World Shipping Council Comments
to the
California Air Resources Board (CARB)
on the
Proposed Control Measure for Ocean Going Vessels at Berth

9 December 2019

The World Shipping Council (WSC) is a non-profit trade association that represents the liner shipping industry, which is comprised primarily of operators of containerships, vehicle carriers, and roll-on/roll-off (ro-ro) vessels. Together, WSC's members operate approximately 90% of the world's liner vessel services. Vessels operated by WSC members make frequent calls in California ports, and WSC's members would be directly and substantially affected by the proposed rule.[1]

Before turning to our detailed comments, we wish to highlight several points. First, WSC and its members have actively encouraged CARB to modify the current at-berth regulatory structure, which imposes essentially all of the regulatory obligations and penalty risk on ocean carriers, to establish clear and appropriate obligations for shore side entities to provide the shore power connection infrastructure that is critical to this regulation and to connect arriving vessels that are subject to the rules. For the rules to function effectively, each party that is needed to play a role in meeting the rule's objectives should be provided with clear and achievable regulatory obligations. We therefore support this proposed rule's inclusion of such obligations on ports, marine terminal operators and on emissions control strategy operators.

Second, as you will see below, WSC has provided detailed comments that are intended to improve and streamline the regulatory system through which CARB has regulated at-berth emissions since the original at-berth rules were promulgated. We have serious concerns, however, with CARB's proposal to both substantially *revise* the current at-berth regulatory system *and expand* the applicability of that system to new classes of vessels, particularly ro-ro vessels, which comprise a large number of discrete vessels, only a small percentage of which make infrequent and very short port calls (on average 14 hours and short as 9 hours) in California. No evidence has been presented or reviewed that demonstrates that a cost-effective pathway

[1] A full description of the Council and a list of its members are available at www.worldshipping.org.

exists for controlling ro-ro vessels' auxiliary emissions. Furthermore, CARB's analyses fail to address the major operational, safety and cost issues the proposed "capture and control" systems pose for ro-ro vessels or to account for the emissions generated by these control systems and the tug boats need to maneuver them to and from the vessels. In short, the proposed rule and its supporting analyses fail to provide an adequate explanation and cost-benefit analysis that demonstrate that controlling auxiliary emissions for ro-ro vessels is any more practicable and cost effective than for general cargo ships, which the rule has chosen not to regulate. Instead of expanding the applicability of this rule to new classes of vessels such as ro-ros, we recommend that CARB first consider other, more cost-effective and feasible approaches to achieving further emissions reductions.

Third, we have concerns with CARB's proposed implementation timeline. Substantial additional technical work, planning, approvals and investments in ship and shoreside infrastructure and alternative emissions control strategies will be required to meet the proposed rule's requirements to control at-berth emissions for each regulated vessel call to California. If the CARB Board approves the proposed regulation in April 2020, that would leave 8 months for the industry to try to be prepared to comply with the rule starting on 1 January 2021. The rule already acknowledges that the ports and terminals cannot realistically submit their infrastructure plans within that timeline (their earliest infrastructure plan deadline is 1 July 2021). Equally important, CARB-approved infrastructure expansion plans also requires time for the on-shore infrastructure to be built and permitted. We therefore recommend that the rule be modified so that it takes effect once the port and terminal infrastructure plans have been approved by CARB and the terminals and/or port authorities have built out the infrastructure needed and obtained the necessary permit approvals.

WSC's detailed additional comments and suggestions on CARB's proposed Regulation Order follow for your consideration. Our comments and recommendations are presented in the order that the provisions appear in the proposed Regulation Order. Questions on these comments should be directed to Doug Schneider of the WSC staff at dschneider@worldshipping.org or +1-202-589-1227.

1. Definitions (Section 93130.2 (b)):

   a. *California Approved Emission Control Strategy (CAECS) Operator*: We support the inclusion of this new definition and note that it will be essential not only for CARB to approve the types of CAECS technologies, but also the parties that are approved to operate them. This is particularly important given the problems carriers have faced in obtaining reliable and quality services from the existing barge-based capture systems operators.

   b. *Ready to Work*: We appreciate that this definition was changed to include other government entities that may affect when a vessel is cleared and ready to work. We also recommend that CARB insert in this definition the following after "netting down" and before "United States Coast Guard": ", *the ramp is down and secure (if applicable),*

required shore side labor technicians are present, and the". Finally, we wish to note that changing the "Ready to Work" definition does not solve the problems with the proposed 1-hour connection timeline. That issue is discussed in point 4.d.ii of our comments.

