



# Seaport Air Quality 2020 and Beyond Plan

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## Memorandum: Screening of Suggested Actions

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## ACRONYMS AND ABBREVIATIONS

2020 and Beyond Plan	Final Seaport Air Quality 2020 and Beyond Plan (June 13, 2019)
AB	assembly bill
ARB	(California) Air Resources Board
ASC	automated stacking crane
BAAQMD	Bay Area Air Quality Management District
BACT	best available control technology
BNSF	Burlington Northern and Santa Fe Railroad
Board	Board of Port Commissioners
CAAP	Clean Air Action plan (prepared by the Ports of Los Angeles and Long Beach)
CARB	California Air Resources Board
CE	Clean Energy Fuels (a private natural gas company)
CEPP	U.C. Berkeley Goldman School of Public Policy/Center for Environmental Public Policy
CHC	commercial harbor craft (same as harbor craft)
CHE	cargo-handling equipment
City	City of Oakland
CNG	compressed natural gas
CTMP	Port of Oakland Comprehensive Truck Management Plan
DGE	diesel gallon equivalent
DOC	diesel oxidation catalyst
DPF	diesel particulate filter
DPM	diesel particulate matter
EBMUD	East Bay Municipal Utilities District
EDF	Environmental Defense Fund
EIR	environmental impact report
EJ/WOEIP	Earth Justice/West Oakland Environmental Indicators Project

FITS	Freight Intelligent Transportation System
GHG	greenhouse gas
GSPP	U.C. Berkeley Goldman School of Public Policy/Center for Environmental Public Policy
HC	harbor craft
HEPA	high-efficiency particulate filter
HVIP	Hybrid and Zero-Emission Truck and Bus Voucher Incentive Program
IMO	International Maritime Organization
ITS	intelligent transportation system
JPA	joint powers authority
LCFS	Low Carbon Fuel Standard
LEED	Leadership in Energy and Environmental Design
LNG	liquefied natural gas
LPG	liquefied petroleum gas
MARPOL	The International Convention for the Prevention of Pollution from Ships
MOU	memorandum of understanding
MTC	Metropolitan Transportation Commissions
MY	model year
NO <sub>x</sub>	oxides of nitrogen
NTAP	Seaport Air Quality 2020 and Beyond Plan/Near-Term Action Plan
NZE	near-zero-emissions
OAB	Oakland Army Base
OEM	original equipment manufacturer
OGRE	Oakland Global Rail Enterprise
OGV	ocean-going vessel
OIG	Oakland International Gateway (BNSF Railyard)
PM	particulate matter

Port	Port of Oakland
PETF	Port Efficiency Taskforce
PV	photovoltaic
RTG	rubber-tired gantry crane
SB	senate bill
SCA/MM	standard condition of approval/mitigation measure
SCR	selective catalytic reduction
SEP	supplemental environmental project
STEP	The Port's Secure Truck Enrollment Program
SPBP	San Pedro Bay Ports
TAP	The San Pedro bay Ports' Technology Advancement Program
TCM	transportation control measure
TMP	West Oakland Truck Management Plan
TRU	transport refrigeration unit
UP or UPRR	Union Pacific Railroad Company
U.S. EPA or EPA	United States Environmental Protection Agency
VSR	vessel speed reduction
WOCAP	West Oakland Community Action Plan (AB 617)
ZANZEFF	Zero and Near-Zero Emissions Freight Facilities
ZE	zero emissions



## PORT OF OAKLAND

# SEAPORT AIR QUALITY 2020 AND BEYOND PLAN: *THE PATHWAY TO ZERO EMISSIONS*

## Memorandum - Screening of Suggested Actions

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### INTRODUCTION

The 2020 and Beyond Plan (Plan) includes a comprehensive five-step process to screen and evaluate Suggested Actions. The purpose of the five-step screening and evaluation process is to identify those actions that are most effective at furthering the goals of the 2020 and Beyond Plan. This process is detailed in Appendix D: *Screening and Evaluation of Implementing Actions* (see Figure 1: Screening and Evaluation Process). Under the five-step process, Step 1 is the identification of Suggested Actions. All actions, whether identified by the Port or suggested by stakeholders, are initially classified as “Suggested Actions” and compiled into Pool #1. In Step 2, each Suggested Action is screened in a pass/fail screening process to determine whether it meets the criteria in Table D-1: Screening Criteria (shown in Table 2, below, for reference).

This memorandum documents completion of the Step 2 pass/fail screening process for all Suggested Actions identified during Plan development and approval (see below, Table 1: Pass/Fail Screening of Suggested Actions.) In addition, in performance of Board direction given upon Plan approval on June 13, 2019, Port staff added the Port-related strategies of the final *Owning Our Air: The West Oakland Community Action Plan* (2019) (WOCAP) as Suggested Actions to Table 1. The California Air Resources Board (CARB) approved the WOCAP on December 5, 2019. Three other Suggested Actions submitted prior to that date are also included in Table 1. These are Suggested Action #279: Offer Employee Incentives for ZE Vehicles; #280: Pursue a Hydrogen Fuel Cell Demonstration Project, and #281: Install Additional Shorepower Outlets. The Suggested Actions from the WOCAP and Actions #279 through #281 were included in the screening.

This Memorandum documents the methodology used and the results of the Step 2 pass/fail screening process. The detailed screening results are presented in detail in Table 1. Suggested Actions that pass the pass/fail screening are classified as “Screened Actions” compiled into Pool #2 for further evaluation in Step 3: Evaluate.



Figure 1. Five Step Screening and Evaluation Process





The Port will document the results of Step 3 in a subsequent technical memorandum. Pursuant to the provisions of Appendix D, Suggested Actions that fail Step 2 are eliminated from further consideration. Duplicate actions (i.e., actions that are identical to other Suggested Actions that passed the Step 2 screening) are also eliminated from further consideration. The Port will conduct future rounds of Step 2 pass/fail screening as new Suggested Actions are identified. The frequency of Step 2 screening will depend on the rate at which new Suggested Actions are identified and progress of actions currently being implemented.

## STEP 2 PASS/FAIL SCREENING - METHODOLOGY

Step 2 determines whether a Suggested Action supports the goals of the 2020 and Beyond Plan and then moves to the more in-depth Step 3 evaluation. The Step 2 pass/fail screening methodology consists of four tasks:

- 2.a: Compile all Suggested Actions into a single table
- 2.b: Identify duplicate actions
- 2.c: Screen all Suggested Actions<sup>1</sup> against the five screening criteria provided in Table D-1
- 2.d: Identify actions that are already completed, currently underway, or programmed for implementation

Task 2.a: To begin the screening process, the Port compiled all actions included in Tables C-2 and C-3 of the 2020 and Beyond Plan into a single table – Table 1. As discussed above, Table 1 includes the actions assigned to the Port in the WOCAP, as well as three suggestions that were provided after the Plan was finalized. All Suggested Actions received or identified by the Port as of December 5, 2019 are included in Table 1. In the future, the Port will continue to add to Table 1 as new Suggested Actions are identified and screened.

Task 2b: After compiling all Suggested Actions, the Port identified duplicate actions (i.e., actions that were suggested by more than one source or more than one time by a single source). Only those actions that were complete duplicates (i.e., the wording had to be identical or virtually identical) were identified as duplicates. To streamline the tracking and management of Suggested Actions, only one of the duplicate actions was screened; the other duplicate(s) was removed from further consideration. Some Suggested Actions have already been completed. To keep track of completed actions, the Port created a new pool, Pool #4, of completed actions. The Port will maintain Pool #4 as a table of completed actions for future reference.

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<sup>1</sup> For duplicate actions only one of the actions was screened.

Task 2.c: To conduct the screening, the Port assessed each of the Suggested Actions against the five screening criteria (see Table 2), in sequence. A Suggested Action must satisfy all *applicable* screening criteria to pass the screening step. When a Suggested Action satisfies a criterion, it is denoted by “Yes” in the applicable column in Table 1. A “No” indicates that the Suggested Action did not satisfy that criterion. Once a Suggested Action does not pass (fails) a screening criterion, the 5-step process provides that the screening effort concludes at that point and no other criteria are evaluated. For each Suggested Action that did not pass a screening criterion, the Port noted the reason (see the “Notes” column in Table 1). Certain screening criteria are not applicable to certain actions (e.g., studies to do not provide emissions reductions, and therefore Screening Criteria 2 and 3 are not applicable to studies). An “N/A” in the applicable column of Table 1 indicates that a criterion is not applicable to a given Suggested Action.

The Plan provides for a generous (i.e., “benefit of the doubt”) qualitative assessment in Step 2. When there was any uncertainty about whether an action satisfied a specific screening criterion, the Port defaulted to a “pass” decision. This results in the greatest possible number of actions passing Step 2. All actions that pass Step 2 screening are evaluated in Step 3. By defaulting to a “pass” decision when there was uncertainty whether an action satisfied a criterion, the Port allowed for more detailed consideration of the specific action in Step 3 - Evaluate.

<b>Table 2. Screening Criteria</b>	
<b>Screening Criterion</b>	<b>Description</b>
1. Air Quality Action by the Port or a Port-related business	Is the Suggested Action an action that the Port or a Port-related business would undertake as part of the Seaport Air Quality 2020 and Beyond Plan (2020 and Beyond Plan or Plan), or is this action included in or under the purview of another program (such as the West Oakland Truck Management Plan)?
2. Surplus Emissions Reductions (Avoid Regulatory Duplication)	Does the Suggested Action achieve “surplus” emissions reductions, which are defined as emissions reductions in advance of new proposed regulations or emissions reductions above and beyond an existing regulation?
3. Community Health Risk Reduction and Emission Reductions	Does the Suggested Action reduce Seaport-related diesel particulate matter (DPM) emissions, and thereby reduce community exposure to pollutants that are harmful to public health? Does the Suggested Action reduce nitrogen oxides (NOx), sulfur oxides (SOx) and/or greenhouse gas (GHG) emissions?
4. Contribution to Zero-Emissions Pathway	Does the Suggested Action contribute to the Plan’s pathway to a zero emissions Seaport by (as applicable): <ul style="list-style-type: none"> <li>Developing designs or collecting data in support of infrastructure improvements and/or deployment of zero-emissions or hybrid</li> </ul>

Table 2. Screening Criteria	
Screening Criterion	Description
	<p>equipment; and/or</p> <ul style="list-style-type: none"> <li>• Delivering infrastructure in support of zero-emissions equipment; and/or</li> <li>• Deploying zero-emissions equipment; and/or</li> <li>• Deploying hybrid equipment that substantially reduces criteria air pollutants, DPM, and/or GHGs; and/or</li> <li>• Creating the fiber-optic communications systems infrastructure required to operate some zero-emissions equipment; and/or</li> <li>• Increasing the availability of zero-emissions fuels or other fuels that contribute to emissions reductions?</li> </ul>
5. Side Effects	Does the Suggested Action avoid or minimize foreseeable negative environmental, economic, or social side effects?

## PASS/FAIL SCREENING RESULTS SUMMARY

A total of 281 Suggested Actions was screened. This total includes 39 duplicate actions. Thus, 242 Suggested Actions required screening. Of these Suggested Actions, 196 passed the screening and were moved to Pool #2, Screened Actions while 46 actions did not pass screening. The 196 Screened Actions include 13 completed actions, which the Port moved to Pool #4, and 44 actions that are currently in progress, on-going, or are included in the NTAP but not yet underway. The remaining 139 Screened Actions will be evaluated in Step 3: Evaluation. Table 1 shows the screening results for each Suggested Action.

Table 3. Summary of Screening Results		
	Number	Percent
Total Suggested Actions as of December 5, 2019	281	
Duplicate Actions	39	14%
Suggested Actions Screened in Step 2	242	86%
Suggested Actions Passing Screening	196	69%
Suggested Actions Not Passing Screening	46	17%
Completed Actions	13	5%
Actions in Progress, On-going Actions, and Actions in NTAP not yet underway	44	16%
<b>Screened Actions to be Evaluated in Step 3</b>	<b>139</b>	<b>49%</b>

Note: Percentages do not total to 100% because they are rounded to the nearest whole number

Source: Port of Oakland 2020

## Actions Not Passing Screening

As noted above, 196 actions passed Step 2 screening and 46 did not pass. A summary is provided by criterion below:

- **Criterion 1:** The majority (40 of the 46 actions that did not pass the screening) of the Suggested Actions that did not pass the Step 2 screening did not satisfy Criterion 1. These actions failed predominantly because they are under the purview of a program by another agency, such as the California Air Resources Board (CARB), the Bay Area Air Quality Management District (BAAQMD), the City of Oakland, or the federal government. Some actions failed Criterion 1 because they are already being addressed by other initiatives, such as the West Oakland Truck Management Plan (City of Oakland and Port of Oakland 2019), the Oakland Army Base Area Redevelopment Plan Environmental Impact Report, dated July 2002 (City of Oakland 2002), or the Title VI Informal Resolution Agreement among U.S. EPA, the City of Oakland, and the Port, dated July 26, 2019.
- **Criterion 2:** Three (3) actions did not pass Criterion 2 because they do not provide surplus emissions reductions. One of these actions was to plant trees, which would not provide surplus emissions reductions. The second action was for the Port to require tenants to comply with regulations for equipment. This action did not pass Criterion 2: Surplus Emissions Reductions because CARB is responsible for enforcing its regulations, meeting existing regulatory standards does not generate surplus emissions reductions above and beyond existing regulations, and CARB enforcement data show that compliance among the fleet of trucks serving the Port is already very high (99%).<sup>2</sup> The third action would increase emissions control equipment repair service providers in Oakland. This action would support compliance with existing regulations and thus would not provide surplus emissions reductions. Under Criterion 2, the intent is to identify actions that provide emissions reductions in advance of new proposed regulations or emissions reductions above and beyond an existing regulation; Criterion 2 does not consider that compliance with existing regulations by itself provides surplus emissions reductions. Therefore, these three actions would not result in surplus emission reductions and did not pass. (Note that Criterion 2 *is not applicable* to actions that would not generate surplus emissions reductions, such as feasibility studies and infrastructure plans (see for example Actions 193: Study Favorable Time-of-Day Electricity Rate Structure for Truckers and Technology Advancement Program Investment Plan)). Under Step 2,

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<sup>2</sup> Final WOCAP Volume 1 (2019), Table 7-1 page 7-9

these actions pass Criterion 2 because that criterion is not applicable to these Suggested Actions.

- **Criteria 3 and 4:** All the actions that passed Criterion 2 either passed Criteria 3: Community Health Risk Reduction and Emission Reductions, and Criterion 4: Contribution to Zero-Emissions Pathway, or Criteria 3 and/or 4 were *not applicable*. Actions that provide surplus emissions reductions (e.g., Action 222: Increased Shore Power Capability on Vessels) also result in exposure reductions for the local community. Criterion 3 *does not apply* to actions that would not generate surplus emissions reductions. In addition to studies and plan, these include partnership actions such as community meetings, trucker office hours, and sharing information about grant programs (see for example Actions 264: Provide Support during Development of Grant Applications and 269: Community Town Hall Meetings).

Criterion 4 specifically identifies whether an action contributes to the pathway to zero emissions. Many actions that provide surplus emissions reductions also contribute to the pathway to zero emissions. In addition, in some cases, certain actions, such as plans and studies that do not provide surplus emissions reductions, do contribute to the pathway to zero emissions. Thus, for some actions Criterion 4 is *applicable*, although Criterion 3 is *not applicable* (e.g., Action 72: Develop Electrical Infrastructure Plans in Conjunction with Utilities). Criterion 4 is *not applicable* for many partnership and stakeholder engagement actions. Criterion 4 also is *not applicable* for actions that are solely designed to optimize diesel equipment or provide emissions control technology, such as Action 148: Seek New Funding Sources to Upgrade Tug and Switcher Engines.

