternative At-Berth technologies to additional vessel fleets and types not currently covered by the existing Regulation.

Climate Change Scoping Plan Update (pp. 73-74, 78-80, Appendix H) (adopted 2017)

Transportation Sustainability

California's population is projected to grow to 50 million people by 2050. How and where the State grows will have important implications for all sectors of the economy, especially the transportation sector. …

Transportation also enables the movement of freight such as food, building materials, and other consumable products, as well as waste and recyclables. The California freight system includes myriad equipment and facilities, and is the most extensive, complex, and interconnected system in the country, with approximately 1.5 billion tons of freight valued at $2.8 trillion shipped in 2015 to, through, and within California. Freight dependent industries accounted for over $740 billion of California's GDP and over 5 million California jobs in 2014.

…

Efforts to Reduce Greenhouse Gases

The measures below include some required and new potential measures to help achieve the State's 2030 target and to support the high-level objectives for the transportation sector. Some measures may be designed to directly address GHG reductions, while others may result in GHG reductions as a co-benefit. …

Ongoing and Proposed Measures – Sustainable Freight

• Implement the California Sustainable Freight Action Plan:

• 25 percent improvement of freight system efficiency by 2030.

• Deployment of over 100,000 freight vehicles and equipment capable of zero emission operation, and maximize near-zero emission freight vehicles and equipment powered by renewable energy by 2030.

…

[Table H3-2. Vehicle Technology and Fuel Description]

2016 Mobile Source Strategy

The Mobile Source Strategy identifies actions to be undertaken to simultaneously meet air quality standards, achieve GHG emission reduction targets, decrease toxics health risk, and reduce petroleum consumption from transportation emissions by 2031. More information on the Mobile Source Strategy can be found at: https://www.arb.ca.gov/planning/sip/2016sip/2016mobsrc.htm

The California Sustainable Freight Action Plan

The California Sustainable Freight Action Plan (Action Plan) is a multi-State agency effort to improve freight system efficiency by 25 percent by 2030, and to deploy over 100,000 freight vehicles and equipment capable of zero emission operation, and maximize near-zero emission freight vehicles and equipment powered by renewable energy by 2030.

The Action Plan Includes recommendations on: • A long-term 2050 Vision and Guiding Principles for California's future freight transport system. • Targets for 2030 to guide the State toward meeting the Vision. • Opportunities to leverage State freight transport system investments. • Actions to initiate over the next five years to make progress towards the Targets and the Vision. • Pilot projects to achieve on-the-ground progress in the near-term. • Additional concepts for further exploration and development, if viable. More information on can be found at: http://www.dot.ca.gov/casustainablefreight/

AB 617 Community Air Protection Blueprint, Appendix D (pp. D-3-4, D-6, D-8-10) (adopted 2018)

II. STATEWIDE EMISSION REDUCTION STRATEGIES

Identifying specific strategies for reducing criteria air pollutants and toxic air contaminants in communities with high cumulative exposure burdens is critical for implementing strong statewide actions to ensure new emissions reductions. The strategies outlined in this section reflect actions that CARB and air districts are already taking to deliver new reductions in communities. This includes new strategies from existing air quality and climate plans, early action incentive funding appropriated by the Legislature, and additional community-focused actions (e.g., new regulatory measures, targeted enforcement activities, other new tools and resources).

FOUNDATIONAL STRATEGIES IN CARB AIR QUALITY AND CLIMATE PLANS
CARB's Governing Board has adopted several comprehensive air quality and climate plans in recent years, including the State Strategy for the State Implementation Plan, the California Sustainable Freight Action Plan, California's 2017 Climate Change Scoping Plan, and the Short-Lived Climate Pollutants Reduction Strategy. Each of these plans includes a suite of emissions reduction strategies that will address many of the sources that are concentrated within heavily impacted communities like cars, trucks, freight sources, and other equipment. Together they provide a foundation for additional emissions reductions needed to deliver healthful air in communities with high cumulative exposure burdens.

