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At-Berth Vessel Emission Reduction Regulation

**Innovative Concept Application for Tesoro
Refining and Marketing Company (TRMC)**

**Avon Terminal
Amorco Terminal**

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1 Introduction

This application intends to identify Innovative Concept Compliance Options for TRMC to reduce emissions from sources in and around the regulated port or marine terminal in accordance with section 93130.17 of title 17 of the California Code of Regulations, adopted August 27, 2020, and effective January 1, 2021. The primary scope of this application is to allow for the potential use of alternative emission reduction methods that may enhance safety, utilization efficiency, and cost effectiveness of emissions reduction equipment.

Innovative Concepts identified in this application are based on best available information. For many of the proposed strategies, the technology is still under development, therefore, the actual number of emission reductions achieved may vary. Innovative Concepts are important for compliance with the Regulation and TRMC has identified instances that may require the use of other parties' innovative concept reductions for TRMC to comply with the Regulation. TRMC has also identified instances where TRMC may offer to third parties the reductions TRMC has demonstrated by use of an Innovative Concept.

As such, TRMC is submitting this application to satisfy the Innovative Concept Application due date of December 1, 2021. As a result of this, TRMC may request CARB amend or issue a new Executive Order for additional or modified Innovative Concepts in the future. TRMC is not obligating itself to control the emissions sources described under this proposal at this time nor is TRMC indicating the ability to safely control emissions sources on tanker vessels has been determined feasible. Concerns with the timeline of technology development and the ability to comply with the regulation are outlined in TRMC's Terminal Plans.

2 Owner Background

TRMC is a wholly owned subsidiary of Marathon Petroleum Corporation (MPC). MPC owns and operates refining and renewable fuel assets along with associated logistics assets. These assets include the Martinez Renewable Fuels facility which is in the process of being converted from a petroleum refinery, and associated berths.

TRMC operates two marine oil terminals associated with Martinez Renewable Fuels facility. These two terminals have historically supported the petroleum refining operations at Martinez and are expected to support the Martinez Renewable Fuels facility once in operation.

Identification and control of emissions not otherwise required to be controlled is provided in the regulation as a means of compliance. This application is for TRMC to be able to use emission reductions that are not otherwise required as one of several strategies employed for compliance.

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2.1 Primary Owner Contact

Tesoro Refining & Marketing Company LLC

150 Solano Way

Pacheco, CA 94553

Attention Sharon Lim

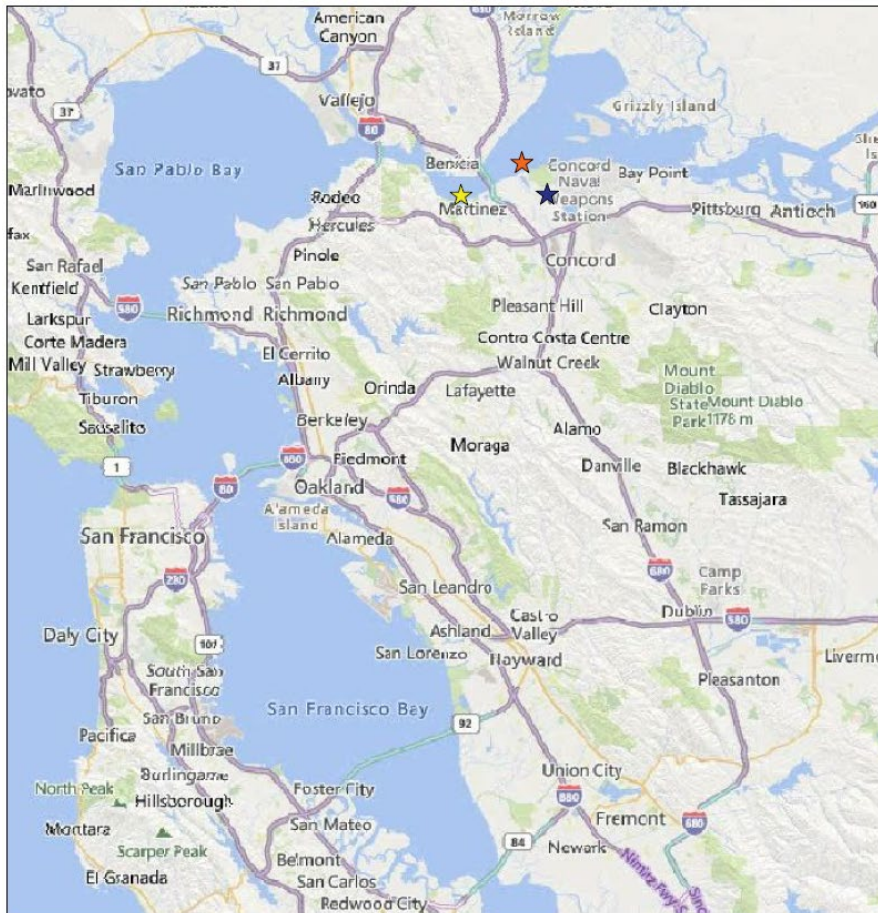
2.2 Operational Description

Marathon operates two marine oil terminals in Northern California typically known as the Amorco Terminal and the Avon Terminal. These terminals with their associated pipelines and tankage previously handled hydrocarbon-based feedstocks or finished fuels via 3rd party oil tankers or barges for further processing or distribution at the Marathon Martinez Refinery. With the proposed conversion to a renewable fuels facility, these operations are anticipated to change. These marine terminals and associated tankers will be regulated under CARB's current At-Berth vessel emission reduction regulation.