- **Criterion 5:** Three (3) actions did not pass Criterion 5: Side Effects, because they were assessed as imposing an undue economic burden on individual truckers or small trucking companies or other Port tenants, or might stifle competition. The following Suggested Actions failed under Criterion 5. The rationale for each action's failing Criterion 5 is given in Table 1:
  - #27: Limit Truck Idling (this action would cause accelerated wear and tear on truck engines)
  - #118: Zero-Emissions Trucks for Short-Haul Drayage (it is economically infeasible for many truckers to dedicate trucks to short-haul drayage, which would create economic inequality and stifle competition), and

- #119: Develop a Trucking Concession Program (this action would also stifle competition)

## **Completed Actions**

The Screening evaluation concluded that thirteen of the Suggested Actions (see Table 4) are already completed. The rationale for this “Completed” designation is provided in Table 1.

Completed actions include several feasibility studies, suggestions for items to be addressed or included in the 2020 and Beyond Plan, providing shore power for tugs berthed at the Port, and Port zero-emissions equipment purchases. These actions were placed into Pool #4.

## **Actions Currently in Progress**

Forty-one (41) Suggested Actions are currently deemed “in progress.” These include actions that are on-going, such as Suggested Action #256: Trucker Office Hours, which is included in the Near-Term Action Plan (NTAP) as Item 34, as well as specific projects such as demonstration testing of 10 battery-electric drayage trucks at Shippers Transport Express as part of the Zero and Near-Zero Emissions Freight Facilities (ZANZEFF) grant (Suggested Action #232, included in the NTAP as Item 4). In addition, three actions are included in the NTAP, but have not yet begun because they are scheduled for future years covered by the NTAP. Appendix G, the Public Engagement Plan, also contains some actions that are included Pool #1: Suggested Actions, and passed the screening to become Screened Actions. The actions included in Appendix G are in progress. These 44 actions that are currently in progress do not need to be evaluated in Step 3 of the screening and evaluation process.

## **NEXT STEPS**

One-hundred and thirty-nine (139) Suggested Actions passed Step 2 screening and are classified as “Screened Actions.” These Screened Actions are in Pool #2 of the screening and evaluation process and will be evaluated in Step 3 of the five-step screening and evaluation process.

Completed actions were placed into Pool #4. The Port will maintain a matrix of completed actions comprising Pool #4 for future reference. Pursuant to the Plan, the Port provides documentation of Steps 1 and 2 (i.e., this Screening Memorandum) to the 2020 and Beyond Plan Task Force Co-Chairs for their review and presentation to the 2020 and Beyond Plan Task Force (Task Force.)

The Port will conduct the Step 3 evaluation in groups of actions, starting with those actions understood by Port staff and the Board to be of greatest interest to the West Oakland community (i.e., the actions identified for the Port in the WOCAP) as well as actions identified as most promising by Port staff. Each group of actions will then be prioritized for implementation in

accordance with Step 4 of the process. The Port will provide the results of the Steps 3 and 4 evaluation and prioritization for each group of actions to the 2020 and Beyond Task Force Co-Chairs for review and presentation to the Task Force. Pursuant to the Plan (see Appendix D), the Co-Chairs may convene Working Sessions, which will include Task Force members, for collaborative problem-solving on specified Selected Actions (i.e., actions which the Co-Chairs and Task Force members specify.) The Co-Chairs will document the Working Sessions to inform the qualitative assessment of specified Selected Actions.

The Port will conduct additional rounds of screening throughout implementation of the Plan. The Port will weigh several factors, including the rate by which new Suggested Actions are identified and the progress on actions currently in implementation.



## REFERENCES

Bay Area Air Quality Management District and West Oakland Environmental Indicators Project. 2019. Final Owning Our Air: West Oakland Community Action Plan - Volume 1 - the Plan. (WOCAP 2019) October.

City of Oakland. 2002. Oakland Army Base Redevelopment Environmental Impact Report. April.

City of Oakland and Port of Oakland. 2019. West Oakland Truck Management Plan. May.

Port of Oakland. 2019. Final Seaport Air Quality 2020 and Beyond Plan. June.

## TABLE 1—PASS/FAIL SCREENING OF SUGGESTED ACTIONS

No.	Name of Suggested Action	Description of Suggested Implementing Action	Source	Document	Associated Strategy (see p.9 of 2020 & Beyond Plan)						Step 2 Screening: Does Suggested Action Pass Indicated Criterion? (Yes/No)					Retained (Moved to Pool #2?) (Yes/No)	To Be Evaluated in Step 3?	Notes
					1	2	3	4	5	6	Criterion 1	Criterion 2	Criterion 3	Criterion 4	Criterion 5			
1	Require Tenant and Contractor Compliance with all Applicable Air Quality Regulations	Require that all tenants and onsite construction contractors comply with and monitor compliance with all applicable air quality regulations for heavy duty-diesel trucks, including the Air Resources Board's (ARB) Tractor-Trailer Greenhouse Gas Reduction Regulation, Period Smoke Inspection Program, Off-Road Regulation, and Statewide Truck and Bus Regulation. To document compliance, require that fleets provide ARB Certificates of Compliance for the equipment regulations and copies of annual smoke test results.	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)	X			X			Yes	No				NO	NO	Surplus emissions reductions are defined as those that go above and beyond complying with existing regulations. This action focuses on compliance with existing regulations.
2	Contractual Lease Language for Air Quality Compliance	Incorporate contractual language into tenant lease agreements to ensure that tenants comply with all applicable air quality regulations, are using the cleanest technologies for their equipment (in both construction and operations) and understand their responsibilities of building and maintaining a green facility as well as compliance with diesel regulations.	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)	X			X			Yes	Yes	Yes	Yes	Yes	YES	YES	
3	Require Cleanest Possible Construction Equipment and Processes	Require that the cleanest possible construction practices and equipment are utilized. This should include eliminating idling of diesel powered equipment, requiring the use of zero and near-zero emission equipment and tools to the greatest extent feasible, and providing the necessary infrastructure, like electric hookups, to support that equipment.	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)	X						Yes	Yes	Yes	Yes	Yes	YES	YES	
4	Plan for the Necessary Infrastructure to Support ZE and NZE Technology	Implement and plan for the necessary infrastructure to support zero-emissions and near-zero-emissions technology vehicles and equipment at the Port. This includes physical, energy, and fueling infrastructure for construction equipment, on-site vehicles, and equipment, and medium-heavy and heavy-duty trucks. ARB's Technology and Fuels Assessments provide information on the current and projected development of mobile source technologies and fuels, including current and anticipated costs at widespread deployment. The assessments can be found at <a href="http://www.arb.ca.gov/msprog/tech/tech.htm">http://www.arb.ca.gov/msprog/tech/tech.htm</a> .	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)				X			Yes	N/A	N/A	Yes	Yes	YES	YES	
5	Adopt Targets for Electric Raceway Construction	At a minimum, both the Port and City should adopt targets for electric raceway circuit installation as part of initial facility construction. This will ensure sufficient electrical power is available for EV charging at sites under development and minimizes future costs to install infrastructure for zero and near zero emissions vehicles.	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)				X			Yes	Yes	Yes	Yes	Yes	YES	YES	
6	Develop a Sustainable Leasing Program focused on Clean Ships	Develop a Sustainable Leasing Program whereby the Port and City shall work with tenants to develop and implement a policy incentive-based sustainable leasing program to attract the cleanest ships, ships that utilize shore power, zero and near-zero technologies, and otherwise incorporate technological and operational practices that reduce freight related emissions.	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)	X	X		X			Yes	Yes	Yes	Yes	Yes	YES	YES	Board Resolution 19-41 directs staff to "submit an Agenda Report to the Board, within 18 months following the date of this Resolution, on "...performance incentive programs for ocean vessels and rail tenants"
7	Require Tenants to Use Cleaner Technologies Over Time	Require tenants to use cleaner technologies over time as they become available and feasible. If a technology review demonstrates the new technology will be effective in reducing emissions and the Port or City determines that installation or use of the technology is feasible, the tenant shall implement such technology within 12 months of the Port or City's determination.	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)		X		X			Yes	Yes	Yes	Yes	Yes	YES	YES	
8	Require Tenants to Develop an Annual Technology Review Program	Require tenants to develop an annual Technology Review Program to identify any new emissions-reduction technologies that may reduce emissions at the Port, including the feasibility of zero and near-zero emissions technologies for heavy-duty trucks, yard equipment, tugs, vessels, and bulk handling equipment.	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)	X	X		X			Yes	Yes	N/A	Yes	Yes	YES	YES	
9	Ensure Tenants Compliance with ARB's Transport Refrigeration Regulation	Ensure existing and future tenants are compliant now and in the future with ARB's Transport Refrigeration Regulation. If not already implemented, incorporate operating practices that eliminate the amount of time that a transport refrigeration system powered by a fossil-fueled internal combustion engine can operate utilizing the combustion system at the Port.	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)	X			X									NO - Duplicate	
10	Cold Storage Facilities with Clean TRU Technology	Plan and design cold storage facilities that incorporate zero emission all-electric plug-in transport refrigeration systems, hydrogen fuel cell transport refrigeration, and cryogenic transport refrigeration sufficient to meet Port growth.	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)	X		X				No					NO	NO	This action is under the purview of the California Air Resources Board (CARB).

**Table 1: Pass/Fail Screening of Suggested Actions**

No.	Name of Suggested Action	Description of Suggested Implementing Action	Source	Document	Associated Strategy (see p.9 of 2020 & Beyond Plan)						Step 2 Screening: Does Suggested Action Pass Indicated Criterion? (Yes/No)					Retained (Moved to Pool #2?) (Yes/No)	To Be Evaluated in Step 3?	Notes
					1	2	3	4	5	6	Criterion 1	Criterion 2	Criterion 3	Criterion 4	Criterion 5			
11	Require the Use of Cleanest Available Cargo Handling Equipment	Require the use of cargo-handling equipment (CHE), including yard trucks, handlers, gantry cranes, fork lifts, that is the cleanest available technology (LPG/LNG, renewable diesel, electric, hydrogen, electric hybrid) and use zero- and near-zero emissions technology for equipment that is commercially available now and in the future, as more zero-emissions equipment becomes commercially available, as committed to in A Bold Vision. ARB's Technology Assessment: Mobile Cargo Handling Equipment, provides information on current and projected development of CHE, including current and anticipated costs at widespread development. This assessment can be found at <a href="https://www.arb.ca.gov/msprog/tech/techreport/che_tech_report.pdf">https://www.arb.ca.gov/msprog/tech/techreport/che_tech_report.pdf</a> .	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)	X	X		X			Yes	Yes	Yes	Yes	Yes	YES	YES	
12	Require Yard Layout to Maximize Use of Zero-Emissions Equipment	Tenants should be required to demonstrate how their yard layout maximizes their ability to use zero-emissions equipment such as electric rail mounted gantry cranes.	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)		X	X	X			Yes	Yes	N/A	Yes	Yes	YES	YES	
13	Require Use of Commercial Harbor Craft Technologies that Exceed Tier 2 or 3	Require the use of commercial harbor craft (CHC) technologies that exceed the Tier 2 or 3 requirements of CARB's CHC Regulation. There are some zero- and near-zero emissions technologies for equipment that are commercially available now, and additional projects are under way demonstrating the capability of CHC to achieve emission lower than Tier 4 marine and off-road emission standards. Some of these solutions may require retrofit with aftermarket emission control devices. ARB's Technology Assessment: Commercial Harbor Craft, provides information on current and projected development of CHC, including current and anticipated costs at widespread development. This assessment can be found at <a href="https://www.arb.ca.gov/msprog/tech/techreport/draft_chc_technology_assessment.pdf">https://www.arb.ca.gov/msprog/tech/techreport/draft_chc_technology_assessment.pdf</a>	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)	X	X		X			No					NO	NO	This action is under the purview of CARB.
14	Standards for Medium-Heavy and Heavy-Heavy Duty On-Road and Yard Trucks	Require that all medium-heavy and heavy-heavy duty on-road and yard trucks, including any alternative fuel vehicles, meet or exceed the 2010 emission standards. As it becomes available, require that medium-heavy and heavy-heavy duty trucks traveling within 100 miles of the site use zero and near- zero technology and require that yard trucks with similar duty cycles (less than hundred miles daily) convert to zero and near- zero technology. ARB's Technology and Fuels Assessments provide information on the current and projected development of mobile source technologies and fuels, including current and anticipated costs at widespread deployment. The assessments can be found at <a href="http://www.arb.ca.gov/msprog/tech/tech.htm">http://www.arb.ca.gov/msprog/tech/tech.htm</a> .	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)	X	X		X			No					NO	NO	This action is under CARB purview.
15	Require that all Forklifts Meet a Zero Emissions Standard.	All forklifts should be required to meet a zero emission standard.	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)		X		X			Yes	Yes	Yes	Yes	Yes	YES	YES	
16	Require Highest-Tier Construction Equipment.	During all construction activities, require that off-road construction equipment meet Tier 4 engine standards, if not available, require equipment that meets Tier 3 engine standards. Tenants shall keep a list of available equipment and submit to the Port or City upon request.	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)													NO - Duplicate	
17	Require Zero Emissions or Highest Available Engine Tier for Onsite Vehicles	Require that all on-site service vehicles, light-duty vehicles and equipment (operational and during construction activities), and property maintenance equipment use zero- emissions technology and, if zero-emissions technology is unavailable, that all vehicles and equipment meet the cleanest applicable emission standard.	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)	X	X					Yes	Yes	Yes	Yes	Yes	YES	YES	
18	Truck Traffic Plan	Require that all projects include a robust traffic plan that moves truck traffic away from residents reducing truck traffic in neighborhoods, reduces and enforces truck speeds to reduce exposure to noise and increase safety, and discourages new development near truck routes. Coordinate and consult with the West Oakland community on site-wide truck traffic circulation.	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)							No					NO	NO	This action is under the purview of the West Oakland Truck Management Plan (TMP).
19	Require Integration of Freight Transport Infrastructure for Maximum Efficiency.	Properly integrate truck parking, terminal parking, security systems, electronic gates systems, and other freight transport infrastructure to maximize achievable efficiencies.	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)	X						Yes	Yes	Yes	Yes	Yes	YES	NO - Already Underway	This action is in progress.
20	Require Operational Support for Zero and Near-Zero Emission Freight Equipment	Require future project design plans include operational support to demonstrate and deploy zero and near-zero emission freight equipment.	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)		X					Yes	N/A	N/A	Yes	Yes	YES	YES	

