

Valero Benicia Marine Terminal CARB At Berth Terminal Plan

Last Update: November 23, 2021

This terminal plan has been prepared pursuant Section to 93130.14(a)(3) of the Airborne Toxic Control Measure for Auxiliary Diesel Engines Operated on Ocean-Going Vessels At-Berth in a California Port.

Control Strategies

Valero Benicia has consulted with industry and third-party experts, such as Moffatt & Nichol and DNV GL USA, Inc. Maritime, who have evaluated various technologies such as shore power and shore- and barge-based capture and control. They both independently determined that there is currently no commercially available means to comply with the regulation. Valero Benicia reserves the right to continue to evaluate technologies as they become available. As technologies become available, they must be approved by multiple agencies before they can be implemented to comply with the regulation. Once an available strategy has been identified and received all required approvals, Valero Benicia will update this plan and provide it to CARB. Valero Benicia reserves the right to evaluate all innovative options that are or may become available as the terminal continues to plan for CARB compliance.

Strategy 1: Shore Power

Strategy 2: Shore-Based Capture and Control

Strategy 3: Barge-Based Capture and Control

Strategy 1: Shore Power

93130.14(a)(3)(A): Identification of and description of all necessary equipment, including whether it will be located on the vessel, wharf, shore, or elsewhere:

Note that there is no commercially available cable handling/management system with the required reach to service the vessels at the terminal. However, implementation of shore power will require the following equipment and infrastructure at a minimum:

- *New dedicated service feed from the Utility provider (PG&E)*
- *New substation, transformer, and switchgear supported on a new overwater platform*
- *New overwater platform to support shore power vaults, shore power cable reels, and a shore power cable handling/management system that can provide the shore power cable to the vessel*
- *New overwater access walkways and other miscellaneous site improvements*
- *Modifications / improvements to all the vessels calling at the terminal to be shore power capable*

93130.14(a)(3)(B): Number of vessels expected to visit the terminal using the strategy:

Up to 125 regulated vessels per year requiring the use of a CAECS

93130.14(a)(3)(C): List of each berth with geographic boundary coordinates:

<u>Name:</u>	<u>Approximate Geographic Boundary Coordinates:</u> *
Valero Benicia Marine Terminal Berth 1	38.044667, -122.129431

**The number of berths on a terminal and the spatial positioning of berths are dependent on vessel size; thus, the geographic boundary coordinates are approximate only.*

93130.14(a)(3)(D): Identify berth(s) where equipment will be used:

Valero Benicia Marine Terminal Berth 1

93130.14(a)(3)(E): Terminal/port specific berthing restrictions:

Valero Benicia complies with all federal, state, and local requirements. Terminal restrictions are documented in the latest Terminal Operating Limits as approved and regulated by the California State Lands Commission (CSLC) in compliance with California Building Code (CBC) Chapter 31F: Marine Oil Terminals also known as the Marine Oil Terminal Engineering and Maintenance Standards (MOTEMS). Additional berthing restrictions are identified in the Valero Benicia Port Information & Terminal Regulations Manual.

93130.14(a)(3)(F): Schedule for installing equipment:

To be determined pending CARB and IMO approved technology for safe interfacing with tankers.

93130.14(a)(3)(G): Division of responsibilities between the terminal operator and the port, including contractual limitations applicable to the terminal, relevant to enacting the infrastructure required by each terminal's plan:

There is no Port Authority responsibility identified in association with the Valero Benicia Marine Terminal.

93130.14(a)(3)(H): A terminal operator claiming that a physical and/or operational constraint will delay its ability to implement its preferred CARB approved control strategy to achieve emission reductions from vessels at berth according to the requirements of section 93130 et seq., must also include with its terminal plan a technical feasibility study evaluating if there are any other emission control options that could be implemented more quickly at the terminal:

The following milestone schedule demonstrates the constraint to comply with the regulation timeline. Note that there is no commercially available cable handling/management system with the required reach to service the vessels at the terminal. This milestone schedule assumes that all technology necessary for shore power systems has been demonstrated for safe interfacing with tankers and is commercially available. If these assumptions are not true, the milestone schedule would be delayed further. This constraint and others, including other terminal-based compliance technologies, directly impacting the operability and safety of the ship/shore interface are documented in the DNV "CARB OGV at Berth Regulation Emissions Control Technology Assessment for Tankers" feasibility report.

12/1/21: Submit Terminal Compliance Plan to CARB
12/1/22: CARB Staff will publish Interim Evaluation
6/1/23: Valero completes review of Interim Evaluation and other industry developments
9/1/23: Valero selects preferred CAECS
6/1/24: Permit Applications Submitted
12/1/25: All Permits and Approvals Received (assumed, not within Valero's control)
6/1/26: PG&E Application for New Service Submitted
12/1/26: Engineering Phase Complete
1/1/27: CARB Compliance Deadline (CAECS is not yet in service)
6/1/27: California State Lands Commission MOTEMS Approval Received (assumed, not within Valero's control)
12/1/27: Procurement and Mobilization Complete
6/1/28: PG&E New Service Line Commissioned
6/1/29: Construction Complete
8/1/29: Shore Power CAECS Operational

Strategy 2: Shore-Based Capture and Control

93130.14(a)(3)(A): Identification of and description of all necessary equipment, including whether it will be located on the vessel, wharf, shore, or elsewhere:

Note that there is no commercially available capture system arm/crane demonstrated safe for interfacing with tankers and with the required reach to service the vessels at the terminal. However, implementation of shore-based capture and control will require the following equipment and infrastructure at a minimum:

- *New overwater platform to support the treatment system and capture system arm/crane*
- *New overwater access walkways and other miscellaneous site improvements*

93130.14(a)(3)(B): Number of vessels expected to visit the terminal using the strategy:

Up to 125 regulated vessels per year requiring the use of a CAECS

93130.14(a)(3)(C): List of each berth with geographic boundary coordinates:

<u>Name:</u>	<u>Approximate Geographic Boundary Coordinates:</u> *
Valero Benicia Marine Terminal Berth 1	38.044667, -122.129431

**The number of berths on a terminal and the spatial positioning of berths are dependent on vessel size; thus, the geographic boundary coordinates are approximate only.*

93130.14(a)(3)(D): Identify berth(s) where equipment will be used:

Valero Benicia Marine Terminal Berth 1

93130.14(a)(3)(E): Terminal/port specific berthing restrictions:

Valero Benicia complies with all federal, state, and local requirements. Terminal restrictions are documented in the latest Terminal Operating Limits as approved and regulated by the California State Lands Commission (CSLC) in compliance with California Building Code (CBC) Chapter 31F: Marine Oil Terminals also known as the Marine Oil Terminal Engineering and Maintenance Standards (MOTEMS). Additional berthing restrictions are identified in the Valero Benicia Port Information & Terminal Regulations Manual.

93130.14(a)(3)(F): Schedule for installing equipment:

To be determined pending CARB and IMO approved technology for safe interfacing with tankers.

93130.14(a)(3)(G): Division of responsibilities between the terminal operator and the port, including contractual limitations applicable to the terminal, relevant to enacting the infrastructure required by each terminal's plan:

There is no Port Authority responsibility identified in association with the Valero Benicia Marine Terminal.

93130.14(a)(3)(H): A terminal operator claiming that a physical and/or operational constraint will delay its ability to implement its preferred CARB approved control strategy to achieve emission reductions from vessels at berth according to the requirements of section 93130 et seq., must also include with its terminal plan a technical feasibility study evaluating if there are any other emission control options that could be implemented more quickly at the terminal:

The following milestone schedule demonstrates the constraint to comply with the regulation timeline. Note that there is no commercially available capture system arm/crane demonstrated safe for interfacing with tankers and with the required reach to service the vessels at the terminal. This milestone schedule assumes that all technology necessary for capture and control systems has been demonstrated for safe interfacing with tankers and is commercially available. If these assumptions are not true, the milestone schedule would be delayed further. This constraint and others, including other terminal-based compliance technologies, directly impacting the operability and safety of the ship/shore interface are documented in the DNV "CARB OGV at Berth Regulation Emissions Control Technology Assessment for Tankers" feasibility report.

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9/1/23: Valero selects preferred CAECS

6/1/24: Permit Applications Submitted

12/1/25: All Permits and Approvals Received (assumed, not within Valero's control)

12/1/26: Engineering Phase Complete

1/1/27: CARB Compliance Deadline (CAECS is not yet in service)

6/1/27: California State Lands Commission MOTEMS Approval Received (assumed, not within Valero's control)

12/1/27: Procurement and Mobilization Complete

6/1/29: Construction Complete

8/1/29: Shore-Based Capture and Control CAECS Operational

Strategy 3: Barge-Based Capture and Control System

93130.14(a)(3)(A): Identification of and description of all necessary equipment, including whether it will be located on the vessel, wharf, shore, or elsewhere:

Note that there is no commercially available barge-based capture and control system demonstrated safe for interfacing with tankers. In addition, there are unique challenges to the exposed Bay Area terminals that require additional advancements to maintain position of the barge systems in challenging current, metocean, and geotechnical conditions. However, implementation of barge-based capture and control will require the following equipment and infrastructure at a minimum:

- *Third party barge-based capture and control system that is CARB and IMO (International Maritime Organization) approved and accepted for safe interfacing with tanker vessels and that can safely maintain position at the terminal location.*
- *Additional infrastructure or modifications to existing infrastructure may be required to provide a safe anchorage for a barge at this site due to strong currents and challenging metocean and geotechnical conditions.*

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93130.14(a)(3)(F): Schedule for installing equipment:

To be determined pending CARB and IMO approved technology for safe interfacing with tankers and to maintain position in challenging current, metocean, and geotechnical conditions.

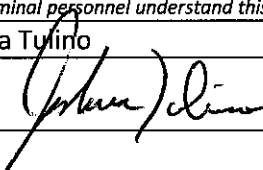
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There needs to be a sufficient number of third-party barge-based capture and control system providers that are CARB and IMO approved and accepted for safe interfacing with tanker vessels operating in the Bay Area at exposed terminals. This is to ensure that competitive bids can be obtained before executing a contract with the successful bidder. This constraint and others, including other terminal-based compliance technologies, directly impacting the operability and safety of the ship/shore interface are documented in the DNV “CARB OGV at Berth Regulation Emissions Control Technology Assessment for Tankers” feasibility report.

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SIGNATURE OF TERMINAL’S RESPONSIBLE OFFICIAL	
<i>By signing below, the Terminal Operator’s Responsible Official confirms under penalty of perjury that he/she has reviewed this At Berth Terminal Plan and is submitting this At Berth Terminal Plan as the Valero Benicia Marine Terminal compliance strategy for the At Berth Regulation. Terminal personnel understand this plan is subject to verification by CARB staff.</i>	
Name: Joshua Tulino	Title: Vice President and General Manager
Signature: 	Date: 11/25/21