2. CARB Approval of Emissions Control Strategy Operators (Section 93130.5): We support CARB approval not only of particular emissions control strategies, but of parties that operate those strategies. CARB approval of emissions control strategy operators is essential under the proposed revised regulations because they would place penalty obligations on operators for failure to meet their responsibilities under the rule. It is therefore essential that CARB formally approve the named operators or companies operating a particular emissions control strategy. We recommend that the text of 93130.5(a) be slightly amended as follows: delete the words "at a port or terminal" from line 2 and replace "it" in line 2 with "that person". The first change will eliminate confusion about the provision's applicability to emissions control strategies that are deployed not from the terminal or port property but from a barge. The second change would make it clear that the emissions control strategy operator must be approved by CARB.

3. Already Approved Strategies (Section 93130.5 (d) (3)): As noted in the comment immediately above, we recommend that CARB affirmatively approve operators of emissions control strategies, not just the technologies used in those strategies. Therefore, if the existing CARB approvals referenced in this sub-section already include approval of the parties operating the strategy, then we have no objection to this provision. If, however, the existing CARB approvals referenced in this sub-section are only for the strategies and would allow any person or company to operate those strategies, then we recommend that this provision be deleted.

4. Vessel Operator Requirements (Section 93130.7):

   a. *General Requirement* (Section 93130.7): The "Summary of Responsibilities" section of this rule (Section 93130.17) identifies, with one exception discussed in point 12 of our comments, the particular entity that will be held responsible in circumstances in which auxiliary emissions are not controlled. For example, when a commissioned shore power equipped ship arrives, the terminal/port is responsible for connecting the ship to shore power. This is appropriate. The problem is that Section 93130.7 contains checklist items that a commissioned shore power equipped ship will not be able to complete unless the terminal/port completes its obligations under the rule. Section 93130.7's statement that "Any failure to perform any specific items in this section shall constitute a separate violation…" could thus be used to penalize a shore power equipped ship that cannot complete all of the vessel checklist items in 93130.7(e) because the terminal/port failed to meet its rule obligations.

      To correct this misalignment between proposed Sections 93130.7 and the "Summary of Responsibilities" section, we recommend that the second sentence in the opening paragraph of Section 93130.7 be replaced with: "*Any failure to perform any*

specific items in this section shall constitute a separate violation for each day that the failure occurs, except to the extent a vessel operator cannot perform any requirement due to (1) a terminal and/or port's failure to comply with the portions of this Control Measure that impose requirements upon terminals and/or ports, and/or (2) a CARB Approved Emission Control Strategy Operator's failure to comply with the portions of this Control Measure that impose requirements upon CARB Approved Emission Control Strategy Operators."

b. *Shore Power Requirements* (Section 93130.7 (a)): This provision states that commissioned shore power vessels shall plug in to shore power on each visit to a "compatible" shore power berth. CARB staff indicated in discussions with industry that "compatible" relates only to electrical standards, not to terminal or vessel characteristics such as berth location, space, side of vessel fitted with shore power, or other factors. We therefore recommend that CARB amend this provision by inserting the words "functioning, electrically" before "compatible". We also recommend that reference be made to the technical standards of the international organizations, which are IEC/ISO/IEEE 80005-1/80005-2 and IEC 62613-1.

c. *Applicability to Roll-on/Roll-off (ro-ro) Vessels* (Section 93130.7(b)): The rule continues to propose that ro-ro vessels be subject to at-berth emissions controls starting on 1 January 2025. CARB has estimated that the control cost per ton of emissions reduced for ro-ro vessels is $53,600. We believe that estimate is low, for reasons discussed below. Even using that estimate, however, it is worth noting for comparison that CARB estimated that the control cost per ton of emissions reduced for containerships is $13,500.

The proposed rule and its supporting analyses have failed to provide an adequate explanation and cost-benefit analysis that demonstrate that controlling auxiliary emissions for ro-ro vessels is any more practicable and cost effective than for general cargo ships, which the rule has chosen not to regulate. It is also worth noting that ro-ro competes with general cargo and some bulk cargo vessels for the transport of construction and agricultural machinery and a lot of "breakbulk" cargo. Imposing requirements on ro-ro would create a market distortion.

When asked what cost-benefit threshold was used to decide which classes of vessels to regulate and which not to regulate, CARB staff reported that there is no threshold and that the decision to regulate ro-ro was based simply on aggregate emissions. There has been no considered analysis of the costs and benefits of regulating ro-ro auxiliary emissions versus the operational realities associated with regulating this class of vessels, which is comprised of a large number of discrete vessels, only a small percentage of which make infrequent and very short port calls (on average 16 hours and short as 8 hours) in California.