Table 1: Pass/Fail Screening of Suggested Actions																		
No.	Name of Suggested Action	Description of Suggested Implementing Action	Source	Document	Associated Strategy (see p.9 of 2020 & Beyond Plan)						Step 2 Screening: Does Suggested Action Pass Indicated Criterion? (Yes/No)					Retained (Moved to Pool #2?) (Yes/No)	To Be Evaluated in Step 3?	Notes
					1	2	3	4	5	6	Criterion 1	Criterion 2	Criterion 3	Criterion 4	Criterion 5			
21	Require Emissions-Based Berthing Fees to Support West Oakland Emissions Reduction Projects	Require ships that enter the Port area pay emissions-based berthing fees or other user fees. The fees shall be used to reduce emissions and exposure in West Oakland.	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)	X						Yes	Yes	Yes	Yes	Yes	YES	YES	
22	OGV Fuel Requirements Compliance	Require that ocean-going vessels comply with fuel requirements for both the California Ocean-Going Vessel Regulation and the North American Emission Control Area Requirements.	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)	X						Yes	No				NO	NO	This action is under CARB purview.
23	Provide Support for Demonstration Projects	Provide support (logistical and financial) for demonstration projects to encourage the use of alternative and/or advanced technologies. ARB's Technology and Fuels Assessments provide information on the current and projected development of mobile source and port equipment technologies and fuels, including current and anticipated costs at widespread deployment. The assessments can be found at <a href="http://www.arb.ca.gov/msprog/tech/tech.htm">http://www.arb.ca.gov/msprog/tech/tech.htm</a>	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)	X	X		X			Yes	Yes	Yes	Yes	Yes	YES	NO - Already Underway	Support for demonstrations projects is on-going. Several demonstration projects are in progress (NTAP Items 3, 4, 5, 6, 7, 8, 13, and 14).
24	Enhance Community Engagement	Utilize concepts to enhance community engagement as outlined in the U.S. Environmental Protection Agency Draft Environmental Justice Primer for Ports, "The Good Neighbor Guide to Building Partnerships and Social Equity" released in July 2016. This document provides a road map to assess current community engagement and outlines strategies to assist the City and the Port to enhance neighboring community relationships. The document can be found at <a href="https://www.epa.gov/ports-initiative/draft-environmental-justice-primer-ports">https://www.epa.gov/ports-initiative/draft-environmental-justice-primer-ports</a>	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)					X		No					NO	NO	This action falls within the purview of the Title VI Informal Resolution Agreement among the United States Environmental Protection Agency (U.S. EPA), the City of Oakland, and the Port, dated July 25, 2019.
25	Use Grant Funding	Utilize grant funding from Federal, State and local programs to reduce air pollution emissions and health risk from diesel exhaust. Incorporate a collaborative process between tenants and the Port and/or the City to apply for funding to support zero-emissions freight related diesel equipment technologies.	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)						X	Yes	Yes	Yes	Yes	Yes	YES	YES	
26	Require Recycling and Metal Melting Facilities to Meet BAAQMD BACT Standards	Require that all recycling facilities and metal melting facilities that include re-melting furnaces for the melting of alloys, within the Port, the OAB project area, and within 1,000 feet of the West Oakland community meet the best available control technology (BACT) standards as defined by the BAAQMD.	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)							No					NO	NO	This action is under the purview of the City of Oakland (City).
27	Limit Truck Idling	All trucks shall be prohibited from idling more than two minutes when loading and unloading, staging or when not in active use for extended periods of time. Exemptions from the two-minute idling rule would be allowed when required for safety or when equipment is in use. (Plan Bay Area)	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)	X						Yes	Yes	Yes	Yes	NO	NO	NO	This action would result in accelerated wear and tear on truck engines, and would impose an unreasonable financial burden on truckers.
28	Implement an Appointment/ITS System for Drayage Trucks	An appointment/ITS system shall be implemented that minimizes truck idling and queuing for the movement of containers.	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)	X						Yes	Yes	Yes	N/A	Yes	YES	NO - Already Underway	This action is on-going.
29	Require Tier 4 or Cleaner, or ZE Harbor Craft	Prior to implementation of zero-emissions harbor craft: Prior to 2023, all CHC accessing the new OAB port facilities will meet U.S. EPA Tier 4 standards (or cleaner) for both propulsion and auxiliary engines, or zero emissions technologies such as: batteries, shorepower, or hydrogen fuel cell.	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)	X						No					NO	NO	This action is under CARB purview.
30	Low NOx Retrofit Technology for Tugs	Prior to implementation of zero-emissions harbor craft: NOx emissions can be controlled with selective catalytic reduction systems. For example, implement emission reduction control measures to replace tugboat engines with low NOx technology (for example, through the expansion of the existing cargo handling equipment re-powering and retrofitting program, part of the Berths 55-58 Project air quality mitigation program).	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)	X						No					NO	NO	This action is under CARB purview.
31	Broaden Zero-Emissions Cargo-Handling Equipment Category to Include Non-Electric Zero-Emissions and Hybrid Equipment	All the mobile cargo handling equipment will be electric equipment. (MAQIP) The Air District suggest this be broadened to allow for other zero emissions fuels (Hydrogen) and for near zero emissions equipment in the event that full zero emissions equipment is not commercially available.	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)							Yes	Yes	Yes	Yes	Yes	YES	NO - Completed; Moved to Pool #4	This action has been completed. The 2020 and Beyond Plan explicitly includes other zero-emissions and hybrid technologies (Strategies #2 and #3 addressing use of hybrid equipment and hydrogen-powered equipment, respectively). In addition, the Port conducted a feasibility study of increasing the targets for zero emissions and near-zero-emissions cargo handling equipment that includes recommendations for deploying hybrid equipment (Zero-Emission Cargo-Handling Equipment Feasibility Assessment, dated November 21, 2019). As a result of the feasibility study, at its December 12, 2019 Board meeting, the Port adopted a new goal that all new RTG cranes shall be hybrid (or all electric).

**Table 1: Pass/Fail Screening of Suggested Actions**

No.	Name of Suggested Action	Description of Suggested Implementing Action	Source	Document	Associated Strategy (see p.9 of 2020 & Beyond Plan)						Step 2 Screening: Does Suggested Action Pass Indicated Criterion? (Yes/No)					Retained (Moved to Pool #2?) (Yes/No)	To Be Evaluated in Step 3?	Notes
					1	2	3	4	5	6	Criterion 1	Criterion 2	Criterion 3	Criterion 4	Criterion 5			
32	LEED Platinum Certification Standards for All Buildings	Buildings shall meet LEED Platinum certification standards.	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)	X						Yes	Yes	Yes	Yes	Yes	YES	YES	
33	Energy Generation from All Buildings	All buildings shall provide sources of energy.	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)			X				Yes	Yes	Yes	Yes	Yes	YES	YES	
34	Investigate Alternative Energy Generation	Solar, wind, mechanical, tidal or solar generated hydrogen systems will be investigated to determine their feasibility.	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)			X				Yes	Yes	Yes	Yes	Yes	YES	YES	
35	Plant Trees in OAB to Trap DPM	The developer shall be required to plant trees and/or vegetation throughout the OAB. Trees that are best suited to trapping PM shall be planted, including one or more of the following: Pine ( <i>Pinus nigra</i> var. <i>maritima</i> ), Cypress ( <i>X Cupressocyparis leylandii</i> ), Hybrid poplar ( <i>Populus deltoides</i> X <i>trichocarpa</i> ), and Redwoods ( <i>Sequoia sempervirens</i> ). (Plan Bay Area)	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)	X						Yes	No				NO	NO	This action would not result in surplus emissions reductions.
36	Provide HEPA Air Filters to Sensitive Receptors, and Contribute to System Maintenance	All existing land uses serving sensitive receptors within 1,000 feet of the Project boundaries shall be equipped with HEPA air filtration systems rated MERV 13 or better. The Port and City will establish a fund and contribute on a fair share basis to the cost of installing and maintaining the MERV 13 systems and provide educational materials to owners and occupants explaining how to maximize the benefits of these systems.	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)							No					NO	NO	Per the West Oakland Community Action Plan (see WOCCAP actions 70 and 73), this action is under the purview of the Bay Area Air Quality Management District (BAAQMD).
37	Fund Fair Share of Transportation Control Measures (TCMs)	Consistent with SCA/MM 4.4-5, when redevelopment activity generates more than 20,000 square feet of employment-generating land uses, or generates 100 or more local jobs, the City, Port and developers will fund on a fair share basis Transportation Control Measures (TCMs) for reducing vehicle emissions from commercial, institutional, and industrial operations. See SCA/MM 4.4-5 for a full list of TCMs and include the following for new stationary sources: 2.11.1 On the OAB property, new stationary sources that are added as part of the project must reduce emissions beyond what is required by CARB and BAAQMD, whenever possible. For example, the cleanest available stand- by diesel generators and portable generators will be required. The City and Port shall fund this on a fair share basis.	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)							No					NO	NO	This action is under the purview of and being implemented pursuant to the Oakland Army Base Area Redevelopment Plan Environmental Impact Report, dated July 2002.
38	Develop Commute Benefits Committee and Program	(1) To design and implement a Commute Benefits Program, the City, Port, and private developers need to form a committee and assign a representative to the committee. Committee representatives will include two West Oakland community members, an employee representative, and a representative from the Port and from the City. (Note that all employers with 50 or more full-time employees in the Bay Area are subject to the Bay Area Commuter Benefits Program [BAAQMD regulation 14, Rule 1]. For more information, please see <a href="https://commuterbenefits.511.org">https://commuterbenefits.511.org</a> ); (2) 2 Design and locate buildings to facilitate transit access, e.g., locate building entrances near transit stops, and eliminate building setbacks. Construct transit facilities such as bus turnouts/bus bulbs, benches, shelters, and improving transit bus service to the area. Provide on-site services, such as cafeterias, banks, dry cleaners, and convenience market so that employees can walk to these services. Include bicycle and pedestrian facilities in the design; (3) Transit, Bicycle and Pedestrian Access: Include sidewalks, multi-use paths and bike lanes in the project design. Provide secure, weather- protected bicycle parking for employees. Provide showers and lockers for employees bicycling or walking to work. Provide safe, direct access for bicyclists to adjacent bicycle routes. Provide direct, safe, attractive pedestrian access from project to transit stops and adjacent development; and (4) Manage [sic] Travel Demand and Provide Transit Service: Encourage OAB tenants to use carpools, vanpools, and public transit by providing incentives. Provide a shuttle to and from the West Oakland BART station. Establish mid-day shuttle service for worksite to food service establishments/commercial areas. Provide preferential parking for carpool and vanpool vehicles. Implement parking fees for single occupancy vehicle commuters.	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)							No					NO	NO	This action is under CARB purview.

**Table 1: Pass/Fail Screening of Suggested Actions**

No.	Name of Suggested Action	Description of Suggested Implementing Action	Source	Document	Associated Strategy (see p.9 of 2020 & Beyond Plan)						Step 2 Screening: Does Suggested Action Pass Indicated Criterion? (Yes/No)					Retained (Moved to Pool #2?) (Yes/No)	To Be Evaluated in Step 3?	Notes
					1	2	3	4	5	6	Criterion 1	Criterion 2	Criterion 3	Criterion 4	Criterion 5			
39	Ensure Tenant Compliance with CARB's Transport Refrigeration Regulation	Ensure existing and future tenants are compliant now and in the future with ARB's Transport Refrigeration Regulation. Incorporate operating practices that eliminate the amount of time that a transport refrigeration system powered by a fossil-fueled internal combustion engine can operate utilizing the combustion system while at the Port. Require the use of zero emission all-electric plug-in transport refrigeration systems and ensure the design plan includes the necessary infrastructure. ARB's Technology Assessment: Transport Refrigerators, provides information on the current and projected development for transport refrigerators, including current and anticipated costs at widespread deployment. This assessment can be found at <a href="https://www.arb.ca.gov/msprog/tech/techreport/tru_07292015.pdf">https://www.arb.ca.gov/msprog/tech/techreport/tru_07292015.pdf</a> .	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)	X						No					NO	NO	Enforcements of regulations is under CARB purview.
40	Accelerate the Turnover of Line-Haul Locomotives	Accelerate the turnover of line-haul locomotives servicing the Port to Tier 4, ARB proposed Tier 5, or Zero emissions locomotives as expeditiously as possible, with the goal of 95% of operations to be performed at a minimum Tier 4 standard by 2023. ARB's Technology Assessment: Freight Locomotives, provides information on current and projected development of freight locomotives, including current and anticipated costs at widespread development. This assessment can be found at <a href="https://www.arb.ca.gov/msprog/tech/techreport/freight_locomotives_tech_rep_or_t.pdf">https://www.arb.ca.gov/msprog/tech/techreport/freight_locomotives_tech_rep_or_t.pdf</a> .	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)	X						No					NO	NO	The federal government (U.S. EPA) has jurisdiction over line-haul locomotives.
41	Co-Funding and Other Support for Development of Zero-Emissions Line Haul Locomotives	Furthermore, the Port, Union Pacific (UP) Railroad, and/or BNSF Railway should commit to providing co-funding, facility access, and operational support for the development and demonstration of interstate line-haul locomotive technology with zero-emissions capability. This would include, but is not limited to, a hybrid-electric locomotive with all electric capability. ARB's Technology Assessment: Freight Locomotives, provides information on current and projected development of freight locomotives, including current and anticipated costs at widespread development. This assessment can be found at <a href="https://www.arb.ca.gov/msprog/tech/techreport/freight_locomotives_tech_rep_or_t.pdf">https://www.arb.ca.gov/msprog/tech/techreport/freight_locomotives_tech_rep_or_t.pdf</a> .	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)		X		X			No					NO	NO	The federal government (U.S. EPA) has jurisdiction over line-haul locomotives.
42	Lease Agreements for Minimum Tier 4 Locomotives by 2023	Incorporate conditions into lease agreements with BNSF and/or UP to ensure that switch locomotives meet a minimum Tier 4 emissions level by 2023.	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)	X						Yes	Yes	Yes	N/A	Yes	YES	YES	The Port holds the leasehold for the OIG (BNSF); UPRR owns its own property. This action passes for the OIG only.
43	Replacement of Diesel-Powered Switcher Locomotives on Port- or City-owned Rail Properties	Phase in the replacement of diesel powered switcher locomotives with electric rail car movers, within the Port or City owned rail properties.	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)													NO - Duplicate	
44	Infrastructure for 100% Plug-in of TRUs	Plan and design for the necessary infrastructure to ensure 100%, plug-in equipped, to accommodate future growth volumes of TRU's or expansion of this area.	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)			X				Yes	Yes	Yes	Yes	Yes	YES	YES	
45	Limits on TRU Operation without Plugging In	Implement a policy that limits the amount of time that a transport refrigeration system powered by a fossil-fueled internal combustion engine can operate utilizing the combustion system while on Site.	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)	X						Yes	Yes	Yes	N/A	Yes	YES	YES	
46	Encourage Use of Zero-Emissions Refrigeration Systems	Encourage the use of zero emission all-electric plug-in refrigeration systems, hydrogen fuel cell and cryogenic transport refrigeration systems.	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)		X					Yes	Yes	Yes	Yes	Yes	YES	YES	