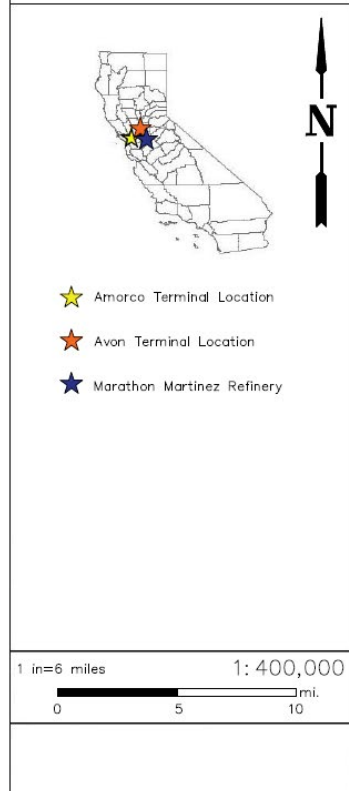
The Amorco Terminal is located in the Carquinez Strait, approximately 0.25 mile west of the Benicia-Martinez Bridge, in the city of Martinez, Contra Costa County (see Figure 1.3.1). Marathon's Martinez Renewable Fuels facility is located approximately 2.5 miles east of the Amorco terminal.

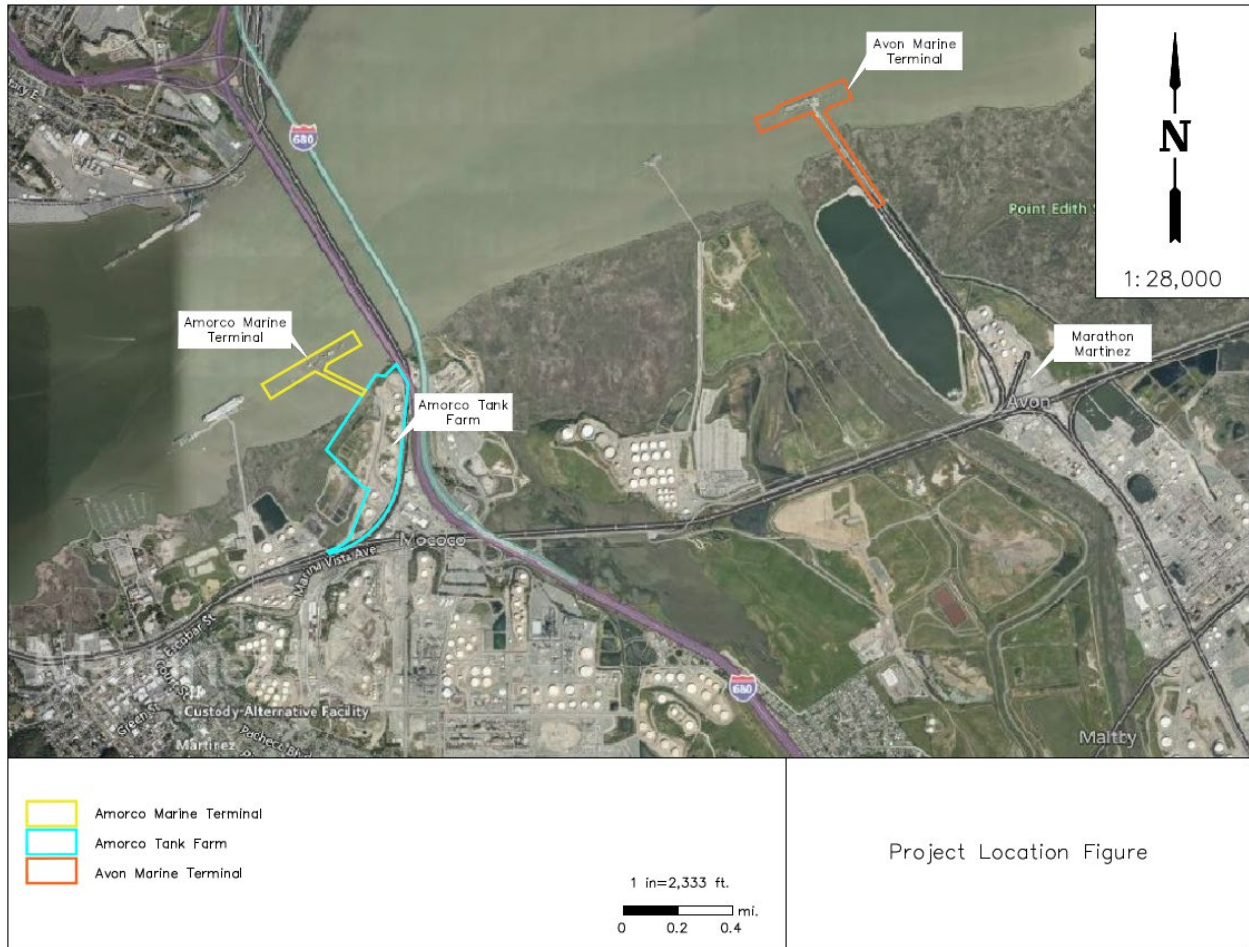
The Avon Terminal is located in the lower Suisun Bay, approximately 1.75 miles east of the Benicia-Martinez Bridge, in unincorporated Contra Costa County (refer to Figure 1.3.1). Marathon's Martinez Renewable Fuels facility is located approximately 0.5 mile south of the Avon Terminal.

As a result of the proposed conversion of the Martinez Refinery to a renewable fuels facility, estimates for emissions to be covered with the innovative concepts in this application (per Section 17(b)(1)(C)) are not yet determined.



Project Location Figure





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3 Potential Emission Reductions Not Otherwise Required

Emission reductions from the following source categories have been identified for potential credit generation using the guidelines in Section 93130.17 of the At-Berth regulation. The emission reductions described below are an attempt to identify possible source categories that could be available when Section 93118.3 of Title 17 and Section 2299.3 of Title 13 of the California Code of Regulations are superseded by Sections 93130 through 93130.22.

3.1 Pre-Compliance Emissions (Tankers – Amorco and Avon)

Emissions captured and controlled from the auxiliary engines and/or boilers of tankers in the Richmond area prior to the compliance date. The tankers would be serviced by a CARB approved emissions control strategy while At-Berth. The vessels serviced would be those calling into Amorco and Avon Terminals which represent the berths used by TRMC that service both tankers and barges.