Shore power infrastructure for ro-ro vessels is not emerging in California ports or in any other U.S. or international ports where ro-ros call. There are many reasons for this,

including: the fact that ro-ros increasingly operate like tramp vessels and less like liner vessels, making shore-side power infrastructure difficult to set up; that ro-ros would need to go through expensive electrical system retrofits because container-based shore power units (e.g. AMP's) are not a realistic option; and ro-ro's don't typically carry dedicated electricians that container vessels have (to handle reefer units). CARB is therefore basing regulation of ro-ros on the premise that barge-based capture and control equipment is or will become a viable and practicable emissions control option. Experience to date with the two existing barge-based capture and control service providers has demonstrated that those services are often unreliable, are exceedingly costly, and pose substantial operational and safety problems for ro-ros - namely that the systems cannot be used in windy weather, cannot always reach ro-ro stacks (which may be 40 meters laterally and 40 meters above the waterline), and often prevent simultaneous alongside bunkering operations. If ro-ros cannot bunker in port, they may be forced to bunker at anchorages. Neither ro-ro auxiliary emissions at anchor for bunkering nor the additional emissions from tugboats used to move bunkering barges to and from the anchorage have been accounted for in CARB's analyses.

We also note that barge-based capture and control systems need to be moved into position, by tugboats, after the ro-ro has been secured fast to the pier. This consumes a substantial amount of time, which increases the cost of control per hour of emissions because ro-ro calls are already very short. A related factor that has not been adequately considered is the impact of the tug emissions generated to move the barge-based capture and control system to and from the ro-ro vessels and other vessels that may require barge-based emissions control strategies. Typically, a tugboat will use engines two to four times larger than the ro-ro auxiliary engines to be controlled. As a result, emissions from tugboat operations can significantly offset the emissions reductions gained by requiring ro-ro to use capture and control systems during their vessel calls. The capture and control systems also use generators for power that need to be factored into the total impact analysis for regulating ro-ro auxiliary emissions. While CARB staff included the cost of obtaining tug services and capture and control services in the SRIA, CARB staff has not included in to the environmental analysis, ISOR or the emissions inventory the increased emissions that result from controlling emissions using capture and control system emissions and the tugs that support them.

Another idea that has been proposed to control ro-ro emissions is development of shore-based capture and control systems at the various ro-ro terminals in California. While one land-based system is being trialed, no commissioned land-based systems exist today and we understand that land-based systems would not be a practicable control option at many existing California ro-ro terminals because the piers on which the shore-based control systems would sit could not support the weight of the systems. Furthermore, such systems would obstruct cargo operations as ro-ro stacks are located near the stern where the ramp is located. Ro-ro operators need to be able to stage, maneuver and park cargo all along the quay side. Even if this technology could be built and deployed, the limitations related to use of the systems in inclement weather remain

as does the need to factor in the generator GHG emissions the control systems would produce.

Finally, if ro-ros are diverted – either to concentrated docks within California or to out-of-state alternative ports - due to lack of control technology, access to alternatives, or simply to avoid increased costs, CARB's analyses 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 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 would not only have significant economic costs to the state in terms of lost employment and activity but also result in a net increase in emissions.

For the reasons discussed above, we recommend that CARB not proceed with plans to regulate ro-ro auxiliary emissions in 2025 and instead monitor ro-ro emissions and the ongoing development of technologies that may in the future provide a viable and economically achievable compliance option for these vessels.

d. *Vessel Compliance Checklists* (Section 93130.7 (e)):

i. Before Arrival Communications: We recommend that the requirement in § (1) to communicate "in writing" be eliminated from this provision, as it would impose a method of communication that may not be practicable between a vessel operating at sea and a marine terminal. Electronic communication should be encouraged.

ii. Shore Power Connection Time: § 3(A) would require vessels to begin using shore power or another CAECS within one hour after "Ready to Work". We have serious concerns about the practicability of such a requirement.

While it may, in rare circumstances, be possible for a vessel arriving from a foreign country to meet this requirement because of the time it may take for U.S. Customs to clear the vessel to work, this will mostly not be the case; a regulatory deadline should not be based on a variable such as how long it will take another agency to clear an arriving vessel. Moreover, there would be no Customs inspections for a large percentage of vessels calls to California because the U.S. Customs inspections occur only on the first vessel arrival from a foreign country.