**Table 1: Pass/Fail Screening of Suggested Actions**

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					1	2	3	4	5	6	Criterion 1	Criterion 2	Criterion 3	Criterion 4	Criterion 5			
47	Accelerate the Turnover of Line-Haul Locomotives	Accelerate the turnover of line-haul locomotives servicing the Port to Tier 4, ARB proposed Tier 5, or zero-emissions locomotives as expeditiously as possible, with the goal of 95% of operations to be performed at a minimum Tier 4 standard by 2023. Furthermore, the Port, Union Pacific (UP) Railroad, and/or BNSF Railway should commit to providing co-funding, facility access, and operational support for the development and demonstration of interstate line-haul locomotive technology with zero-emissions capability. This would include, but is not limited to, a hybrid-electric locomotive with all electric capability. Incorporate conditions into lease agreements with BNSF and/or UP to ensure that switch locomotives meet a minimum Tier 4 emissions level by 2023. ARB's Technology Assessment: Freight Locomotives, provides information on current and projected development of freight locomotives, including current and anticipated costs at widespread development. This assessment can be found at <a href="https://www.arb.ca.gov/msprog/tech/techreport/freight_locomotives_tech_rep_or_t.pdf">https://www.arb.ca.gov/msprog/tech/techreport/freight_locomotives_tech_rep_or_t.pdf</a> .	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)													NO - Duplicate	
48	Replace Diesel-Powered Switcher Locomotives with Electric Rail Car Movers	Phase in the replacement of diesel-powered switcher locomotives with electric rail car movers, within the Port- or City-owned rail properties.	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)													NO - Duplicate	
49	Require Flexible Shore Power Configurations	Require that berths providing shore power now or in the future, can accommodate changes to vessel sizes and various berthing configurations. The ARB At-Berth Regulation currently requires 80% compliance of ocean-going vessels by 2020. Vessel operations should meet 100% shore power compliance rate for all vessels or incorporate other technologies, such as emissions capture and control systems, to maximize emission reductions from all vessels in advance of the regulation. ARB's Sustainable Freight: Pathways to Zero and Near-Zero Emissions Discussion Document has identified the development and proposal of amendments to the At-Berth Regulation that could expand the regulation to include smaller fleets and/or additional vessel types to the current At Berth Regulation.	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)	X						Yes	Yes	Yes	Yes	Yes	YES	YES	
50	Incorporate Hybrid Technologies into Tug Operations	Additionally, hybrid technologies have shown success at achieving emission reductions in certain tugs based on duty, engine size, and location and should be incorporated into operations, where possible.	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)	X						Yes	Yes	Yes	Yes	Yes	YES	YES	
51	Demonstration Project of Zero and Near-Zero Emission Truck Technology	The City and Port should administer a minimum of a one year demonstration project, prior to 2020, of zero and near-zero emission truck technology. This demonstration project shall be conducted in cooperation with regional and state agencies and stakeholders.	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)		X					Yes	Yes	Yes	Yes	Yes	YES	NO - Already Underway	Demonstration testing of 16 pieces of zero-emissions (battery-electric) equipment is being conducted at the Port under a ZANZEFF grant, pursuant to the Port's MOU with the Port of Long Beach. The equipment includes 10 drayage trucks, five yard hostlers, and one top-pick. The Port has also worked with BYD, a manufacturer of battery-electric trucks, to conduct demonstration testing of one of their trucks. Six BYD Phase II trucks are currently being tested by Port tenants.
52	Identify and Test Hybrid Diesel Electric Locomotives	Research and funds shall be used to identify and test hybrid diesel electric locomotives	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)	X						Yes	Yes	Yes	Yes	Yes	YES	YES	Line-haul locomotives are under federal purview . This Suggested Action passes screening for switcher locomotives.
53	Conduct a Demonstration of Locomotive DOC or DPF Retrofits.	Research and funds shall be used to conduct a demonstration of locomotive DOC or DPF retrofits.	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)	X						Yes	Yes	Yes	N/A	Yes	YES	YES	
54	Conduct Feasibility Studies of Electrification of Freight/Passenger Rail	Feasibility studies of electrification of freight/passenger rail from Port intermodal yards to the Bay Area Air Quality Management District's boundaries conducted in conjunction with the Metropolitan Transportation Commission, Capital Corridor JPA, Union Pacific, and Burlington Northern Santa Fe railroads.	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)		X	X	X			No					NO	NO	The federal government (U.S. EPA) has jurisdiction over line-haul locomotives. CARB and CalTrans may also contribute (as they did for the CalTrain electrification study).
55	Renewable Energy Generation from Trucks	Investigation of renewable energy generation via mechanical systems that utilize truck weight to generate electricity.	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)							Yes	Yes	Yes	Yes	Yes	YES	YES	

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					1	2	3	4	5	6	Criterion 1	Criterion 2	Criterion 3	Criterion 4	Criterion 5			
56	Study of a "Virtual Container Yard" System	Study of a "virtual container yard" system that integrates truck movements with container moves to minimize emissions and maximize efficient use of trucking fleets.	BAAQMD	BAAQMD Emissions Reductions Actions (Note 1)	X						Yes	Yes	Yes	N/A	Yes	YES	YES	
57	Create a Mayor's Sustainable Freight Advisory Committee	Create a Mayor's Sustainable Freight Advisory Committee to provide input and oversight on Port and City planning efforts. The Committee should include designated seats for community members.	Earth Justice	Title VI Suggested Actions, Table (Note 3)				X	X		No					NO	NO	Alameda County and MTC have existing, on-going freight advisory committees.
58	Shared Vision of the Future of West Oakland	Engage in a community-based effort that brings stakeholders together to create a shared vision of the future of West Oakland. Establish standing, facilitated meetings with all stakeholders including representatives from the City, Port, other local, state and federal agencies, businesses, unions, and impacted residents, and connect with broader planning efforts under way with the Alameda County Transportation Commission.	Earth Justice	Title VI Suggested Actions, Table (Note 3)				X	X		No					NO	NO	Both the West Oakland Specific Plan and the WOCAP are robust planning efforts that define a community vision for West Oakland.
59	Coordinate Mitigation Planning between Construction and Operation Air Quality Reviews	End practice of piecemealing mitigation planning between construction and operations air quality reviews.	Earth Justice	Title VI Suggested Actions, Table (Note 3)	X			X			No					NO	NO	Mitigation planning is under the purview of the Oakland Army Base Area Redevelopment Plan Environmental Impact Report, dated July 2002.
60	Provide Notice and Public Comment Period on Relevant Planning or Land-Use Decisions	Provide notice and at least 30 days of comment period on all relevant planning or land-use decisions.	Earth Justice	Title VI Suggested Actions, Table (Note 3)					X		No					NO	NO	This action falls within the purview of the Title VI Informal Resolution Agreement among the U.S. EPA, the City of Oakland, and the Port, dated July 25, 2019.
61	End Practice of Conditional Use Permitting	End practice of conditional use permitting to allow incompatible freight operations in the community.	Earth Justice	Title VI Suggested Actions, Table (Note 3)							No					NO	NO	The City of Oakland has land use planning authority in the City of Oakland. This action is under the purview of the City.
62	Move Freight and Supporting Service Activities away from Disadvantaged Communities	Use zoning authority and incentives such as small business loans and subsidies to move freight and supporting service activities away from disadvantaged communities and to appropriate locales.	Earth Justice	Title VI Suggested Actions, Table (Note 3)							No					NO	NO	The City of Oakland has land use planning authority in the City of Oakland. This action is under the purview of the City.
63	Enforce Truck Parking, Route, and Idling Restrictions	Enforce truck parking, route, and idling restrictions. This includes training enforcement personnel, taking enforcement delegation as necessary to enforce specific requirements, and providing funding for enforcement personnel.	Earth Justice	Title VI Suggested Actions, Table (Note 3)							No					NO	NO	The City of Oakland has land use planning authority in the City of Oakland. This action is under the purview of the City, as also reflected in the WOCAP (see WOCAP action 33).
64	Continue ARB Spot Inspection Program	Continue ARB spot inspection program by collecting and reporting information on trucks with excess smoke, improper emissions control labels, evidence of tampering, and noncompliance with regulations requiring soot filters on trucks and transport refrigeration units.	Earth Justice	Title VI Suggested Actions, Table (Note 3)	X						No					NO	NO	This action is under CARB purview.
65	Ban or Report Trucks not in Compliance with ARB Regulations	Deny Port access to, or report, any truck not in compliance with ARB regulations.	Earth Justice	Title VI Suggested Actions, Table (Note 3)							Yes	Yes	N/A	N/A	Yes	YES	NO - Completed; Moved to Pool #4	Under the STEP registry this is already being done for trucks that enter marine terminals and railyards, and will continue to be done in the future. This action is considered completed.
66	Regular Reporting on Progress with Emission Reduction Requirements	Provide regular reporting on progress and compliance with emission reduction requirements.	Earth Justice	Title VI Suggested Actions, Table (Note 3)					X		Yes	N/A	N/A	No	Yes	YES	YES	
67	Conduct New EIR for Current Proposed Development of Oakland Army Base	Conduct new environmental review (EIR) for current proposed development of Oakland Army Base. Include alternatives that support moving freight activities and services out of the surrounding communities onto Port and OAB properties.	Earth Justice	Title VI Suggested Actions, Table (Note 3)							No					NO	NO	The Port will continue to use the Oakland Army Base (OAB) Area Redevelopment Plan Environmental Impact Report (EIR), dated July 2002, as appropriate. When new developments are proposed on the former OAB, the Port and the City consider whether the proposed development is covered by the analysis of the OAB EIR, as amended. Where needed, the Port and the City conduct the appropriate level of environmental review, such as an Addendum or Supplemental EIR, to analyze the potential environmental impacts of the proposed project.
68	Prepare Clean Air Action Plan	Prepare Clean Air Action Plan with interim targets for replacing all port equipment and drayage trucks with zero-emissions vehicles and equipment.	Earth Justice	Title VI Suggested Actions, Table (Note 3)	X	X		X	X		Yes	Yes	Yes	Yes	Yes	YES	NO - Completed; Moved to Pool #4	This action was completed by preparation of the 2020 and Beyond Plan.
69	Prepare New Traffic and Transportation Plan	Prepare new traffic and transportation plan to route truck traffic away from disadvantaged communities.	Earth Justice	Title VI Suggested Actions, Table (Note 3)							No					NO	NO	This action was implemented pursuant to the West Oakland Truck Management Plan (TMP).
70	Move Incompatible Freight Activities out of the Community	Use parking, route, and idling restrictions to move incompatible freight activities out of the community.	Earth Justice	Title VI Suggested Actions, Table (Note 3)													NO - Duplicate	

**Table 1: Pass/Fail Screening of Suggested Actions**

No.	Name of Suggested Action	Description of Suggested Implementing Action	Source	Document	Associated Strategy (see p.9 of 2020 & Beyond Plan)						Step 2 Screening: Does Suggested Action Pass Indicated Criterion? (Yes/No)					Retained (Moved to Pool #2?) (Yes/No)	To Be Evaluated in Step 3?	Notes
					1	2	3	4	5	6	Criterion 1	Criterion 2	Criterion 3	Criterion 4	Criterion 5			
71	Improve Signage	Improve signage to avoid any confusion over such parking, route, and idling restrictions.	Earth Justice	Title VI Suggested Actions, Table (Note 3)							No					NO	NO	This action is under the purview of the City, as also reflected in the WOCAP (see WOCAP action 34). This action is being implemented as part of the TMP.
72	Provide Supportive Services within Port Properties	Provide supportive services within Port properties.	Earth Justice	Title VI Suggested Actions, Table (Note 3)	X			X			Yes	Yes	Yes	N/A	Yes	YES	YES	
73	Install Network of Air Monitoring Sensors	Work with community to design and install network of air monitoring sensors, and commit to using data to design and assess impacts of mitigation measures.	Earth Justice	Title VI Suggested Actions, Table (Note 3)				X	X		Yes	N/A	N/A	N/A	Yes	YES	YES	
74	Develop Electrical Infrastructure Plans in Conjunction with Utilities	Work with utilities to develop electrical infrastructure plans to support port electrification by 2018.	Earth Justice	Title VI Suggested Actions, Table (Note 3)			X	X			Yes	N/A	N/A	Yes	Yes	YES	YES	
75	Maximize Use of Distributed Renewable and Storage Resources at the Port	Maximize use of distributed renewable and storage resources at the Port.	Earth Justice	Title VI Suggested Actions, Table (Note 3)			X				Yes	Yes	Yes	Yes	Yes	YES	YES	
76	Commit to Renewable Energy Projects	Commit to renewable energy projects to mitigate impacts and facilitate transition of trucks and other equipment to zero-emissions technologies.	Earth Justice	Title VI Suggested Actions, Table (Note 3)			X				Yes	Yes	Yes	Yes	Yes	YES	YES	
77	Land for Green Infrastructure and Truck Charging Stations	Set aside land for green infrastructure and truck charging stations.	Earth Justice	Title VI Suggested Actions, Table (Note 3)			X				Yes	Yes	Yes	Yes	Yes	YES	YES	
78	Zero-Emissions Truck Commercialization Pilot Program	Implement a 100 zero-emissions truck commercialization pilot program by 2023.	Earth Justice	Title VI Suggested Actions, Table (Note 3)		X		X			Yes	Yes	Yes	Yes	Yes	YES	YES	
79	At-Berth Emission Reduction	Require all ships to use shore power or at-berth emission reduction technology by 2023.	Earth Justice	Title VI Suggested Actions, Table (Note 3)	X						No					NO	NO	This action is under CARB purview.
80	Electrification of Resident Locomotives	Require electrification of locomotives that do not leave port facilities.	Earth Justice	Title VI Suggested Actions, Table (Note 3)		X					Yes	Yes	Yes	Yes	Yes	YES	YES	
81	Emission Capture Technologies for Non-Resident Locomotives	Require emission capture technologies for other locomotives while at port facilities.	Earth Justice	Title VI Suggested Actions, Table (Note 3)	X						Yes	Yes	Yes	N/A	Yes	YES	YES	
82	Encourage Turnover of all Tier 3 and Older Locomotives	Adopt strategies for encouraging turnover of all Tier 3 and older locomotives by 2020.	Earth Justice	Title VI Suggested Actions, Table (Note 3)	X	X					Yes	Yes	Yes	N/A	Yes	YES	YES	
83	Indirect Source Emission Caps	Adopt indirect source emission caps by 2020 to encourage efficiency and emission reductions within the port.	Earth Justice	Title VI Suggested Actions, Table (Note 3)							No					NO	NO	This action is under BAAQMD purview.
84	Replace All CHE with Zero-Emissions Equipment	Commit to replace all cargo handling equipment with zero-emissions equipment by 2030.	Earth Justice	Title VI Suggested Actions, Attachment (Note 3)	X	X					Yes	Yes	Yes	Yes	Yes	YES	NO - Completed; Moved to Pool #4	This action is complete. The final feasibility study was presented at the December 12, 2019 meeting of the Board of Port Commissioners.
85	Require Zero-Emissions Drayage Trucks	Commit to allow only zero-emissions drayage trucks to service the port by 2035.	Earth Justice	Title VI Suggested Actions, Attachment (Note 3)	X	X					Yes	Yes	Yes	Yes	Yes	YES	NO - Completed; Moved to Pool #4	This action is complete. The final feasibility study was presented at the December 12, 2019 meeting of the Board of Port Commissioners.
86	Prepare Clean Air Action Plan	Prepare a Clean Air Action Plan with interim targets for achieving these 2030 and 2035 commitments.	Earth Justice	Title VI Suggested Actions, Attachment (Note 3)													NO - Duplicate	
87	Zero-Emissions Truck Commercialization Pilot Program	Implement a 100 zero-emissions truck commercialization pilot program by 2023.	Earth Justice	Title VI Suggested Actions, Attachment (Note 3)													NO - Duplicate	
88	At-Berth Emission Reduction	Require all ships to use shore power or an at-berth emissions reduction technology by 2023.	Earth Justice	Title VI Suggested Actions, Attachment (Note 3)													NO - Duplicate	