Table D-1, Table D-2, and Table D-3 provide lists of new CARB strategies associated with these plans. CARB staff have already begun developing regulations, policies, and incentive programs to implement these strategies. This is an ongoing process that will begin achieving emissions reductions in the near-term and providing benefits that support community-level actions, with a focus on zero emission technologies where the technologies are now feasible. New regulations cover the following range of sources:

- For communities heavily impacted by freight sources –

o Expanded standards for clean operation for ships while they are in port.

…

[Table D-1 "State Strategy for the State Implementation Plan Measures and Schedule (*Approved 2017*)"]
At-Berth Regulation Amendments

…

[Table D-2 Summary of California's 2017 Climate Change Scoping Plan Update Measures (*Approved 2017*)]
Mobile Source Strategy (Cleaner Technology and Fuels [CTF] Scenario)* …
California Sustainable Freight Action Plan* …
*These measures and policies are referred to as "known commitments."

Addendum to the adoption of Resolution 17-7

Furthermore, in addition to the existing Regulations and multiple policy positions regarding potential At-Berth Rule amendments, there was additional procedural, non-policy direction given to the staff by the Board in an Addendum to the adoption of Resolution 17-7, which was the motion to approve the state SIP in March 2017.

This additional direction in the Addendum was that "within 18 months of this date, ARB staff shall develop At-Berth regulation amendments that achieve up to 100% compliance by 2030 for LA Ports and Ports that are in or adjacent to areas in the top 10% of those defined as most impacted by CES."

This is not an adoption of a policy or amendment of a plan, including the SIP, but just a direction to staff to develop and work on the preparation of a proposal for the Board for future consideration. The Alternative Proposal is consistent with this direction and seeks to work with staff to place a set of amendments before the Board which will be an increase in compliance beyond 80%.

Attachment E:
Port of Oakland Cost-Effectiveness Comparison

Current Rule to Proposed Rule DPM Cost-Effectiveness (Oakland 2018)

Average rate of auxiliary engine emissions (DPM):	0.18 g / kWh
Average power of 4 auxiliary engines (container vessels at berth):	1100 kW
Average Oakland time at berth per call (container vessels 2018):	20 hours / call
	3,960g DPM per call

Number of New Vessel calls covered (per Application of Proposed Reg to 2018): 39 calls

Total New At Berth DPM Reductions (2021)(assumes 100% reduction):	154,440 g / year
	340 lbs / year
	0.93 lbs/day
	0.17 tons / year
	0.0005 tons / day
	0.93 lbs/day

2021 Required Power Vaults – Oakland 3 x $2m/vault (CARB est.[1]):	$6,000,000
2021 Required Retrofit Costs per vessel (CARB est.):	$900,000
2021 Required Container vessel retrofits (57) for new visits (403):	7 calls/vessel
2018 Oakland newly regulated calls (39)	5.5 vessels
Total Estimated 2021 Oakland Costs for 39 calls:	$11,000,000
Annualized (2021-2031):	$1,000,000 / year

Remediation Fund Costs ($4,890/hour) x 39 calls x 20 hours:	$3,814,200 / year

Half Costs DPM:	$500,000 - $1,900,000
Annual DPM tons reduced:	0.17
Cost-Effectiveness:	***$2.9m - $11.2m/ ton***

Apples to Apples COST-EFFECTIVENESS with Current Regulation
Current Regulation ISOR Methodology (pp. 23-24)

> "Because the proposed regulation reduces significant amounts of both NOx and PM, staff also evaluated cost-effectiveness by attributing half the total annualized cost to the PM emission reductions and half to the NOx emission reductions. The resulting cost-effectiveness values using that method are $6,400 per ton of NOx reduced and $345,000 per ton of PM reduced."

> "Table 5. Summary of Cost-Effectiveness for Shore-Power
>
> | | Half Costs for PM (Dollars per Ton of Pollutant Reduced) |
> |---|---|
> | **Container Ships – Oakland** | **$200,000 to $1.2 million**" |

[1] SRIA Appendix A