The question is then, would it be practicable for vessels to connect to shore power within one hour after the vessel is secured to the berth? Based on experience, the answer is no. Establishing shore power connections must be done safely by longshore technicians, who may not be immediately available given their other extensive responsibilities (such as maintaining the cranes). Furthermore, many vessels employ systems that must be lifted on/off that require additional connection time. We understand that safety protocols prohibit crane operators from connecting or

disconnecting vessels to/from shore power while it is raining. We are also concerned that an unreasonably short time limit for connecting high-voltage systems could pose safety risks to the workers making the connections and could result in unnecessary damage to the equipment.

For CARB's consideration, one of our Member lines computed, using vessel call data going back to May 2019, how the proposed connection time would affect that company's compliance rate. Out of 135 vessels calls for this period, 38% of the calls would not have met CARB's proposed 1-hour window for connecting to shore power. We note that 27% of those calls were in Los Angeles, 24% in Long Beach, and 54% in Oakland.

We strongly recommend that CARB amend this provision to require vessels to: "Begin using shore power or another CARB approved emissions control strategy as soon as safely practicable and within 3 hours after "Ready to Work."

iii. Shore Power Disconnection Time: § 3(B) would require vessels to cease using shore power no sooner than 1 hour before "Pilot on Board". There will be situations in which this is not a practicable disconnection deadline for ocean carriers because of delayed vessel departures due to weather or vessel traffic or if labor unplugs the vessels early due to their own shift schedules. We therefore recommend that the shore power disconnection time be no sooner than 2 hours before "Pilot on Board". We also request clarification regarding what would happen if the pilot shows up later than the scheduled time, causing the vessel to fail to meet this disconnection time.

iv. Post-Visit Reporting: This provision would require reporting of information for each visit to a California terminal within 7 days of vessel departure. The required visit information includes, among other things, information about whether a vessel uses an exception, if a vessel incident event (VIE) or terminal incident event (TIE) is used for the visit or if a remediation fund payment will be made to cover the visit. It is not realistic to expect vessel operators to be able to report the above visit information in such a short timeframe.

First, the visit information will, for most or all shipping companies, be submitted not by the vessel itself, but by a senior company representative who will collect, review and then submit the information to CARB. One of the reasons for this reporting approach is quality control to ensure that all the required information is properly and consistently presented to CARB. Another reason is the fact that the decision whether to use a VIE, ask the terminal to use a TIE, or to use the remediation fund, is not for the vessel master, but for the company to make since VIEs are allocated based on the company fleets. This process takes time, particularly if there are ongoing negotiations between the shipping company and terminal about whether a VIE or TIE will be used. Weekends, holidays or operational issues affecting the ship's reporting of the data will also slow down this process.

It is also not clear to us why CARB would want the visit information on such short notice and why CARB would want visit information presented in a discrete submission for each visit. We believe that the visit information may, in fact, be more useful to CARB staff if companies submit visit information for all of their vessels (e.g. in a single large spreadsheet) that call California over a fixed period on a quarterly basis. CARB could, for example, require that each company submit visit information no later than 30 or 45 days after the end of each quarter. For example, visit information for all company vessel visits that occurred between 1 January and 31 March would be due to CARB no later than 30 April or 15 May.

We recommend that CARB replace the 7-day visit information reporting requirement with a requirement that visit information be submitted on a quarterly basis (due 30 or 45 days after the last day of the quarter). Given the complexity of the reporting process, CARB staff has supported the idea of establishing a dedicated industry workgroup to focus on reporting requirements for this rule. We recommend that CARB revisit that idea before the rule is finalized.

5. Vessel Visit Exceptions (Section 93130.8): We appreciate that CARB has simplified the vessel visit exception provisions from previous drafts by incorporating safety and emergency events, vessel commissioning, research, vessel incident events (VIE) or terminal incident events (TIE), and remediation fees under the same regulatory category. This makes it clear that all of these categories of events will be treated as exemptions under the rules. We also support CARB's inclusion of a procedure for dealing with situations in which a vessel is unable to complete an at-berth power commissioning visit in a single call to the terminal. This is an important change as unanticipated problems sometimes impact the successful commissioning of a vessel's at berth equipment. We encourage CARB to process commissioning exceptions quickly, so vessel operators do not end up using a VIE for a commissioning that required two vessel calls. Our additional comments on VIEs, TIEs and remediation are provided later in these comments.