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No.	Name of Suggested Action	Description of Suggested Implementing Action	Source	Document	Associated Strategy (see p.9 of 2020 & Beyond Plan)						Step 2 Screening: Does Suggested Action Pass Indicated Criterion? (Yes/No)					Retained (Moved to Pool #2?) (Yes/No)	To Be Evaluated in Step 3?	Notes
					1	2	3	4	5	6	Criterion 1	Criterion 2	Criterion 3	Criterion 4	Criterion 5			
89	Indirect Source Emission Caps	Adopt indirect source emission caps by 2020 to encourage efficiency and emission reductions within the port.	Earth Justice	Title VI Suggested Actions, Attachment (Note 3)													NO - Duplicate	
90	Develop Electrical Infrastructure Plans in Conjunction with Utilities	Work with the relevant utilities to develop electrical infrastructure plans to support port electrification. Initial plans should be presented for Board consideration in 2018.	Earth Justice	Title VI Suggested Actions, Attachment (Note 3)													NO - Duplicate	
91	Maximize Use of Distributed Renewable and Storage Resources at the Port	Such plans should maximize the use distributed renewable and storage resources at the Port. Initial plans should be presented for Board consideration in 2018.	Earth Justice	Title VI Suggested Actions, Attachment (Note 3)													NO - Duplicate	
92	Electrification of Resident Locomotives	Require electrification of locomotives that do not leave port facilities	Earth Justice	Title VI Suggested Actions, Attachment (Note 3)													NO - Duplicate	
93	Emission Capture Technologies for Non-Resident Locomotives	Require emission capture technologies for other locomotives while at port facilities.	Earth Justice	Title VI Suggested Actions, Attachment (Note 3)													NO - Duplicate	
94	Encourage Turnover of all Tier 3 and Older Locomotives	Adopt strategies for encouraging turnover of all Tier 3 and older locomotives by 2020.	Earth Justice	Title VI Suggested Actions, Attachment (Note 3)													NO - Duplicate	
95	Provide Supportive Services within Port Properties	Provide space for truck supportive services within Port properties.	Earth Justice	Title VI Suggested Actions, Attachment (Note 3)													NO - Duplicate	
96	Land for Green Infrastructure and Truck Charging Stations	Set aside land for green infrastructure and truck charging stations.	Earth Justice	Title VI Suggested Actions, Attachment (Note 3)													NO - Duplicate	
97	Regular Reporting on Progress with Emission Reduction Requirements.	Provide regular reporting on progress and compliance with emission reduction requirements.	Earth Justice	Title VI Suggested Actions, Attachment (Note 3)													NO - Duplicate	
98	Continue ARB Spot Inspection Program	Continue ARB spot inspection program by collecting and reporting information on trucks with excess smoke, improper emissions control labels, evidence of tampering, and noncompliance with regulations requiring soot filters on trucks and transport refrigeration units.	Earth Justice	Title VI Suggested Actions, Attachment (Note 3)													NO - Duplicate	
99	Ban Trucks not in Compliance with ARB Regulations	Report or deny access to any truck not in compliance with ARB regulations.	Earth Justice	Title VI Suggested Actions, Attachment (Note 3)													NO - Duplicate	
100	Conduct New EIR for Current Proposed Development of Oakland Army Base	Conduct new Environmental Impact Review for current proposed development of Oakland Army Base. Include alternatives that support moving freight activities and services out of the surrounding communities onto Port and OAB properties.	Earth Justice	Title VI Suggested Actions, Attachment (Note 3)													NO - Duplicate	
101	Coordinate Mitigation Planning between Construction and Operation Air Quality Reviews	End practice of piecemealing mitigation planning between construction and operation air quality reviews.	Earth Justice	Title VI Suggested Actions, Attachment (Note 3)													NO - Duplicate	
102	Commit to Renewable Energy Projects	Commit to renewable energy projects to mitigate impacts and to facilitate transition of trucks and other equipment to zero-emissions technologies.	Earth Justice	Title VI Suggested Actions, Attachment (Note 3)													NO - Duplicate	
103	Prepare New Traffic and Transportation Plan	Prepare new traffic and transportation plan to route truck traffic away from disadvantaged communities.	Earth Justice	Title VI Suggested Actions, Attachment (Note 3)													NO - Duplicate	

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					1	2	3	4	5	6	Criterion 1	Criterion 2	Criterion 3	Criterion 4	Criterion 5			
104	Move Freight and Supporting Service Activities away from Disadvantaged Communities	Use zoning authority and incentives such as small business loans and subsidies to move freight and supporting service activities away from disadvantaged communities and to appropriate locales.	Earth Justice	Title VI Suggested Actions, Attachment (Note 3)													NO - Duplicate	
105	End Practice of Conditional Use Permitting	End practice of conditional use permitting to allow incompatible freight operations in the community.	Earth Justice	Title VI Suggested Actions, Attachment (Note 3)													NO - Duplicate	
106	Move Incompatible Freight Activities out of the Community	Use parking, route, and idling restrictions to move incompatible freight activities out of the community.	Earth Justice	Title VI Suggested Actions, Attachment (Note 3)													NO - Duplicate	
107	Improve Signage	Improve signage to avoid any confusion over such parking, route, and idling restrictions.	Earth Justice	Title VI Suggested Actions, Attachment (Note 3)													NO - Duplicate	
108	Enforce Truck Parking, Route, and Idling Restrictions	Enforce truck parking, route, and idling restrictions. This includes training enforcement personnel, taking enforcement delegation as necessary to enforce specific requirements, and providing funding for enforcement personnel.	Earth Justice	Title VI Suggested Actions, Attachment (Note 3)													NO - Duplicate	
109	Install Network of Air Monitoring Sensors	Work with community to design and install network of air monitoring sensors, and commit to using data to design and assess impacts of mitigation measures.	Earth Justice	Title VI Suggested Actions, Attachment (Note 3)													NO - Duplicate	
110	Create a Mayor's Sustainable Freight Advisory Committee	The Mayor should create a Sustainable Freight Advisory Committee to provide input and oversight on Port and City planning efforts. The Committee should include designated seats for community members.	Earth Justice	Title VI Suggested Actions, Attachment (Note 3)													NO - Duplicate	
111	Shared Vision of the Future of West Oakland	The City should engage in a community-based effort that brings stakeholders together to create a shared vision of the future of West Oakland. The process should include standing, facilitated meetings with all stakeholders including representatives from the City, Port, other local, state and federal agencies, businesses, unions, and impacted residents.	Earth Justice	Title VI Suggested Actions, Attachment (Note 3)													NO - Duplicate	
112	Connect with Broader Planning Efforts with Alameda County Transportation Commission.	Planning should connect with broader planning efforts under way with the Alameda County Transportation Commission.	Earth Justice	Title VI Suggested Actions, Attachment (Note 3)							No					NO	NO	Both the West Oakland Specific Plan and the WOCAP are robust planning efforts that define a community vision for West Oakland.
113	Provide Notice and Public Comment Period on Relevant Planning or Land-Use Decisions	The City should provide notice and at least 30 days of comment period on all relevant planning or land-use decisions.	Earth Justice	Title VI Suggested Actions, Attachment (Note 3)													NO - Duplicate	
114	Phase-in of Zero-Emissions Drayage Trucks	Commit to allow only zero-emissions drayage trucks to service the Port by 2035. BAAQMD Response: <i>This requirement should be phased in with 20% by 2025, 60% by 2030 and 100% by 2033</i>	BAAQMD	BAAQMD Response to EARTHJUSTICE List of Actions	X	X					Yes	Yes	Yes	Yes	Yes	YES	NO - Completed; Moved to Pool #4	This action is complete. The final feasibility study was presented at the December 12, 2019 meeting of the Board of Port Commissioners.
115	Include Indirect Source Emission Caps and Local Emission Offset Fund in the Clean Air Action Plan	Adopt indirect source emission caps by 2020 to encourage efficiency and emission reductions within the port. BAAQMD Response: <i>Indirect source emission caps should be included in the Clean Air Action Plan identified in recommendation# 3 above. Projects above the emission caps should pay into a local emission offset fund.</i>	BAAQMD	BAAQMD Response to EARTHJUSTICE List of Actions	X						No					NO	NO	This action is under BAAQMD purview (see WOCAP action 62).
116	Complete OAB Mitigation Measures that Require Development of Emissions Reductions Plans and Funding of Strategies to Reduce Truck Emissions in a Public Process Prior to Additional Development Plans or Tenant Improvements Approvals	End practice of piecemealing mitigation planning between construction and operation air quality reviews. BAAQMD Response: <i>Air District staff recommends that the OAB mitigation measures requiring development of emission reduction plans and the funding of strategies to reduce truck emissions should be completed in a public process before any additional development plans or tenant improvements are approved.</i>	BAAQMD	BAAQMD Response to EARTHJUSTICE List of Actions	X					X	No					NO	NO	This action falls within the purview of the Truck Diesel Emission Reduction Program being implemented as part of the Oakland Army Base Area Redevelopment Plan Environmental Impact Report (July 2002) mitigation program.

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					1	2	3	4	5	6	Criterion 1	Criterion 2	Criterion 3	Criterion 4	Criterion 5			
117	Initiate New OAB Stakeholder Process and Integrate with AB 617 Process	The City should engage in a community-based effort that brings stakeholders together to create a shared vision of the future of West Oakland. The process should include standing, facilitated meetings with all stakeholders including representatives from the City, Port, other local, state and federal agencies, businesses, unions, and impacted residents. <b>BAAQMD Response: Air District staff supports this recommendation. The current OAB stakeholder process does not accommodate meaningful input from the community stakeholders on proposed development within the OAB. A new stakeholder process should be initiated and integrated with the stakeholder process currently being developed for the AB 617 Community Health Protection Action Plan under way for the West Oakland Community.</b>	BAAQMD	BAAQMD Response to EARTHJUSTICE List of Actions						X	No					NO	NO	This action falls within the purview of the Title VI Informal Resolution Agreement among U.S. EPA, the City of Oakland, and the Port, dated July 26, 2019.
118	Zero-Emissions Trucks for Short-Haul Drayage	By 2021, the Port should require zero-emissions truck operation for transport of containers on-site and between terminals, as well as to nearby rail yards or other freight facilities.	CARB	Comments on Draft 2020 and Beyond Plan		X					Yes	Yes	Yes	Yes	No	NO	NO	This action would impose an unreasonable financial burden on truckers and Port tenants. See also the December 2019 Port of Oakland Zero-Emissions Drayage Truck Feasibility Study.
119	Develop a Trucking Concession Program	This could be achieved by developing a concession program, where companies have responsibility and oversight for short-haul operations between terminals, and between local rail yards such as the adjacent Union Pacific Intermodal rail yard that handles a large amount of port cargo through its facility.	CARB	Comments on Draft 2020 and Beyond Plan		X		X			Yes	Yes	Yes	N/A	No	NO	NO	Each beneficial cargo owner hires its own trucking services and assumes the risk that the trucking service will perform as desired. The Port cannot manage the operations of truckers.
120	Work with City of Oakland to Install Signage	We encourage the Port continue to work with the City to install adequate signage in neighborhoods and along truck routes, and to enforce local ordinances when violated.	CARB	Comments on Draft 2020 and Beyond Plan													NO - Duplicate	
121	Partner with Community Groups to Apply for Supplemental Environmental Projects (SEP) Grants	The Port should also partner with community groups to apply for Supplemental Environmental Projects (SEP) grants to receive funding for local initiatives. CARB can provide further information on this potential funding source. These funds originate from settlement dollars of violators of environmental regulations. The community of Bayview Hunters Point near the Port of San Francisco has achieved success in reducing illegal truck idling after receiving funding through an approved SEP to install signage and conduct other outreach in that community.	CARB	Comments on Draft 2020 and Beyond Plan				X		X	Yes	N/A	N/A	N/A	Yes	YES	YES	
122	Pre-Model Year 2010 Truck Ban	By 2023, the Port should use the Drayage Truck Registry to begin banning trucks not equipped with MY 2010 or newer engines pursuant to CARB's Truck and Bus regulation.	CARB	Comments on Draft 2020 and Beyond Plan		X					Yes	Yes	Yes	Yes	Yes	YES	NO - Already Underway	This action is in progress - the STEP registry process provides for this.
123	Implement Rate Structure to Promote Use of Zero-Emissions Trucks	By 2023, the Port should implement a rate (i.e. fee) structure, where cargo owners would pay more for each gate move if the trucks carrying their goods are not using the cleanest commercially available technologies.	CARB	Comments on Draft 2020 and Beyond Plan		X				X	Yes	Yes	Yes	Yes	Yes	YES	YES	
124	Join International Vessel Environmental Performance Incentive Programs	By 2020, the Port should join one of the international vessel environmental performance incentive programs, such as the Environmental Ship Index (ESI) Incentive Program used by the Port of Los Angeles. Providing lower docking fees or other financial incentives to attract cleaner vessels and reward vessel measures that go beyond requirements will increase emission reductions within the Bay Area and other surrounding West Coast ports.	CARB	Comments on Draft 2020 and Beyond Plan		X					Yes	Yes	Yes	N/A	Yes	YES	YES	Board Resolution 19-41 directs staff to "submit an Agenda Report to the Board, within 18 months following the date of this Resolution, on "...performance incentive programs for ocean vessels and rail tenants"
125	Design and Implement a VSR Program	By 2020, design and implement a VSR program that would reduce emissions from vessels in transit to the greatest extent possible. CARB recommends that a VSR zone that begins outside the Golden Gate Bridge.	CARB	Comments on Draft 2020 and Beyond Plan		X					Yes	Yes	Yes	Yes	Yes	YES	YES	
126	100% Shore Power Use for Vessels Equipped with Shore Power	By 2020, require, where feasible, use of shore power for 100% of visits by vessels equipped with shore power. CARB's existing regulation already requires an equipped vessel at an equipped berth to connect. This recommended measure should include responsibility for the marine terminal operators to provide access to shore power connections for each vessel equipped to plug in, accelerating the anticipated CARB requirements.	CARB	Comments on Draft 2020 and Beyond Plan		X					No					NO	NO	This action is under CARB purview.
127	Demonstrate and Deploy Alternative Systems to Control Vessels When Shore Power is not Available.	By 2020, set interim goals for demonstrating and deploying alternative systems to control vessels when shore power is not available.	CARB	Comments on Draft 2020 and Beyond Plan		X					Yes	Yes	Yes	N/A	Yes	YES	YES	
128	Accelerate Turnover to the Cleanest Available Rail Yard and Locomotive Technologies	At a local level, the Port needs to use its control of or its influence over rail operations to take more aggressive action to accelerate turnover to the cleanest available technologies.	CARB	Comments on Draft 2020 and Beyond Plan		X		X			Yes	Yes	Yes	Yes	Yes	YES	NO - Already in the NTAP	This action is included in the NTAP (Item 32) but has not yet commenced.
129	Support CARB's Tier 5 Petition to U.S. EPA	The Port should support CARB's Tier 5 petition to U.S. EPA with a written letter (other support letters are posted on CARB's rail activities website).	CARB	Comments on Draft 2020 and Beyond Plan		X		X									NO - Duplicate	