The operations of the capture and control system would follow the guidelines stipulated in the Executive Order for that specific system and would be reported to the Emission Reduction Credit Management Company on the form referenced in Section 5.2. Emissions captured would be used as emission reduction credits for compliance with the At-Berth regulation in the Northern California Ports and would be used for any vessel type including container, Roll On Roll Off (RoRo), Tanker, or Cruise.

Early emission reductions are expressly identified as eligible for emission reduction credit generation in Section 93130.17(a)(11).

Business as usual conditions will include the emissions a vessel would have produced without use of the innovative concept. Using vessel and visit specific information TRMC will calculate a vessel specific baseline to determine the real, quantifiable, verifiable and enforceable emission reductions due to the innovative concept.

3.2 Pre-Compliance Emissions (Tankers – all Northern California Ports other than Amorco or Avon)

Emissions captured and controlled from the auxiliary engines and/or boilers of tankers in California ports other than Amorco and Avon prior to the compliance date. The tankers would be serviced by a CARB approved capture and control system while At-Berth.

The operations of the capture and control system would follow the guidelines stipulated in the Executive Order for that specific system and would be reported to the Emission Reduction Credit Management Company on the form discussed in Section 5.2. Emissions captured would be used as emission reduction credits for compliance with the At-Berth regulation for any vessel type including container, RoRo, tanker,

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or Cruise that are At-Berth within three nautical miles of the vessel location from which the emission reduction credits were generated as stipulated in Section 93130.17(a)(4).

Early emission reductions are expressly identified as eligible for emission reduction credit generation in Section 93130.17(a)(11).

Business as usual conditions will include the emissions a vessel would have produced without use of the innovative concept. Using vessel and visit specific information TRMC will calculate a vessel specific baseline to determine the real, quantifiable, verifiable and enforceable emission reductions due to the innovative concept.

3.3 Pre-Compliance Emissions (RoRo – Northern California Ports)

Emissions captured and controlled from the auxiliary engines of RoRo vessels in Northern California ports prior to the compliance date. The RoRo vessels would be serviced by a CARB approved barge-based capture and control system while At-Berth. The potential RoRo vessels serviced would be those calling into any berth located in a Northern California port. The capture and control system used would be capable of collecting emissions at a maximum auxiliary engine equivalency of 2,800 kW.

The operations of the capture and control system would follow the guidelines stipulated in the Executive Order for that specific system and would be reported to the Emission reduction credit Management Company on the form discussed in Section 5.2. Emissions captured would be used as emission reduction credits for compliance with the At-Berth regulation for any vessel type including container, RoRo, tanker, or Cruise that are At-Berth within three nautical miles of the barge location from which the emission reduction credits were generated as stipulated in Section 93130.17(a)(4).

Early emission reductions are expressly identified as eligible for emission reduction credit generation in Section 93130.17(a)(11).

Business as usual conditions will include the emissions a vessel would have produced without use of the innovative concept. Using vessel and visit specific information TRMC will calculate a vessel specific baseline to determine the real, quantifiable, verifiable and enforceable emission reductions due to the innovative concept.

3.4 Bulk Liquid Barges

Emissions captured and controlled from the auxiliary engines on liquid bulk barges that are used to offload cargo and provide power for other miscellaneous equipment on the barge. The barges would be serviced by a CARB approved capture and control system while At-Berth. The barges serviced would be those calling into any berth located in Northern California. The capture and control system used would be capable of collecting emissions at a maximum auxiliary engine equivalency of 2,800 kW.

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The operations of the capture and control system would follow the guidelines stipulated in the Executive Order for that specific system and would be reported to the Emission reduction credit Management Company on the form discussed in Section 5.2. Emissions captured would be used as emission reduction credits for compliance with the At-Berth regulation for any vessel type including container, RoRo, tanker, or Cruise that are At-Berth within three nautical miles of the barge location from which the emission reduction credits were generated as stipulated in Section 93130.17(a)(4).

Emission reduction credits generated from this activity can be used toward compliance only in the calendar year in which they are achieved, or the following calendar year as described in Section 93130.17(a)(10).

Business as usual conditions will include the emissions a vessel would have produced without use of the innovative concept. Using vessel and visit specific information TRMC will calculate a vessel specific baseline to determine the real, quantifiable, verifiable and enforceable emission reductions due to the innovative concept.

3.5 Bulk and General Cargo Vessels

Emissions captured and controlled from the auxiliary engines on bulk and general cargo vessels which are exempted from the At-Berth regulation as stipulated in Section 93130.8(b). Vessels would not be included for which other rules or requirements stipulated control of the emissions as outlined in Section 93130.17(a)(3). These vessels would be serviced by a CARB approved barge-based or dock-based capture and control system while At-Berth. The vessels serviced would be those calling into any berth located in Northern California. The capture and control system used would be capable of collecting emissions at a maximum auxiliary engine equivalency of 2,800 kW.

The operations of the capture and control system would follow the guidelines stipulated in the Executive Order for that specific system and would be reported to the Emission reduction credit Management Company on the form discussed in Section 5.2. Emissions captured would be used as emission reduction credits for compliance with the At-Berth regulation for any vessel type including container, RoRo, tanker, or Cruise that are At-Berth within three nautical miles of the barge location from which the emission reduction credits were generated as stipulated in Section 93130.17(a)(4).

Emission reduction credits generated from this activity can be used toward compliance only in the calendar year in which they are achieved, or the following calendar year as described in Section 93130.17(a)(10).

Business as usual conditions will include the emissions a vessel would have produced without use of the innovative concept. Using vessel and visit specific information TRMC will calculate a vessel specific baseline to determine the real, quantifiable, verifiable and enforceable emission reductions due to the innovative concept.

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3.6 Container Ships At-Ancor (capture and control)

Emissions captured and controlled from the auxiliary engines on container vessels which are at anchor in a Northern California port area. Vessels at anchor are not covered by the rule as only vessels at berth are stipulated 93130.1. Vessels would not be included for which other rules or requirements stipulated control of the emissions as outlined in Section 93130.17(a)(3). These vessels would be serviced by a CARB approved barge-based system while at anchor. The vessels serviced would be those calling into Northern California ports. The capture and control system used would be capable of collecting emissions at a maximum auxiliary engine equivalency of 2,800 kW.