6. Terminal Operator Requirements (Section 93130.9): We support CARB's decision to include in this proposed rule clear and appropriate obligations for marine terminals and ports to, among other things, provide the shore side infrastructure to connect ships to at-berth power and to connect commissioned ships in a timely manner when they call. These are functions that commercial ships cannot themselves perform and lack commercial power to require. Including these requirements in the regulation will establish balanced obligations for ships and the terminals they call and will set clear expectations regarding what ports and marine terminals will need to do to fulfill their obligations under the rule.

We recommend that CARB make the following changes to Section 93130.9 to provide additional clarity regarding the terminal operators' responsibilities under this rule:

- Section 93130.9(a)(3): Replace the current text with the following to make it clearer and eliminate confusion about whether a TIE or VIE should be used: "*If the commissioned shore power vessel is berthed in a way that prevents it from connecting to shore power, the terminal shall either: 1) use a TIE, or 2) provide an alternative CARB approved emissions control strategy that is compatible with the vessel*."
- Section 93130.9(d)(3): Amend the visit reporting deadline for terminals consistent with our recommendations for vessel visit reporting (discussed above in point 5.c.iii of these comments).

7. VIEs and TIEs (Section 93130.11): This section describes how VIEs and TIEs should be allocated.

   a. *Fleet-based Allocations*: We support the allocation of VIEs based on company vessel fleets. We note, however, that allocating VIEs based on the fleet's previous year vessel calls to California fails to account for growth in services to California over time. An easy way for CARB to address this would be to set VIEs based on the previous year vessels calls plus a percentage of those calls that accounts for annual growth in the arrival of at-berth regulated vessels.

   b. *VIE and TIE Rates*: The table on page 33 of the proposed rule indicates that all vessels would be granted VIEs for 5% of their previous year vessel calls. Terminals, on the other hand, would initially be granted TIEs for 15% of the terminal's annual vessel visits. That allocation would fall to 5% in 2025. We understand based on discussions with CARB staff that the total percentage of visit exceptions (i.e. VIEs plus TIEs) should not exceed 20% because the current at-berth regulations are set to increase to 80% compliance in 2020. While we understand that reasoning, we note that the proposed rule is substantially different from the current rule in that it would require *each* regulated ships' auxiliary emissions to be controlled, whereas the current rule is based on 80% *fleet* compliance.

      We therefore think that the VIE percentage needs to be increased to account for the fact that this proposed rule will require all containerships and refrigerated cargo vessels to use at-berth power when the rule becomes effective. While many of the issues that have previously prevented commissioned vessels from connecting to at-berth power have been shore side infrastructure-related, we anticipate, based on historical compliance data, that more than 5% of vessel fleets will be unable to comply due to onboard equipment problems, the need to rotate vessels into and out of California services for required surveys and dry- dockings, and due to unpredictable commercial demands that may require shipping companies to deploy or phase-in non-commissioned vessels to meet U.S. import and export trade needs. Furthermore, there are only two CAECS currently in operation and they offer services only in the Ports of Los Angeles and Long Beach. The lack of available CAECS reinforces the need to temporarily increase the VIE percentage.

With the above considerations in mind, we recommend that CARB increase the VIE allocation for 2021-2024 to 10 percent per year.

c. *VIE and TIE Expiration*: The proposed rule states that VIEs and TIEs would expire on January 31 of the year after they are granted. To address frequently challenging market conditions during the winter months, we recommend that CARB allow companies to carry over any unused TIEs or VIE until June 30 of the year after they were granted.

8. CAECS Operator Requirements (Section 93130.12): We commend CARB for including in this proposed rule responsibilities and requirements for CAECS operators. Since these operators will provide essential emissions control services, it is logical that the operators themselves will be subject to checklist obligations and penalties for failing to meet those obligations under the rule. This is particularly important given the historical problems vessel operators have encountered with CAECS operators who, despite having a confirmed booking and contract with a vessel operator, may not show up on time, may cancel a booking on short notice or may breakdown during control operations. When a vessel or marine terminal contracts for CAECS services, the vessel or marine terminal cannot control whether and when the CAECS operator shows up or provides proper control services.

We therefore recommend that, when a CAECS operator fails to provide contracted emissions control services to a vessel or marine terminal, the compliance burden and any penalties for noncompliance be initiated solely against the CAECS operator. We also recommend that CARB amend the visit reporting deadline for CAECS operators consistent with our recommendations for vessel visit reporting (discussed above in part 5.c.iii of these comments).