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					1	2	3	4	5	6	Criterion 1	Criterion 2	Criterion 3	Criterion 4	Criterion 5			
130	Seek Partners to Demonstrate the Use of Tier 5 Equivalent Locomotives in the Three Rail Facilities	Seek partners to demonstrate the use of Tier 5 equivalent locomotives in the three rail facilities.	CARB	Comments on Draft 2020 and Beyond Plan	X			X			Yes	Yes	Yes	Yes	Yes	YES	YES	
131	Replace Switchers with Zero-Emissions Railcar Movers or Zero-Emissions Locomotives at OIG and OGRE Rail Yards	For the OIG and OGRE rail yards, which are on port property, the Port should set specific targets to cut emissions by replacing switchers with zero-emissions railcar movers, or zero-emissions locomotives. These types of projects are eligible for several local, State, and federal incentive programs.	CARB	Comments on Draft 2020 and Beyond Plan		X					Yes	Yes	Yes	N/A	Yes	YES	YES	
132	Establish Target of 100% Zero-Emissions Yard Trucks by 2023	In the Revised Plan, the Port should establish a target to achieve 100% zero-emissions yard trucks by 2023. Today, there are commercially available technologies manufactured by several companies such as OrangeEV and BYD that should be able to meet the demands of a seaport within the next five years.	CARB	Comments on Draft 2020 and Beyond Plan	X	X					Yes	N/A	N/A	N/A	Yes	YES	YES	The Port conducted the Zero-Emissions Cargo Handling Equipment Feasibility Study (November 2019) to assess the feasibility of replacing all CHE at the Port with zero-emissions equipment. The study concluded that it is not currently feasible to replace all CHE at the Port with zero-emissions equipment or to predict when all CHE will be zero-emissions. However, at the December 12, 2019 Board meeting, the Port set an interim goal of having all new off-dock yard tractors be zero emissions vehicles. This interim goal is contingent on sufficient incentive funding from CARB.
133	Achieve 100% zero-emissions RTG cranes by 2026	In the Revised Plan, the Port should establish a goal of 100% zero-emissions RTG cranes by 2026. In this particular sector, repower or conversion kits are available for a fraction of the cost of replacing the entire RTG crane. Further, zero-emissions technologies do not need batteries to power all of their operations; instead, they can operate using direct power technologies using cable reels or conductor rails when lifting and lowering containers. A number of ports around the world have been retrofit to electrify RTG crane operations and reduce emissions, save money on maintenance and fuel, and improve efficiencies.	CARB	Comments on Draft 2020 and Beyond Plan	X	X	X				Yes	N/A	N/A	N/A	Yes	YES	YES	The Zero-Emissions Cargo Handling Equipment Feasibility Study (November 2019) concluded that zero-emissions RTGs are not currently feasible at the Port of Oakland; however, hybrid RTGs are commercially available and cost-effective, and provide very substantial emissions reductions. At the December 12, 2019 Board meeting, the Port therefore set a new goal of having all new RTGs at the Port be hybrid (or electric, if feasible).
134	Establish Target of 100% Zero-Emissions Cargo-Handling Equipment by 2030	In the Revised Plan, the Port should consider a goal of 100% zero-emissions cargo-handling equipment by 2030. Establishing targets earlier than statewide regulations will ensure the Port and its tenants remain eligible for a wider range of incentive funding opportunities when repowering or replacing older equipment.	CARB	Comments on Draft 2020 and Beyond Plan	X	X					Yes	N/A	N/A	N/A	Yes	YES	YES	The Port conducted the Zero-Emissions Cargo Handling Equipment Feasibility Study (November 2019) to assess the feasibility of replacing all CHE at the Port with zero-emissions equipment. The study concluded that it is not currently feasible to replace all CHE at the Port with zero-emissions equipment or to predict when all CHE will be zero-emissions. However, at the December 12, 2019 Board meeting, the Port set two new interim goals: (1) having all new off-dock yard tractors be zero emissions vehicles (this interim goal is contingent on sufficient incentive funding from CARB), and having all new RTGs be hybrid (or electric).
135	Upgrade Specific Infrastructure Components in the Near-Term (2018-2023)	The Port should commit to upgrading specific components of infrastructure within the Near-Term (2018-2023) phase, which will help the Port and its tenants to remain eligible for incentive dollars that require projects to be completed in advance of statewide requirements.	CARB	Comments on Draft 2020 and Beyond Plan			X				Yes	Yes	Yes	Yes	Yes	YES	NO - Already Underway	The Port has conducted a detailed analysis of potential future electrical demand (the Maritime Power Capacity Study for Terminal Electrification study). Based on this study, staff made seven recommendations regarding infrastructure improvements.
136	Annual Meetings for Stakeholders	We recommend holding at least annual meetings for stakeholders to provide input and receive updates on progress, annual emissions inventory updates, and health risk assessment updates annually until health risks are resolved.	EDF	Comments on Draft 2020 and Beyond Plan					X		Yes	Yes	Yes	Yes	Yes	YES	NO - Already Underway	This action is on-going. Annual meetings are being conducted as part of the public engagement plan included with the 2020 and Beyond Plan (see Appendix G), and will include updates on progress and studies as available. Health risk assessments are under the purview of BAAQMCD.
137	Annual Review of the Plan	We recommend that there be annual review of the plan in the first few years so that additional actions can be added to the Near-Term plan as new technologies and funding become available.	EDF	Comments on Draft 2020 and Beyond Plan				X	X		Yes	Yes	Yes	Yes	Yes	YES	NO - Already Underway	This action is on-going. As stated on Page 41 of the 2020 and Beyond Plan "The Port intends to review and, as appropriate, update the NTAP on an annual basis."
138	Refine Emissions Inventory Methodology	Refining Emissions Inventory Methodology: (a) Automated data collection that can capture detailed activity data is available across most vehicle and equipment types and should be leveraged to improve the accuracy of emission estimates. (b) Expand the geographic scope of each emission source mode to the first intermodal transfer point and in a way that reflect the mode footprint. (c) Apply sensitivity analysis to account for uncertainty and improve accuracy.	EDF	Comments on Draft 2020 and Beyond Plan	X						Yes	N/A	N/A	N/A	Yes	YES	YES	



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					1	2	3	4	5	6	Criterion 1	Criterion 2	Criterion 3	Criterion 4	Criterion 5			
139	Develop a Real and Tangible Plan to Fund AQ Mitigations	Develop a Real and Tangible Plan to Fund AQ Mitigations - Under the current draft, the original problem of insufficient commitment to funding mitigations persists. As per comments of interagency stakeholders in the original process, EPA, local air district, and local health agencies wrote, "it is very important for the Port Commission to take some additional concrete steps to make the MAQIP a plan that clearly demonstrates the Port's strong commitment to improving air quality and the health of Oakland residents who live near the Port." The missing component is a realistic strategy to fund emissions mitigations adequately. Unfortunately, the prior MAQIP suffered from the same limitation, and thus leads EDF to ask if the Port is truly committed to seeing thru improved air quality and associated health. This broad concern leads to several additional questions pertaining to the current proposal:	EDF	Comments on Draft 2020 and Beyond Plan						X	Yes	N/A	N/A	Yes	Yes	YES	NO - Already Underway	Board Resolution 19-41 directs staff to "submit an Agenda Report to the Board, within 18 months following the date of this Resolution, on costs and financing aspects associated with the 2020 and Beyond Plan including discussions of grant and incentive funding opportunities from outside sources (i.e., CARB, BAAQMD, and the California Energy Commission, etc. .) and private sector and Port resources;"
140	Technology Advancement Program Investment Plan	To demonstrate commitment to actions, we also recommend that the Port include an investment plan similar to the Technology Advancement Program adopted by the Port of LA to accelerate cleaner technologies at the Port.	EDF	Comments on Draft 2020 and Beyond Plan		X		X			Yes	N/A	N/A	Yes	Yes	YES	YES	
141	Apply for All Available Grant Opportunities	Demonstrate Commitment to Winning Grants – As part of the funding and investment plan, we suggest that the Port commit to not leave any grant funding opportunities unapplied for. This would include having dedicated and adequate staff capacity to develop and submit grant applications, as well as building sufficient matching funds for grants into the budget.	EDF	Comments on Draft 2020 and Beyond Plan						X	Yes	N/A	N/A	N/A	Yes	YES	YES	
142	Port Loan Program for Zero-Emissions Equipment	Explore Innovative Funding Mechanisms - We urge the Port to consider designing a loan program for electric drayage trucks, CHE and other off-road equipment to make it easier for operators to transition to zero-emissions technologies.	EDF	Comments on Draft 2020 and Beyond Plan				X		X	No					NO	NO	The Port does not serve as a lending institution or grant-making body but will continue to provide information about grant and incentive opportunities to Port tenants, customers, and trucks.
143	Evaluate Establishment of an Air Quality Finance Authority	We also recommend that the Port explore the establishment of an Air Quality Finance Authority, recommended by the U.S. EPA's National Environmental Justice Advisory Council. This authority could serve as a mechanism to assist small fleet owners and other goods movement related businesses to receive low cost financing.	EDF	Comments on Draft 2020 and Beyond Plan						X	No					NO	NO	The Port does not serve as a lending institution or grant-making body but will continue to provide information about grant and incentive opportunities to Port tenants, customers, and trucks.
144	Clarify the Scope of Drayage Truck Charging Infrastructure Study	Clarifying the Scope of Drayage Truck Charging Infrastructure- The proposed needs assessment and feasibility study (Table 2) should reflect how drayage trucks are operated beyond the gates of the Port, including an assessment of the daily cycle of the trucks. It should map out optimal charging strategies while minimize the overall emission footprint, for instance, taking into consideration the potential impact on peak load. Importantly, planning and committing real estate for infrastructure requirements for these technologies will also be critical and should be built into the assessment. Additionally, recognizing that most drayage drivers are independent with limited resources, the assessment should also take into account the cost impact on drivers. We request that the Port share the scope of the proposed study as it becomes ready.	EDF	Comments on Draft 2020 and Beyond Plan				X			Yes	N/A	N/A	N/A	Yes	YES	YES	
145	Electrification and Resilience Plan for Mobile Equipment	Electrification and Resilience Plan for Mobile Elements of Operations – Beyond the charging infrastructure for drayage trucks, we recommend that the Port develop a clear roadmap for infrastructure that will be needed to electrify other mobile components of its operations - including a resiliency assessment. EV systems have the potential to be more resilient than fossil-fueled systems for several reasons, notably shorter supply lines and potential for in situ generation. On the point of generation, as the Port is itself a municipal utility, it has the opportunity to lead the development of renewable generation in situ and nearby solar (and wind) generation. The Port should look to the electrified fleet as both a new load and a new capability to store energy. This latter capability creates the full set of capabilities needed to implement island microgrids, which is a good resiliency strategy. One of Port's tenants demonstrates an example of this strategy, FedEx, which is showing the way to resiliency, reliability and zero-emissions with its fuel cells and solar PV array.	EDF	Comments on Draft 2020 and Beyond Plan		X	X				Yes	N/A	N/A	Yes	Yes	YES	NO - Already Underway	This action is in progress.
146	Track Harbor Craft Repowering Options	Strategy for harbor crafts – The Port's 2015 emissions inventory shows that harbor crafts are the second largest contributor of DPM, and the third largest contributor of total NOx emissions associated with port's operations. We urge the Port to continually assess the readiness of different repowering options as part of their annual review of actions and proactively seek cost-effective and technology-ready solutions that go beyond the expected regulatory updates in 2020.	EDF	Comments on Draft 2020 and Beyond Plan	X						Yes	N/A	N/A	Yes	Yes	YES	YES	

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					1	2	3	4	5	6	Criterion 1	Criterion 2	Criterion 3	Criterion 4	Criterion 5			
147	Transition to Cleaner Harbor Craft	In the meantime, the Port should also seek commitments from its tenants to transition to cleaner harbor crafts.	EDF	Comments on Draft 2020 and Beyond Plan	X			X			Yes	Yes	Yes	N/A	Yes	YES	YES	
148	Seek New Funding Sources to Upgrade Tug and Switcher Engines	For near-term solutions, the Port may also consider tapping into new funding sources such as the Volkswagen fund to upgrade tug and switcher engines to the latest clean diesel technology. A recent study <sup>9</sup> by Diesel Technology Forum and Environmental Defense Fund confirms that these upgrades offer one of the most cost-effective options for reducing diesel emissions, particularly NOx emissions.	EDF	Comments on Draft 2020 and Beyond Plan						X	Yes	Yes	Yes	N/A	Yes	YES	YES	
149	Mandatory Use of Shore Power or Emission Control Systems	At-berth emissions: we recommend that over time use of shore power or emission control systems become mandatory, and that the Port should set a timeline for capturing 100% of vessel at-berth emissions similar to the Ports of LA/Long Beach.	EDF	Comments on Draft 2020 and Beyond Plan	X						Yes	Yes	Yes	Yes	Yes?	YES	YES	
150	Evaluate Overall Effectiveness of Vessel Speed Reduction	Vessel speed reduction: the draft plan identifies this as a near-term action. Vessel speed reduction is a routine emission reduction strategy and we agree should be explored; however, this practice can also lead to ships speeding up once outside the channel, thereby cancelling out the benefits. We encourage the Port to consider taking into account the impact of any potential unintended consequences in assessing the effectiveness of this strategy. Automatic information systems can also be used to evaluate how frequently this occurs.	EDF	Comments on Draft 2020 and Beyond Plan	X						Yes	N/A	N/A	N/A	Yes	YES	NO - Already in the NTAP	This action is included in the NTAP (Item 21) but has not yet commenced.
151	Collaborate on High-Emitting Truck Detection System (Work Group)	<u>High-Emitting Truck Detection System (E-T-6)</u> . CARB funded the University of California, Berkeley evaluation of in-use trucks serving the Port, and has since developed its own advanced detection system, the Portable Emissions Acquisition System (PEAQS). This provides CARB the ability to detect automatically, and in real-time, trucks with high emissions. In 2018, CARB amended its statewide inspection programs to lower opacity limits for trucks equipped with diesel particulate filters. Lowered opacity limits support our ability to identify and require repair of the subset of high polluting drayage trucks affecting West Oakland. We are asking the Port to collaborate with CARB to determine how PEAQS or other advanced detection systems can be used to identify trucks with high emissions for citation and repair. The Center for Environmental Public Policy at the University of California, Berkeley submitted recommendations on this issue and may be interested as well.	CARB	Comments on Revised Draft 2020 and Beyond Plan	X			X	X		Yes	N/A	N/A	N/A	Yes	YES	YES	
152	Implement Voluntary Vessel Speed Reduction Program Now	A Port commitment for a voluntary VSR does not need to wait until the completion of the Bay Area Air Quality Management District pilot study.	CARB	Comments on Revised Draft 2020 and Beyond Plan	X						Yes	Yes	Yes	N/A	Yes	YES	YES	Board Resolution 19-41 directs staff to "submit an Agenda Report to the Board, within 18 months following the date of this Resolution, on "...performance incentive programs for ocean vessels and rail tenants." Evaluation of a voluntary VSR program will occur as part of the performance incentive assessment.
153	Accelerate Electrical Infrastructure Deployment and Upgrades	<u>Infrastructure Planning and Investment</u> . We previously suggested that [the] Port begin infrastructure investments in the Near-Term Phase (2019-2023) instead of waiting until the Intermediate-Term Phase (2023-2030). We are supportive of the additional equipment and infrastructure actions in the Revised Plan, but urge the Port to begin deploying more widespread electrical infrastructure and modifying electrical substations now. The Maritime Power Capacity Study for Terminal Electrification is expected in Spring 2019, and early upgrades will begin laying the groundwork for zero-emissions maritime operations. Earlier investments in infrastructure will accelerate the adoption of zero-emissions equipment instead of next-best alternatives, and will also allow infrastructure projects to remain competitive for local, State, and/or federal incentive opportunities.	CARB	Comments on Revised Draft 2020 and Beyond Plan				X			Yes	N/A	N/A	Yes	Yes	YES	YES	
154	Identify Truck Charging Space at the OAB	To address the lack of space for truck charging infrastructure that is cited in the response to comments on the Draft Plan, we strongly encourage the Port to work with the City of Oakland to identify space within the entire former Oakland Army Base property for this need. This action is to help mitigate the impacts of the expanded on- and off-port freight activities occurring in response to development of that property by both the Port and the City.	CARB	Comments on Revised Draft 2020 and Beyond Plan													NO - Duplicate	