The operations of the capture and control system would follow the guidelines stipulated in the Executive Order for that specific system and would be reported to the Emission Reduction Credit Management Company on the form referenced in Section 5.2. Emissions captured would be used as emission reduction credits for compliance with the At-Berth regulation for any vessel type including container, RoRo, tanker, or Cruise that are At-Berth within three nautical miles of the barge location from which the emission reduction credits were generated as stipulated in Section 93130.17(a)(4).

Emission reduction credits generated from this activity can be used toward compliance only in the calendar year in which they are achieved, or the following calendar year as described in Section 93130.17(a)(10).

Business as usual conditions will include the emissions a vessel would have produced without use of the innovative concept. Using vessel and visit specific information TRMC will calculate a vessel specific baseline to determine the real, quantifiable, verifiable and enforceable emission reductions due to the innovative concept.

3.7 Minimizing Capture and Control Connect and Disconnect Times

Emissions associated with the emissions control system connecting and disconnecting at times reduced from those stipulated Section 93130.7(e)(3)(A) and (B). The "Reduced Time to Connect" will be determined by subtracting the time between Ready to Work and Successful Connection from the two-hour stipulated limit. The definition of Successful Connection is defined by the items listed below.

1. Capture hood(s) are physically in place on the stack(s) and the system is indicating capture efficiency equal to or in excess of the requirements of the Executive Order that covers the capture and control system being used.
2. Outlet emission levels for PM, NOx, and ROG are at or below the requirements of the Executive Order that covers the capture and control system being used.
3. The on-board Manager of the capture and control system being used declares the system is Ready for Operations according the operations manual of the system.

For capture and control, the total mass emissions associated with the Reduced Time to Connect will be determined by subtracting the total measured inlet mass emissions from the total measured outlet mass emissions over the period of the Reduced Time to Connect.

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The “Reduced Disconnect Time” will be determined by subtracting the time between Pilot on Board and Successful Disconnect from the one-hour stipulated limit. The definition of Successful Disconnect is defined by the items listed below.

1. Capture hood(s) have been physically removed from the stack(s) and the capture booms are stowed for transport.
2. The treatment system has been purged and shutdown.
3. The on-board Manager of the capture and control system being used declares the system is Ready for Transport according the operations manual of the system.

For capture and control the total mass emissions associated with the Reduced Disconnect Time will be determined by subtracting the total measured inlet mass emissions from the total measured outlet mass emissions over the period of the Reduced Disconnect Time.

For Shore Power Systems

For shore power systems, the “Reduced Time to Connect” will be determined by subtracting the time between Ready to Work and Successful Connection from the two-hour stipulated limit. A successful Connection is defined by the electrical connection being complete, and vessel is operating on shore power

The “Reduced Disconnect Time” will be determined by subtracting the time between Pilot on Board and Successful Disconnect from the one-hour stipulated limit. A successful disconnect is defined by the electrical disconnection is complete between vessel and shore, and vessel is no longer operating on shore power

For both “Reduced Time to Connect”, and “Reduced Disconnect Time” for shore power systems, the emissions controlled will be calculated based on anticipated fuel consumption during the “Reduced Time to Connect” and “Reduced Disconnect Time”.

These calculations will be performed as part of the standard vessel call report generated for regulated pollutants as discussed in Section 5.1 of this application.

Emission reduction credits generated from this activity can be used toward compliance only in the calendar year in which they are achieved, or the following calendar year as described in Section 93130.17(a)(10).

Business as usual conditions will include the emissions a vessel would have produced without use of the innovative concept. Using vessel and visit specific information TRMC will calculate a vessel specific baseline to determine the real, quantifiable, verifiable and enforceable emission reductions due to the innovative concept.

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3.8 Vessel Speed Reduction

Vessel speed reductions are an available source of non-regulated emissions. Reductions in speed from 12 knots to 8-10 knots within three nautical miles of the terminals may be possible. Emission reductions associated with vessel speed reductions can be calculated utilizing one of the following methods

- A. U.S. Environmental Protection Agency. 2020. Ports Emissions Inventory Guidance: Methodologies for Estimating Port Related and Goods Movement Mobile Source Emissions. [Port Emissions Inventory Guidance: Methodologies for Estimating Port-Related and Goods Movement Mobile Source Emissions \(EPA-420-B-20-046, September 2020\)](#) Appendix Table E-1. Accessed 3-5-2021.
- B. Reduction in fuel usage from 12 knots to 8-10 knots vessel speed reduction

These calculations will be performed as part of the standard vessel call report generated for regulated pollutants as discussed in Section 4.1.

Emission reduction credits generated from this activity can be used toward compliance only in the calendar year in which they are achieved, or the following calendar year as described in Section 93130.17(a)(10).

Business as usual conditions will include the emissions a vessel would have produced without use of the innovative concept. Using vessel and visit specific information TRMC will calculate a vessel specific baseline to determine the real, quantifiable, verifiable and enforceable emission reductions due to the innovative concept.

3.9 Capture and Control Performance Exceeds the Requirements of the Rule

Emissions associated with the capture and control system exceeding the performance requirements stipulated in Sections 93130.17(5)(d)(1) and (2). The actual measured mass emissions would be calculated based on the total measured emissions at the outlet of the capture and control system over the duration of the vessel call. Emissions will be measured continuously for PM, NOx, and ROG along with volumetric flow rate and temperature, and then the mass emissions will be calculated in total kg for the vessel call. The vessel call would begin two hours after ready to work [Section 2(b)(63)] and would complete at one hour before pilot on board [Section 2(b)(58)] as defined in Section 7(e)(3)(A) and (B).