WSC also believes, as we have communicated in earlier meetings and comments, that it is important to discourage or restrict the use of alternative control emission control technologies in container ports where the clear objective of the existing rule was to facilitate connections to shore-side power. Encouraging or facilitating further expansion of alternative emission control technologies in container terminals undermines the investments made in retrofitting the container fleet and could lead to an absurd and unfavorable outcome in which shore-power equipped container ships are expected to use alternative emission control technologies that are inefficient, often unreliable, and only available at high cost. In short, expansion of emission capture systems in container terminals and ports undermines existing carrier investments and undermines the rules effectiveness in delivering emission reductions that are achieved through the most cost-effective and efficient pathway.

9. Terminal and Port Plan Requirements (Section 93130.14): WSC strongly supports the provisions that require CARB approval of shore-side infrastructure plans applicable to ports and terminals. This is a critical element of the new rule. How well these obligations are implemented will have a significant impact on the future program and whether the rule delivers the expected air quality benefits. In this context, WSC believes that there would be value in explicitly articulating in the revised rule that plans should include, among other

things: a) appropriate changes to existing infrastructure design (e.g., inadequate electrical sub-station/electrical vault configurations); b) expansion of existing electrical infrastructure in container ports to accommodate future rule requirements to enable 95% of all shore power equipped container ship calls to be accommodated through shore-side power; and c) that approved plans include a realistic timeframe for design and construction consistent with the final regulatory dates promulgated in the final rule.

10. Interim Evaluation of Ro-Ro and Tanker Control Technologies (Section 930130.14(d): As emphasized in point 5.b of these comments, we think an adequate case has not been made to include ro-ro vessel auxiliary emissions in this regulation. We hope that CARB staff will carefully consider our arguments regarding the operational problems and costs versus benefits of regulating ro-ro vessel auxiliary emissions. Should CARB proceed with plans to regulate ro-ro auxiliary emissions, we think the interim 2023 evaluation control technologies will be critical in understanding if technology solutions that may facilitate operationally practicable controls of ro-ro (and tanker) emissions are commercially available and cost-effective. We also recommend that CARB include in this interim evaluation comprehensive cost-benefit and practicability analyses for controlling ro-ro auxiliary emissions using available technologies.

11. Remediation Fund Use (Section 93130.15): We generally support CARB's proposal to establish a remediation that regulated entities could pay into to offset auxiliary emissions that the regulated entity would have been responsible for under the regulation. We think it is critical that monies paid into the remediation fund be used on projects to reduce in-sector emissions or impacts of those emissions.

    We recommend that CARB expand the list of circumstances in which vessel operators may use the remediation fund to include vessels that make infrequent calls to California ports (e.g. less than 3 calls per year). This is a logical regulatory approach for addressing infrequent calling vessels (e.g. vessels rotated in to address increased demand or "extra loaders" brought in to ease port congestion) because it would enable the vessels to have a compliance option if CAECS operators, which have limited operations, are not available or operational for a particular visit.

12. Summary of Responsibilities (Section 93130.17): We generally find the "Summary of Responsibilities" matrix on pages 48-49 to be helpful in defining which party or parties are responsible for what actions under a given scenario. We have two recommended changes to the matrix, as follows:

    - One row of the matrix improperly assigns responsibility to the vessel operator for a situation entirely outside of the vessel operator's control. The last row of the matrix on page 48 suggests that in the case of a CAECS failure, the vessel and the CAECS operator would be held responsible. We note that nowhere else in the matrix is a party held responsible for a circumstance completely outside of its ability to control. An arriving vessel has absolutely no ability to control whether a CAECS system will

work properly. The proper function and maintenance of a CAECS is up the CAECS operator. We therefore recommend that "vessel" be removed from the list of responsible parties when a CAECS has a failure. The CAECS operator must be solely responsible for these situations.

- We recommend that CARB change the statement "No shore power, but has other CAECS" in the "Berth" column of the matrix to: "No shore power available, but has other CAECS". This change will address situations in which a terminal that is equipped with shore power cannot for one reason or another connect a shore power equipped vessel to power.

13: Compliance Examples: We recommend that CARB consider publishing a list of situations vessel operators (and other parties with responsibilities under the rule) may face, with a discussion of what happens when that situation occurs. For example, it would be helpful if CARB described how vessel operators should deal with the following situations:

- What happens when labor delays prevent a vessel from connecting to shore power?
- What happens when a booked CAECS operator does not show up?
- What are specific examples of circumstances that would qualify for use of the remediation fund (please note our recommendations in point 11 of these comments)?

# # #