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155	Track Cost/Availability of Electric Drives	Track Cost/Availability of Electric Drives. Costs of electric drive, battery and charging technology are declining very rapidly. Availability of electric powered trucking and cargo handling equipment is expected to expand quickly in 2019-2021. Sound decisions by the Port, its tenants and supporting service industries, about infrastructure and fleets investment require up-to-date information on equipment price and availability with which to compare to conventional, fossil-fuel powered trucking options. Our general sense is that the Port's assessment of cost and availability of electric-drive and charging technology is somewhat conservative and understates the opportunities that will be presented in the market in the near-term. For example, the Revised draft states, "...if HVIP funding continues to be available under the current terms, battery- electric yard tractors could reach cost parity with diesel-fueled equipment by 2027; if no incentive funding is available, cost parity may not be achieved until 2038 or later." Other sources suggest parity could occur sooner than 2027, and that in the interim, state financial incentives will create an artificial parity and opportunities to integrate substantial numbers of yard trucks and other diesel equipment into Port, tenant and service industry operations. We acknowledge that reasonable minds may differ on how quickly electric drives will be available in such quality, quantity and price to cost effectively replace other diesel equipment. But trends in battery technology costs suggest that electric drive technology may become competitive with new diesel equipment relatively soon for certain types of equipment, especially if oil prices rise again. The Port, its tenants, and its service industries need access to current and reasonably accurate data on cost and availability. The Port could contract for regular delivery and dissemination of such data, or could generate information from periodic, aggregated, requests for proposals (RFPs) developed collaboratively with other entities operating at the Port.	GSPP	Comments on Revised Draft 2020 and Beyond Plan		X		X			Yes	N/A	N/A	Yes	Yes	YES	YES	
156	Group Buying System	Group Buying System. We also encourage the Port to collaborate with other West Coast ports on RFPs, and develop a group buying system to help lower upfront costs of zero-emissions equipment.	GSPP	Comments on Revised Draft 2020 and Beyond Plan		X		X		X	Yes	Yes	Yes	Yes	Yes	YES	YES	
157	Dedicated Zero-Emissions Vehicle Lane into Marine Terminals	A dedicated EV lane into the terminals will speed adoption of EV's more so than the HOV lane on the Bay Bridge.	DockTime	Comments on Revised Draft 2020 and Beyond Plan		X	X				Yes	Yes	Yes	Yes	Yes	YES	YES	
158	High-Emitting Truck Detection System Working Group	Find and Fix High-Polluting Trucks. We included a broad initial comment on the creation of a Find and Fix plan in our September comments (pg. 9), but have added greater detail on the program implementation in Appendix A. We recognize that the Port does not directly regulate trucks, but we believe that the Port would be within its rights to refuse access to vehicles that are likely in violation of air quality standards. The Center would welcome the opportunity to help convene and manage a work group this subject and to coordinate with BAAQMD and CARB on related monitoring studies. Recent studies by UC Berkeley researchers show that a significant percentage of trucks entering the Port have faulty air pollution control systems. A system to "find and fix" these vehicles, coupled with information on state financial assistance for vehicle upgrades and repairs could produce short-term air quality benefits to people of West Oakland.	GSPP	Comments on Revised Draft 2020 and Beyond Plan													NO - Duplicate	

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159	Collect Trucking Duty-Cycle Data and Identify Trucks Suitable for Electrification	Collect Trucking Duty-Cycle Data and Identify Trucks Suitable for Electrification. The Port's commitment to zero emission operations would be aided by collection of data on Trucking Duty-Cycles. Currently there does not appear to be an inventory of the full range of diesel equipment operating within, and around the Port. Such data is needed to help target financial incentives, forecast need for supporting infrastructure and identify those segments of the transport sector that are most ripe for electric drive technology. This data is potentially available from Port Tenants, trucking companies serving Port functions or from private services. The Port, perhaps in cooperation with state agencies or University of California Centers, could collect the data in a form that protects confidentiality, but helps identify trucks that: (1) are approaching retirement; (2) have predictable duty cycles that could be served by electric drives. Our guess is that this data could identify dozens or even hundreds of trucks per year that would be amenable, practically and economically, to electrification. This information will likely be critical as new electric truck models become more available and allow the Port to prepare charging infrastructure and procedures.	GSPP	Comments on Revised Draft 2020 and Beyond Plan		X		X			Yes	N/A	N/A	Yes	Yes	YES	YES	
160	Electric Supply/Charging Infrastructure Work Group	Electric Supply/Charging Infrastructure Work Group. The Revised Plan includes several improvements concerning electrification infrastructure, but we believe the process needs to accelerate into order to take full advantage of state funding. A formal work group dedicated to learning, planning and outreach on this subject would help ensure a transparent, inclusive and effective response to rapid changes in technology, funding, and markets. This could include planning for locations where trucks could charge, how charging fees would be assessed, and forecasted energy demand.	GSPP	Comments on Revised Draft 2020 and Beyond Plan			X	X	X		Yes	N/A	N/A	Yes	Yes	YES	YES	
161	Distributed Clean Energy Potential Study	Distributed Clean Energy Potential Study. Even from a BART train it is apparent that there is a large amount of roof space at the Port that could potentially host solar generation. Similarly, there are likely to be many locations where demand response, targeted energy efficiency retrofits, and batteries would help lower costs of electric supply infrastructure needed for vehicle electrification and help avoid energy demand peaks due to growing vehicle energy charging demand. Wind turbines take up very little surface area and can operate above other port operations (just as they do above agricultural activity in other locations). In anticipation of demand from charging infrastructure, a study of distributed clean energy potential at the Port is necessary to ensure that the Port is able to meet increased demand in a sustainable, and economic fashion.	GSPP	Comments on Revised Draft 2020 and Beyond Plan	X	X	X				Yes	N/A	N/A	Yes	Yes	YES	YES	
162	Differential Ship Berthing and Truck Access Rates Study	Differential Ship Berthing and Truck Access Rates Study. This comment is repeated from CEPP's September 25, 2018 comment letter (See page 4). The Response to Comments addressed our original comment, we still believe that offering differential rates is a feasible and appropriate measure to phase in over time. Other California Ports, such as Los Angeles and Long Beach have developed a plan to charge differential access rates. At a minimum we request that the Port to commit to evaluating the feasibility of an entrance fee structure to be instituted by 2026 (three years after the entry fees for non-near zero trucks will become effective in Los Angeles). The Port needs a source of revenue to support infrastructure and other expenses of the transition to zero emission operations. It also needs to establish incentives to encourage ship and truck owners to shift equipment to zero carbon technology. The Port should commit to study and establish a set of access charges or preferential access rules that will gradually create revenues and incentives for investment in low carbon vessels and vehicles.	GSPP	Comments on Revised Draft 2020 and Beyond Plan	X						Yes	N/A	N/A	Yes	Yes	YES	YES	
163	Yard Hostler Transition Plan	Yard Hostler Transition Plan. Establish a plan to gradually move yard hostler equipment from diesel to electric drive technology, with a goal to replace half of the yard hostler fleet with electric drives by 2025 and complete replacement by 2030.	GSPP	Comments on Revised Draft 2020 and Beyond Plan	X	X		X			Yes	N/A	N/A	Yes	Yes	YES	YES	
164	Yard Hostler Electric Supply Infrastructure	Yard Hostler Electric Supply Infrastructure. Modify port electric supply infrastructure to accommodate a complete yard hostler transition to electric drives by 2030.	GSPP	Comments on Revised Draft 2020 and Beyond Plan			X				Yes	N/A	N/A	Yes	Yes	YES	YES	
165	Power Supply Transition for Drayage Trucks	Power Supply Transition for Drayage Trucks. Achieve a gradual/sustained increase in power supply and charging equipment for drayage trucks that bring containers to and from the Port.	GSPP	Comments on Revised Draft 2020 and Beyond Plan			X				Yes	Yes	Yes	Yes	Yes	YES	YES	

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166	Long-Range Planning for Zero-Emissions Fuels for OGV, HC, and Long-Haul Trucks	ZE Fuels for OGV, HC, and Long-Haul Trucks. We recognize that some forms of propulsion are not amenable to electrification, including long-haul trucks, transoceanic ships and some harbor-craft. The Port will, sooner or later need to assess how to meet fossil-free fuel requirements for these important elements of shipping. The International Maritime Organization (IMO) has already acted to reduce sulfur content of bunker fuel, a move that is causing changes in fuel markets and ship design. It has also set a greenhouse gas emission reduction target that strongly suggests a move, over the long term, away from fossil fuels for ships. The Oakland Port will eventually face market demand for non-fossil fueling infrastructure for ships and long haul trucks. Now is a good time to begin long range planning to assess how to meet renewable hydrogen, or hydrogen/ammonia demand for ship and long haul trucking. Hydrogen ferries are, or will soon be operating in the San Francisco Bay.	GSPP	Comments on Revised Draft 2020 and Beyond Plan				X			Yes	N/A	N/A	Yes	Yes	YES	YES	
167	Establish Local Supplies of Renewable Hydrogen Feedstocks	The long term competitiveness of the Port of Oakland may depend on early planning to assess how to fuel ships with near zero-carbon fuels, and take advantage of local supplies of renewable hydrogen feedstocks (e.g. EBMUD Wastewater facility, food-agriculture-forestry bio-waste diversion).	GSPP	Comments on Revised Draft 2020 and Beyond Plan				X			Yes	Yes	Yes	Yes	Yes	YES	YES	
168	Enable Electric Hostlers to Operate on Public Streets	The Port should work together with the City, industry, regulatory agencies, and the community to change local ordinances and determine how electric hostlers can travel to off-site yards near the Port.	EJ/WOEIP	Comments on Revised Draft 2020 and Beyond Plan	X				X	X	Yes	Yes	Yes	Yes	Yes	YES	YES	
169	Host Private Financing Workshop	The Port of Long Beach is hosting a workshop on private financing options. The Port of Oakland should do the same.	EJ/WOEIP	Comments on Revised Draft 2020 and Beyond Plan						X	Yes	N/A	N/A	Yes	Yes	YES	YES	
170	Provide Incentives to Rail Operators to Use Cleaner Equipment	We recognize that the Port has no direct control over these railyards, but the Port can work with railyard operators to create incentives to use available cleaner equipment.	EJ/WOEIP	Comments on Revised Draft 2020 and Beyond Plan	X			X		X	Yes	Yes	Yes	Yes	Yes	YES	YES	
171	Conduct Cargo Vessel and Truck Rate Study	The Port should commit to study and establish a set of access charges or preferential access rules that will gradually create revenues and incentives for investment in low carbon vessels and vehicles.	GSPP	Comments on Revised Draft 2020 and Beyond Plan	X					X	Yes	N/A	N/A	Yes	Yes	YES	YES	
172	Technology Demonstrations and Vendor Fairs	Pilot demonstrations will assist in this effort, but more could be included in the Plan. For example, the Port could organize technology fairs and opportunities for vendors to demonstrate their technologies and answer questions, financing workshops as noted above, and briefings from other operators that have adopted zero-emissions technologies.	EJ/WOEIP	Comments on Revised Draft 2020 and Beyond Plan	X	X		X	X		Yes	N/A	N/A	Yes	Yes	YES	YES	
173	Develop Feasibility Analysis for Requiring Zero-Emissions Drayage Trucks	The Plan declines to provide a detailed analysis of the feasibility of requiring drayage trucks servicing the Port to be zero-emissions. The Plan should be updated to include such an analysis.	EJ/WOEIP	Comments on Revised Draft 2020 and Beyond Plan		X					Yes	N/A	N/A	Yes	Yes	YES	NO - Completed; Moved to Pool #4	This action is complete. The final feasibility study was presented at the December 12, 2019 meeting of the Board of Port Commissioners.
174	Pursue Low-Carbon Fuel Standard Credits	The Low Carbon Fuel Standard was recently amended to allow for credits from fuel use by heavy-duty mobile equipment. The Port will pursue credits for the electrical power it supplies to support this equipment.	Port	NTAP						X	Yes	N/A	N/A	Yes	Yes	YES	NO - Already Underway	This action is in progress. It is Item 37 in the NTAP.
175	Replace Electrical Infrastructure that is Beyond its Serviceable Life	Certain components of the Seaport electrical grid are nearing the end of their serviceable life and need to be replaced and potentially upgraded. The Port will identify high-priority components and integrate the replacement of these components into its budget planning cycle. During the Near-Term, high priority replacement actions are identified in the Maritime Power Capacity Study for Terminal Electrification	Port	NTAP				X			Yes	Yes	Yes	Yes	Yes	YES	NO - Already Underway	This action is in progress. It is Item 9 in the NTAP.
176	Port Electrical Grid Reliability and Capacity Upgrades	In addition to replacing electrical grid components that have reached the end of their serviceable life, the Port will also undertake specific actions to increase the resilience and capacity of the Seaport electrical grid. High priority upgrade and resilience projects are identified in the Maritime Power Capacity Study for Terminal Electrification (Burns & Mc Donnell 2019). The Port will integrate the high priority actions into its budget planning cycle.	Port	NTAP				X			Yes	Yes	Yes	Yes	Yes	YES	NO - Already Underway	This action is in progress. It is Item 10 in the NTAP.
177	Analysis of Financing Options	A thorough analysis of these financing options should be conducted.	EJ/WOEIP	Comments on Revised Draft 2020 and Beyond Plan						X	Yes	N/A	N/A	N/A	Yes	YES	NO - Already Underway	Board Resolution 19-41 directs staff to "submit an Agenda Report to the Board, within 18 months following the date of this Resolution, on "...costs and financing aspects associated with the 2020 and Beyond Plan including discussion of grant and incentive funding opportunities from outside sources (i.e., CARB, BAAQMD, and the California Energy Commission, etc.) and private sector and Port resources"