The excess emission reductions will be the difference between the maximum allowable emission and the actual measured mass emissions. The maximum allowable mass emissions for the vessel call will be calculated for the auxiliary engine(s) and boiler(s) individually based on fuel consumption records from the vessel according to the method outlined in Section 93130.17(d)(1)(B). The actual measured mass emissions will be subtracted from the maximum allowable emissions for both auxiliary engines and boilers to determine the additional emission reduction for PM, NOx, and ROG and will be reported in total pounds for each pollutant.

These calculations will be performed as part of the standard vessel call report generated for regulated pollutants as discussed in Section 4.1.

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Emission reduction credits generated from this activity can be used toward compliance only in the calendar year in which they are achieved, or the following calendar year as described in Section 93130.17(a)(10).

Business as usual conditions will include the emissions a vessel would have produced without use of the innovative concept. Using vessel and visit specific information TRMC will calculate a vessel specific baseline to determine the real, quantifiable, verifiable and enforceable emission reductions due to the innovative concept.

4 Emission Measurements and Estimates

The emission reductions achieved for all source categories listed in Section 3 of this application, except for the sources described in Section 3.2, 3.7b, and 3.9, will be monitored on a continuous basis. These continuous measurements will be on the inlet and outlet of the capture and control system being used and will include individual measurements for PM, NOx, and ROG. The operations of these measurement systems will be operated according to the requirements of the Executive Order issued for the capture and control system being used.

4.1 Measurement of Emission Reductions Not Otherwise Required from Capture and Control Equipment

Any emissions associated with a capture and control system will be directly measured and the results of those measurements will be included in the Captured and Controlled Emissions report discussed in Section 5.2 of this application.

4.2 Vessels Utilizing Emission Reduction Credits – Emission Estimates

All emission estimates utilized for the purpose of applying collected emissions not otherwise required will be performed utilizing the Vessels Utilizing Emission Reduction Credits Report discussed in Section 5.3 of this application.

5 Vessel Call Reports

The reports described below will be used to manage the collection of emission reductions not otherwise required and the distribution of those emissions to regulated vessels. One of these reports would be generated for each vessel call, or in some cases portion of a vessel call, that require compliance as defined in Section 93130.3(a).

5.1 Captured and Controlled Regulated Emissions – Vessel Call Report

A report will be developed for each vessel call, or portion of a vessel call, which will require the use of a CARB approved capture and control system for compliance. This report will incorporate data from the vessel, the terminal, and capture and control system. The data to be collected, source of the data, calculations, and outputs of those calculations are shown in Appendix A of this application.

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5.2 Captured and Controlled Emissions Not Otherwise Required – Vessel Call Report

A report will be developed for each vessel call, or portion of a vessel call, which will utilize a CARB approved capture and control system collect emissions from sources not required to be controlled. This report will incorporate data from the vessel, the terminal, and capture and control system.

5.3 Vessels Utilizing Emission Reduction Credits – Vessel Call Report

A report will be developed for each vessel call, or portion of a vessel call, which will require the application of emission reduction credits for compliance. This report will incorporate data from the vessel, the terminal, and will utilize emission factors that are defined in Section 93130.17(d)(1)(B) of the rule.

As an alternative to the default emission factors, TRMC requests as part of this application to be able to apply the emission factors per the appropriate MARPOL Annex VI Engine Tier Definition as reported by the vessel owner / operator.

The data to be collected, source of the data, calculations, and outputs of those calculations are shown in Appendix B of this application.

6 Executive Order Timing

The purpose of this Innovative Concept is to develop emission reduction credits through controlling emissions from sources that are not otherwise required under The Control Measure for Ocean-Going Vessels at Berth set forth in Sections 93130 through 93130.22, title 17, California Code of Regulations.

It is assumed that amendments to current regulations and development of new regulations will change the types and quantities of source categories not required to be controlled. Any renewal application will incorporate amendments to existing or new regulations for the sources identified in this application.

6.1 Initial Duration

The initial duration requested is for the maximum of 5 years as stipulated in Section 93130.17(a)(7).

6.2 Renewals

It is anticipated that renewals will be requested as specified in Section 93130.17(a)(7). The renewal duration will be for the maximum allowed, 5 years, and the new application will update Section 2 of this application based on the development of new regulations or the identification of yet to be identified source categories.

7 Agreements, Government Approvals, and Environmental Review

This section addresses the items listed in Section 93130.17(b)(1)(E), (G), and (H).

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7.1 Memorandum of Understanding

Memoranda of Understanding (MOUs) do not currently exist due to the early stage of development of the technology and programmatic components that are required for the implementation of the innovative concept plan. As technology is developed and proven the MOUs will be executed as needed with the appropriate counterparty. Counterparties may include affiliates of TRMC.

7.2 Government Approvals

The requirement in this section is acknowledged and understood and no government approvals are required other than the one issued by CARB in response to this application.

7.3 Environmental Review

The requirement in this section is acknowledged and understood and no environmental reviews are required as part of this application.

8 Demonstrated Eligibility

As part of the application process the 16 criteria listed in Section 93130.17(a) have been evaluated and compliance verified. Each of the items in that section are listed below with comments as appropriate.

8.1 Section 93130.17(a)(1)

This Innovative Concept application is intended to provide a compliance pathway for primarily for tankers servicing Avon and Amorco wharfs. However, the emission reductions that are not otherwise required generated as part of this IC could also be used as a method of compliance for all vessel types that are listed in this section. This application was submitted on Tuesday November 30, 2021.

8.2 Section 93130.17(a)(2)

The emission reductions achieved through the Innovative Concept will be realized primarily using a CARB approved CAECS or using means and methods that reduce the emissions from a regulated source by utilizing that source less or operating that source at a reduced load. The proposed methods of controlling emissions not otherwise required comply with the GHG requirements of the regulation.

8.3 Section 93130.17(a)(3)

All proposed emission reductions proposed in this Innovative Concept are either early or in excess of any regulation as stipulated in this section.

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8.4 Section 93130.17(a)(4)

All emission reductions proposed in this Innovative Concept comply with this requirement and are noted in the descriptions contained in Section 2 of this application.

8.5 Section 93130.17(a)(5)

All emission reductions proposed in this Innovative Concept comply with this requirement.

8.6 Section 93130.17(a)(6)

All emission reductions proposed in this Innovative Concept comply with this requirement as they are real, quantifiable, verifiable, and enforceable. Calculations and data reporting that support this requirement are described in Sections 3, 4, and 9 of this application.

8.7 Section 93130.17(a)(7)

All emission reductions proposed in this Innovative Concept comply with this requirement and a compliance period of 5 years has been requested in this application with the intent to renew the application as described in this section.

8.8 Section 93130.17(a)(8)

The requirement in this section is acknowledged and understood.

8.9 Section 93130.17(a)(9)

The requirement in this section is acknowledged and understood.

8.10 Section 93130.17(a)(10)

The requirement in this section is acknowledged and understood.

8.11 Section 93130.17(a)(11)

The requirement in this section is acknowledged and understood.

8.12 Section 93130.17(a)(12)

The requirement in this section is acknowledged and understood.

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8.13 Section 93130.17(a)(13)

The requirement in this section is acknowledged and understood. Calculations, data reporting, and procedures that support this requirement are described in Sections 4, 5, 10, and 11 of this application.

8.14 Section 93130.17(a)(14)

The requirement in this section is acknowledged and understood.

8.15 Section 93130.17(a)(15)

The requirement in this section is acknowledged and understood.

8.16 Section 93130.17(a)(16)

The requirement in this section is acknowledged and understood.

9 Emission Reduction Credits Use

The purpose of this application is to develop a system by which emission reductions not otherwise required can be used to aid in compliance with the regulation. The intent of this system is to allow for better utilization of a CARB approved emissions control strategy, which will produce the intended emissions reduction of the regulation while minimizing the cost to achieve those reductions on dollars per ton of pollutant treated basis. There will be instances for which the available CARB approved emissions control strategies will not be adequate to service the number of vessels which are at berth simultaneously.

It is proposed that emissions credits may be able to be transferred or traded with other parties which have an emission reduction obligation under the regulation. The ability to transfer or trade credits will allow for more efficient use of CARB approved emissions control strategies by allowing equipment, terminal and vessel operators and to optimize the deployment of emission control equipment.

It is proposed that all emission trading be accomplished in the units of actual pounds of either PM, NOX, or ROG.

9.1 Data Management Methods

Each of the vessel call reports described in Section 4 will be identified with a unique serial number. An Emission Reduction Credit Database will be developed to manage the data from each vessel call report and will also contain trading accounts for PM, NOx, and ROG. The data which populates the emission reduction credit accounts will be transferred from the vessel call reports which are governed by the

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Executive Orders for the capture and control systems or, in the case of the “Vessels Utilizing Emission Reduction Credits” report, the Executive Order issued in approval of this application will validate the content. The Emission Reduction Credit database will be developed and presented to the Executive Officer for approval prior to it being utilized. This approval would be documented in the Executive Order.

9.2 Data Entry

Data entry to the Emissions Emission Reduction Credit Database will be accomplished by reading the vessel call reports electronically and the accuracy of that electronic transfer will be validated as described in Section 11 of this application. The data entry process will only be initiated by individuals that have been trained in the process and will follow the guidelines established in a written procedure that describes the process. That procedure will be developed by the same entity that will develop the Emission Reduction Credit Database software.

9.3 Data Access

The Emission Reduction Credit Database will be password protected and its contents will be audited as described in Section 11 of this application. The individuals with access will be controlled by TRMC or its designated representative, and the passwords will be changed and managed by methods considered to be Best Practices within the data management profession.

9.4 Data Storage and Backup

Data storage and backup will be accomplished by methods considered to be Best Practices within the data storage and backup industry.

9.5 Data Reporting to CARB

Data reporting to CARB will occur on an annual basis consistent with the requirements of the regulation, Section 93130.17(d), unless a different reporting frequency is specified in the Executive Order issued as approval of this application. The entirety of the Emission Reduction Credit Database and summaries of the data contained in the database will be provided electronically.

10 Emission Reduction Credit - Administration

The Emissions Emission Reduction Credit System will be administered by designated individual(s) within the TRMC organization or individuals associated with another business entity that is contracted by TRMC for the task of managing and operating the Emission Reduction Credit System.

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10.1 Designated Individual Roles and Responsibilities

The designated individual will be responsible for the timely entry of data to the Emissions Emission Reduction Credit System, auditing the accuracy of data entry, reporting to CARB, and overall distribution of the emission reduction credits either internally to TRMC or to external parties that want the emission reduction credits for compliance with the regulation. The administrator of the system should have qualifications that are consistent with the Best Practices for database development, data entry, data storage and backup, and data reporting in the data management profession.

11 Program Auditing and Quality Control

As in other emission reduction programs across industries it is expected that the CARB-issued Executive Order would contain the requirements for program auditing and quality control for the various emission reduction scenarios. Since early capture and control of vessel emissions prior to the Rule compliance date is being considered, an independent review of the program prior to the regulatory implementation date would provide assurances that all the proper processes are in place for a longer-term emission reduction credit program. This review would at a minimum cover the actual emissions reduction services and reporting, data flow to the TRMC or 3rd party administrator, data entry and data backup, calculation verification for the “unverified” emissions and reporting back to CARB.

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APPENDIX A

Compliance Call Form for Vessel Using Capture and Control

**APPENDIX A
EVENT SUMMARY SAMPLE REPORT**

| Event Summary Sample Report | | | | | | |
|--------------------------------------|-------------------|--------|----------|-------|-------|-------|
| Event Name: _____ | | | | | | |
| Vessel Information | | | | | | |
| Carrier: _____ | | | | | | |
| Vessel Name: _____ | | | | | | |
| Vessel IMO Number: _____ | | | | | | |
| IMO NOx Tier _____ | | | | | | |
| Vessel Type _____ | | | | | | |
| Terminal Information | | | | | | |
| Terminal Name _____ | | | | | | |
| Port _____ | | | | | | |
| Berth Number: _____ | | | | | | |
| Vessel Contact Info | | | | | | |
| Name _____ | | | | | | |
| Phone # _____ | | | | | | |
| Email _____ | | | | | | |
| Terminal Contact Info | | | | | | |
| Name _____ | | | | | | |
| Phone # _____ | | | | | | |
| Email _____ | | | | | | |
| CAECS Information | | | | | | |
| CAECS Contact Info | | | | | | |
| Name _____ | | | | | | |
| Phone # _____ | | | | | | |
| Email _____ | | | | | | |
| Event: | Start | End | HH:MM:SS | | | |
| Time: | Start | End | Duration | | | |
| Emission Control Time | Start | End | Duration | | | |
| Process Flows | | | | | | |
| | Units | P&ID # | Ave | Min | Max | |
| Inlet | scfm | _____ | _____ | _____ | _____ | _____ |
| Outlet | scfm | _____ | _____ | _____ | _____ | _____ |
| System Temperatures | | | | | | |
| Ship Stack | F | _____ | _____ | _____ | _____ | _____ |
| Process Inlet | F | _____ | _____ | _____ | _____ | _____ |
| Filters A | F | _____ | _____ | _____ | _____ | _____ |
| Filters B | F | _____ | _____ | _____ | _____ | _____ |
| Filters C | F | _____ | _____ | _____ | _____ | _____ |
| Box A Outlet | F | _____ | _____ | _____ | _____ | _____ |
| Box B Outlet | F | _____ | _____ | _____ | _____ | _____ |
| Box C Outlet | F | _____ | _____ | _____ | _____ | _____ |
| Process Outlet | F | _____ | _____ | _____ | _____ | _____ |
| System Pressures | | | | | | |
| Ship Stack Pressure | "H ₂ O | _____ | _____ | _____ | _____ | _____ |
| UCF-144-A D.P. | "H ₂ O | _____ | _____ | _____ | _____ | _____ |
| UCF-144-B D.P. | "H ₂ O | _____ | _____ | _____ | _____ | _____ |
| UCF-144-C D.P. | "H ₂ O | _____ | _____ | _____ | _____ | _____ |
| System Air Pressure | psi | _____ | _____ | _____ | _____ | _____ |
| DSI Feed | | | | | | |
| DSI Injection Rate | lb/hr | _____ | _____ | _____ | _____ | _____ |
| DSI Blower Pressure | psi | _____ | _____ | _____ | _____ | _____ |
| DSI Blower Temperature | F | _____ | _____ | _____ | _____ | _____ |
| Main Fan | | | | | | |
| Fan Speed | Hz | _____ | _____ | _____ | _____ | _____ |
| Fan Current | Amps | _____ | _____ | _____ | _____ | _____ |
| Other | | | | | | |
| Burner Set Point | % | _____ | _____ | _____ | _____ | _____ |
| Ammonia | | | | | | |
| NH ₃ | ppmv | _____ | _____ | _____ | _____ | _____ |
| H ₂ O | %v | _____ | _____ | _____ | _____ | _____ |
| Ammonia Flow Rate | slpm | _____ | _____ | _____ | _____ | _____ |
| NOx | | | | | | |
| Inlet NOx | ppmv | _____ | _____ | _____ | _____ | _____ |
| Outlet NOx | ppmv | _____ | _____ | _____ | _____ | _____ |
| Inlet O ₂ | %v | _____ | _____ | _____ | _____ | _____ |
| Outlet O ₂ | %v | _____ | _____ | _____ | _____ | _____ |
| PM | | | | | | |
| PM, Inlet | mg/m ³ | _____ | _____ | _____ | _____ | _____ |
| PM, Outlet | mg/m ³ | _____ | _____ | _____ | _____ | _____ |
| ROG | | | | | | |
| ROG, Inlet | ppmv | _____ | _____ | _____ | _____ | _____ |
| ROG, Outlet | ppmv | _____ | _____ | _____ | _____ | _____ |
| System Performance | | | | | | |
| Capture Efficiency | % | _____ | _____ | _____ | _____ | _____ |
| NOx Efficiency | % | _____ | _____ | _____ | _____ | _____ |
| PM Efficiency | % | _____ | _____ | _____ | _____ | _____ |
| ROG Efficiency | % | _____ | _____ | _____ | _____ | _____ |
| Vessel Emissions during CAECS | | | | | | |
| NOx | g/kW/hr | _____ | _____ | _____ | _____ | _____ |
| PM 2.5 | g/kW/hr | _____ | _____ | _____ | _____ | _____ |
| ROG | g/kW/hr | _____ | _____ | _____ | _____ | _____ |

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APPENDIX B

Innovative Concept - Vessel Call Utilizing Emission Reduction Credits

Innovative Concept - Vessel Call Utilizing Emission Reduction Credits

| | | | | Source | | |
|---|--|-------------|--|---------------------|-----------|--------------------------|
| | | Units | | Primary | Secondary | Comments |
| Port Data | | | | | | |
| | Port | | | Terminal Scheduling | Agent | |
| | Terminal | | | Terminal Scheduling | Agent | |
| | Berth | | | Terminal Scheduling | Agent | |
| Terminal Contact Data | | | | | | |
| | Phone Number - Duty Operator | | | Terminal Guide | Vessel | |
| | Terminal Person in Charge (TPIC) | | | TBD | Vessel | |
| | TPIC - Telephone | | | TBD | Vessel | |
| | TPIC - Email | | | TBD | Vessel | |
| Vessel Contact Data | | | | | | |
| | Phone Number | | | Q-88 | Terminal | |
| | Email | | | Q-88 | Terminal | |
| Vessel Data | | | | | | |
| | Registered Owner | | | Q-88 | Vessel | |
| | Vessel Name | | | Q-88 | Vessel | |
| | Vessel IMO Number | | | Q-88 | Vessel | |
| | Vessel Type | | | Q-88 | Vessel | |
| | IMO NOx Tier | | | | | |
| Vessel Commercial Operator Contact Information | | | | | | |
| | Name | | | Q-88 | Vessel | |
| | Address 1 | | | Q-88 | Vessel | |
| | Address 2 | | | Q-88 | Vessel | |
| | City | | | Q-88 | Vessel | |
| | State/Province | | | Q-88 | Vessel | |
| | Postal Code | | | Q-88 | Vessel | |
| | Country | | | Q-88 | Vessel | |
| | Telephone | | | Q-88 | Vessel | |
| | Email | | | Q-88 | Vessel | |
| Date and Time Data - Vessel | | | | | | |
| | Finished with Engines (FWE) | Date & Time | | Terminal | Vessel | |
| | Ready to Work (RTW) | Date & Time | | Terminal | Vessel | |
| | Begin Cargo Transfer (BCT) | Date & Time | | Terminal | Vessel | |
| | Cargo Transfer Complete (CTC) | Date & Time | | Terminal | Vessel | |
| | Pilot On Board (POB) | Date & Time | | Terminal | Vessel | |
| | Departure | Date & Time | | Terminal | Vessel | |
| | Total Time, At-Berth | hrs | | Calculation | | |
| | Total Time, RTW to POB | hrs | | Calculation | | |
| | Total Time, FWE to BCT | hrs | | Calculation | | |
| | Total Time, BCT to CTC | hrs | | Calculation | | |
| | Connection Allowance after RTW | hrs | | Calculation | | |
| | Disconnection Allowance prior to POB | hrs | | Calculation | | |
| | Total CAECS Required Hours - Aux | hrs | | Calculation | | |
| | Total CAECS Required Hours - Boiler | hrs | | Calculation | | |
| Fuel Data | | | | | | |
| | Type Used (Auxiliary & Boilers) | | | Vessel | Terminal | |
| | Sulfur Content | % | | Vessel | Terminal | |
| | Bunker ROB (finished with engines) FWE | m3 | | Vessel | Terminal | |
| | Bunker ROB (begin cargo transfer) BCT | m3 | | Vessel | Terminal | |
| | Bunker ROB (transfer complete) CTC | m3 | | Vessel | Terminal | |
| | Bunker ROB (departure) | m3 | | Vessel | Terminal | |
| | Fuel Density | kg/m3 | | MPLX | | |
| | Fuel to Energy Ratio - Auxiliary Engines | kg fuel/kW | | CARB | | |
| | Fuel to Energy Ratio - Boilers | kg fuel/kW | | MPLX | | |
| | Fuel Usage Rate (Aux) FWI to BCT | kg/hr | | Calculation | | |
| | Fuel Usage Rate (Aux + Boilers) BCT to CTC | kg/hr | | Calculation | | |
| | Fuel Usage Rate (Boilers) BCT to CTC | kg/hr | | Calculation | | |
| | Average Power (Aux) FWE to BCT | kWh | | Calculation | | |
| | Average Power (Boiler) BCT to CTC | kWh | | Calculation | | |
| | Total Power Aux Power - CAECS | kW | | Calculation | | |
| | Total Power Boiler Power - CAECS | kW | | Calculation | | |
| Machinery Configuration | | | | | | |
| | Auxiliary Engine, count | | | Q-88 | Vessel | Section 10.5 of the Q-88 |
| | Auxiliary Engine, capacity | kW | | Q-88 | Vessel | Section 10.5 of the Q-88 |
| | Boiler, count | | | Q-88 | Vessel | Section 10.5 of the Q-88 |
| | Boiler, capacity | MT/hr | | Q-88 | Vessel | Section 10.5 of the Q-88 |
| | Cargo Pump, count | | | Q-88 | Vessel | Section 8.3 of the Q-88 |
| | Cargo Pump, type | | | Q-88 | Vessel | Section 8.3 of the Q-88 |
| | Cargo Pump, capacity | m3/hr | | Q-88 | Vessel | Section 8.3 of the Q-88 |
| | IGS Supply | | | | | Section 8.3 of the Q-88 |

Innovative Concept - Vessel Call Utilizing Emission Reduction Credits

| | | | | Source | | |
|---------------------------------------|-------------------------------------|--------------|---|-------------|------------|--|
| | | Units | | Primary | Secondary | Comments |
| Operations Data | | | | | | |
| | Anticipated Load At-Berth, Aux 1 | kW | | Vessel | | |
| | Anticipated Load At-Berth, Aux 1 | kW | | Vessel | | |
| | Anticipated Load At-Berth, Aux 1 | kW | | Vessel | | |
| | Anticipated Load At-Berth, Boiler 1 | ton steam/hr | | Vessel | | |
| | Anticipated Load At-Berth, Boiler 1 | ton steam/hr | | Vessel | | |
| Emission Factors | | | | | | |
| | PM, auxillary engines | g/kWh | | EO | Regulation | Net reduction required based on values in Section 17.5(d)(1) |
| | NOx, auxillary engines | g/kWh | | EO | Regulation | Net reduction required based on values in Section 17.5(d)(1) |
| | ROG, auxillary engines | g/kWh | | EO | Regulation | Net reduction required based on values in Section 17.5(d)(1) |
| | PM, boilers | g/kWh | | EO | Regulation | Net reduction required based on values in Section 17.5(d)(2) |
| | NOx, boilers | g/kWh | | EO | Regulation | Net reduction required based on values in Section 17.5(d)(2) |
| | ROG, boilers | g/kWh | | EO | Regulation | Net reduction required based on values in Section 17.5(d)(2) |
| | PM, auxillary engines | g | 0 | Calculation | | |
| | NOx, auxillary engines | g | 0 | Calculation | | |
| | ROG, auxillary engines | g | 0 | Calculation | | |
| | PM, boilers | g | 0 | Calculation | | |
| | NOx, boilers | g | 0 | Calculation | | |
| | ROG, boilers | g | 0 | Calculation | | |
| Emissions Requiring IC Credits | | | | | | |
| | PM | lb | 0 | Calculation | | |
| | NOx | lb | 0 | Calculation | | |
| | ROG | lb | 0 | Calculation | | |