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179	Identify Range Requirement for Trucks Serving the Port	The revised analysis should identify the range requirements for trucks serving the Port, including the number of "short-haul" and "long-haul" trucks, and their operational requirements.	EJ/WOEIP	Comments on Revised Draft 2020 and Beyond Plan		X					Yes	N/A	N/A	N/A	Yes	YES	YES	
179	Identify and Repair High-Emitting Trucks	Recent studies by UC Berkeley researchers show that a significant percentage of trucks entering the Port have faulty air pollution control systems. A system to "find and fix" these vehicles, coupled with information on state financial assistance for vehicle upgrades and repairs could produce short-term air quality benefits to people of West Oakland.	GSPP	Comments on Revised Draft 2020 and Beyond Plan	X						No					NO	NO	This action is under CARB purview as part of SB 210, which is underway. The Port would support CARB's action, potentially be making locations for sensor installation available.
180	Provide Truck Parking	To address the lack of space for truck charging infrastructure that is cited in the response to comments on the Draft Plan, we strongly encourage the Port to work with the City of Oakland to identify space within the entire former Oakland Army Base property for this need. This action is to help mitigate the impacts of the expanded on- and off-port freight activities occurring in response to development of that property by both the Port and the City.	CARB	Comments on Revised Draft 2020 and Beyond Plan	X		X		X		No					NO	NO	Pursuant to the Oakland Army Base Area Redevelopment Plan Environmental Impact Report, dated July 2002, the Port and City are each committed to making 15 acres of truck parking available.
181	Financing Plan for Transition to Zero-Emissions Seaport	More fundamentally, the Plan should identify the investment needs over time for achieving its vision for becoming a zero-emissions Seaport and propose a plan for financing those needs. Instead, the Plan raises the uncertainty of financing to justify avoiding strong commitments – that approach will virtually ensure failure.	EJ/WOEIP	Comments on Revised Draft 2020 and Beyond Plan						X	Yes	N/A	N/A	Yes	Yes	YES	YES	Board Resolution 19-41 directs staff to "submit an Agenda Report to the Board, within 18 months following the date of this Resolution, on "...costs and financing aspects associated with the 2020 and Beyond Plan including discussion of grant and incentive funding opportunities from outside sources (i.e., CARB, BAAQMD, and the California Energy Commission, etc.) and private sector and Port resources"
182	Incentives for College or Job Training	Workforce Development - incentives for West Oakland residents to enter job training at community colleges are important. They might take the form of the Port holding a certain number of jobs for local workers, providing scholarships, or helping to find waivers for college fees.	EJ/WOEIP	Comments on Revised Draft 2020 and Beyond Plan				X	X		Yes	Yes	Yes	Yes	Yes	YES	NO - Already Underway	Various types of scholarships are offered by employee associations and the Port provides direct internships. All of these serve as incentives.
183	Provide Common Drayage Truck Charging Infrastructure	The Port, working with the City of Oakland, could promote off-terminal charging and servicing locations within the Port's land, as part of the ongoing Truck Management Plan effort or within the Oakland Army Base development process. The Plan notes that the Port will be responsible for providing power to trucks domiciled at the Port-provided parking areas (Plan at p. F-24), but does not explain why similar charging infrastructure could not be used by other drayage trucks serving the Port.	EJ/WOEIP	Comments on Revised Draft 2020 and Beyond Plan	X		X				Yes	N/A	N/A	Yes	Yes	YES	YES	
184	Include Near-Zero Emissions Truck Technologies Certified to CARB's Optional Low-NOx Standard	Include near-zero truck technologies that are certified to the California Air Resources Board's (CARB) most stringent optional low-NOx standard of 0.02 g/bhp-hr as an immediate strategy to reduce harmful port-related emissions from heavy duty trucks. The comparative benefits that near-zero technologies provide compared to zero-tailpipe emission strategies include: • An optional low NOx CARB certification that delivers 90% less NOx emissions than the current EPA and CARB heavy duty engine standard and an in-use performance according to UC Riverside that found NOx emission reductions at 95% or 0.01 g/bhp-hr; • A strategy that is 99% cleaner than the diesel trucks currently operating in and around the Port based on the fleet's average model year; • 70% to well over 100% lower greenhouse gas emissions compared to conventional diesel when powering a near-zero truck with renewable natural gas (RNG) - a fuel that can deliver up to a negative 250 carbon intensity score; • 90% quieter than diesel engines; • Commercially available now to deliver reliable emissions relief today; • Fueling infrastructure already in place with plans to further increase statewide fueling network as the market grows; and, • Far lower cost and more cost effective than any other competing technology with comparable performance.	CE	Comments on Revised Draft 2020 and Beyond Plan	X						Yes	Yes	Yes	N/A	Yes	YES	YES	
185	Accelerated Relocation of Non-Conforming Truck Businesses	The City of Oakland and Port of Oakland amends existing Ordinances, Resolutions, or Administrative policies to accelerate relocation of truck yards and truck repair, service, and fueling businesses in West Oakland currently located within the freeway boundaries that do not conform with the zoning designations adopted in the West Oakland Specific Plan.	BAAQMD/ WOEIP	Final WOCAP, Action 5 (Note 4)							No					NO	NO	This action is under the purview of the City pursuant to the West Oakland Specific Plan.
186	Adopt Electrical Infrastructure Plan Incorporating Trucks	The Port of Oakland adopts an Electrical Infrastructure Plan for the maritime waterfront areas of Oakland. This Plan seeks to remove barriers to adoption of zero-emission trucks, such as cost, land, and ownership of charging equipment.	BAAQMD/ WOEIP	Final WOCAP, Action 19 (Note 4)			X				Yes	N/A	N/A	Yes	Yes	YES	YES	

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187	Create Sustainable Freight Advisory Committee	The Air District works with the City and Port of Oakland and other agency and local partners to create a Sustainable Freight Advisory Committee to provide recommendations to each agency's governing board or council. The Committee's scope includes: air quality issues, enhanced/increased enforcement of truck parking and idling, improved referral and follow-up to nuisance and odor complaints related to goods movement, improvements to the Port appointment system, charging infrastructure and rates, developing land-use restrictions in industrial areas, funding, and consideration of video surveillance to enforce truck parking, route, and idling restrictions.	BAAQMD/ WOEIP	Final WOCAP, Action 21 (Note 4)						X	Yes	N/A	N/A	N/A	Yes	YES	YES	
188	Establish Permanent Truck Parking and Container Staging In Logistics Area	The City and Port of Oakland will work to establish permanent locations for parking and staging of Port related trucks and cargo equipment, i.e. tractors, chassis, and containers. Such facilities will provide long-term leases to parking operators and truck owner-operators at competitive rates. Such facilities will be at the City or Port logistics center or otherwise not adjacent to West Oakland residents.	BAAQMD/ WOEIP	Final WOCAP, Action 26 (Note 4)							Yes	N/A	N/A	N/A	Yes	YES	YES	
189	Set Interim Targets for Zero Emissions Trucks	The Port of Oakland, as part of the 2020 and Beyond Seaport Air Quality Plan, supports the transition to zero-emission drayage truck operations, including setting interim year targets out to 2035, coordinating an extensive zero-emission truck commercialization effort,	BAAQMD/ WOEIP	Final WOCAP, Action 37 (Note 4)	X	X					Yes	N/A	N/A	N/A	Yes	YES	YES	The Port conducted the Zero-Emissions Drayage Truck Feasibility Study (November 2019) which concluded that (1) zero-emissions drayage trucks are not currently affordable, cost-effective, commercially available, or operationally feasible, and that (2) it is not appropriate at this time to set a 100% zero-emission truck goal tied to a specific time frame. Instead, Port staff will continue monitoring demonstration projects and seeking new opportunities for more demonstration projects. Port staff will also evaluate the overweight corridor program and look for ways to improve it, which will help with the issue of battery weight.
190	Commercialization Effort for ZE Trucks	The Port of Oakland, as part of the 2020 and Beyond Seaport Air Quality Plan, supports the transition to zero-emission drayage truck operations, including... coordinating an extensive zero-emission truck commercialization effort,	BAAQMD/ WOEIP	Final WOCAP, Action 37 (Note 4)	X	X					Yes	Yes	Yes	Yes	Yes	YES	YES	
191	Increase Weight Limit for Single Axle Zero-Emissions Trucks	The Port of Oakland, as part of the 2020 and Beyond Seaport Air Quality Plan, supports the transition to zero-emission drayage truck operations, including...working with the City of Oakland to amend local ordinances to increase the allowable weight limits for single-axle, zero-emission trucks on local streets located within the Port and the Oakland Army Base/Gateway areas	BAAQMD/ WOEIP	Final WOCAP, Action 37 (Note 4)	X	X					Yes	Yes	Yes	Yes	Yes	YES	YES	
192	Develop Investment Plan to Support Port Infrastructure for Truck Charging	The Port of Oakland, as part of the 2020 and Beyond Seaport Air Quality Plan, supports the transition to zero-emission drayage truck operations, including...developing an investment plan for needed upgrades to the Port's electrical infrastructure	BAAQMD/ WOEIP	Final WOCAP, Action 37 (Note 4)			X			X	Yes	N/A	N/A	Yes	Yes	YES	YES	Board Resolution 19-41 directs staff to "submit an Agenda Report to the Board, within 18 months following the date of this Resolution, on "... costs and financing aspects associated with the 2020 and Beyond Plan including discussion of grant and incentive funding opportunities from outside sources (i.e., CARB, BAAQMD, and the California Energy Commission, etc.) and private sector and Port resources"
193	Study Favorable Time-of-Day Electricity Rate Structure for Truckers	The Port of Oakland also works with the California Public Utilities Commission and the California Energy Commission to study the development of time-of-day electric rate structures favorable to truck operators.	BAAQMD/ WOEIP	Final WOCAP, Action 37 (Note 4)		X					Yes	N/A	N/A	Yes	Yes	YES	YES	
194	Award Long-Term Lease for Trucker Services Center	The City and Port of Oakland award long-term leases to vendors that will deliver trucker services (including mini-market and convenience stores, fast food, and fast casual restaurants), and parking to keep trucks off West Oakland streets.	BAAQMD/ WOEIP	Final WOCAP, Action 42 (Note 4)							Yes	Yes	Yes	Yes	Yes	YES	YES	
195	Study Effects of Larger Vessels on Truck Traffic	The Port of Oakland studies the effects on truck flow and congestion due to increasing visits from larger container ships	BAAQMD/ WOEIP	Final WOCAP, Action 43 (Note 4)							Yes	N/A	N/A	N/A	Yes	YES	YES	
196	Study Feasibility of Off-Dock Yard Using ZE Trucks	The Port of Oakland studies...the feasibility of an off-terminal container yard that utilizes zero-emission trucks to move containers to and from the marine terminals	BAAQMD/ WOEIP	Final WOCAP, Action 43 (Note 4)	X	X					Yes	N/A	N/A	Yes	Yes	YES	YES	
197	Study of Efficiency Gains from Increased Truck Double-Cycling	The Port of Oakland studies...the potential efficiency gains from increasing the number of trucks hauling loaded containers on each leg of a roundtrip to the Port.	BAAQMD/ WOEIP	Final WOCAP, Action 43 (Note 4)	X						Yes	N/A	N/A	N/A	Yes	YES	YES	
198	Use Air District Incentives to Upgrade Tugs and Barges	The Air District plans to offer financial incentives to upgrade tugs and barges operating at the Port of Oakland with cleaner engines every year.	BAAQMD/ WOEIP	Final WOCAP, Action 50 (Note 4)	X						Yes	Yes	Yes	N/A	Yes	YES	YES	



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199	Implement a Clean Ship Program	The Port of Oakland implements a Clean Ship Program to increase the frequency of visits by ships with International Maritime Organization Tier 2 and Tier 3 engines.	BAAQMD/ WOEIP	Final WOCAP, Action 63 (Note 4)	X						Yes	Yes	Yes	N/A	Yes	YES	YES	Board Resolution 19-41 directs staff to "submit an Agenda Report to the Board, within 18 months following the date of this Resolution, on "...performance incentive programs for ocean vessels and rail tenants"
200	Implement a Clean Locomotive Program	The Port of Oakland implements a Clean Locomotive Program to increase the number of U.S. EPA Tier 4 compliant locomotives used by the UP, BNSF, and OGRE railways to provide service in and out of the Port of Oakland.	BAAQMD/ WOEIP	Final WOCAP, Action 64 (Note 4)	X						Yes	Yes	Yes	N/A	Yes	YES	YES	Board Resolution 19-41 directs staff to "submit an Agenda Report to the Board, within 18 months following the date of this Resolution, on "...performance incentive programs for ocean vessels and rail tenants"
201	Study Feasibility of Electric Switchers at BNSF, OGRE	The Port of Oakland studies the feasibility of using electric switcher locomotives at the two Port railyards.	BAAQMD/ WOEIP	Final WOCAP, Action 65 (Note 4)	X	X					Yes	N/A	N/A	Yes	Yes	YES	YES	
202	Engineering Feasibility Studies for Increased Cargo Movement Efficiency through Smart Technology	Data collection/processing and integration of various data systems will be vital elements of the continuing efforts to improve the efficiency of cargo movement. Fiber infrastructure improvements may be required in the future. Future studies could include assessing the adequacy of fiber communications lines and related facilities, establishing a common data management protocol across the entire Seaport, and assessing specific electrical supply needs, such as microgrids, to support smart systems.	Port	Final 2020 and Beyond Plan (Note 5)	X	X	X				Yes	N/A	N/A	N/A	Yes	YES	YES	
203	Engineering Feasibility Studies for Drayage Truck Charging Infrastructure	Trucks in short-haul drayage services (within the Seaport and its vicinity) may be commercially available and operationally feasible within several years if adequate charging infrastructure can be constructed. As electric drayage trucks become more available, an assessment of truck charging needs and associated power demands may be needed. The study would be limited to the Seaport Area, as the Port's charter prevents it from expending funds for facilities outside the Seaport.	Port	Final 2020 and Beyond Plan (Note 5)	X	X	X				Yes	N/A	N/A	Yes	Yes	YES	YES	
204	Maritime Power Capacity Study for Terminal Electrification	The Port is studying the specific infrastructure requirements to support container terminals using 100% electrically powered equipment (Burns and McDonnell 2019, in preparation). The study is assessing the projected electrical demand, the electrical infrastructure needed to support that demand, the location of and acreage required for the charging infrastructure within the terminal, the proposed charging cycles, and the level of charging (slow charging versus fast charging) that might be used. The study is considering all anticipated future increases in loads, including increased use of shore power, additional plugs for transport refrigeration units, and cold storage warehouses. The evaluation includes the level of demand in the Port-served areas of the Seaport, the timing of that demand, the need for new or upgraded infrastructure to serve that demand, and operational considerations at terminals. The study will also develop estimated costs, as feasible, for implementing the electrical infrastructure.	Port	Final 2020 and Beyond Plan (Note 5)	X	X	X				Yes	N/A	N/A	Yes	Yes	YES	NO - Already Underway	This action is in progress. It is Item 15 in the NTAP.
205	Roadway and Other Hard Infrastructure Upgrade Studies	The Port regularly assesses the roadway system within and near the Seaport to identify bottlenecks. These studies would continue, as needed, to ensure that the road infrastructure in and near the Seaport area meets the long-term needs of the Seaport.	Port	Final 2020 and Beyond Plan (Note 5)	X	X	X				Yes	N/A	N/A	N/A	Yes	YES	YES	
206	Electric Vehicle Infrastructure Guide for Port Tenants	To facilitate the Port tenants' ability to install electrical charging infrastructure, the Port has prepared a guide (Port Approval of Charging Stations) that includes relevant information regarding permit and other requirements and provides the necessary forms for permit applications. This guide is available upon request.	Port	Final 2020 and Beyond Plan (Note 5)	X	X	X				Yes	N/A	N/A	Yes	Yes	YES	NO - Completed; Moved to Pool #4	This action has been completed.
207	Uniform Charging Standards for Electrically-Powered CHE and Drayage Trucks	Manufacturers of electric terminal equipment are using different methods and different equipment design specifications for equipment charging, resulting in different infrastructure requirements depending on the specific manufacturer selected. The same issue exists with electric drayage trucks. As more equipment is transitioned to electric power, the lack of uniformity may lead to significant challenges. Drayage trucks should also be able to use the same chargers that are used to charge CHE. Since 2015, SPBP have been working with regulatory agencies, technology developers, and equipment operators to establish charging standards for CHE. These standards, which are currently under development, simultaneously reduce the complexity and cost of charging a large fleet of equipment. The Port will continue to track the development of the uniform charging standards and will assist with the review of the standards with respect to their utility for local implementation.	Port	Final 2020 and Beyond Plan (Note 5)	X	X	X				Yes	N/A	N/A	Yes	Yes	YES	NO - Already Underway	This action is in progress. It is Item 23 in the NTAP.
208	Charging Infrastructure to Support Zero-Emissions Equipment	The Port will coordinate with tenants on tenants' estimates of specific power needs, design, and systems costs for the infrastructure to support planned zero-emissions equipment.	Port	Final 2020 and Beyond Plan (Note 5)		X	X				Yes	N/A	N/A	Yes	Yes	YES	NO - Already Underway	This action is in progress as Intermediate-Term Equipment Goal 3.

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209	Future Infrastructure Modifications	The Port will determine the extent of necessary infrastructure modifications based on the feasibility studies. This process is likely to be somewhat iterative as zero-emissions technology continues to mature. Once infrastructure needs have been adequately defined, the Port will identify specific projects and will program capital costs into its annual budget cycle based on available funding. While the current direction of zero-emissions technology appears to be toward electrification, shifts in technology could occur in the future. The Port will continue to monitor the evolution of zero-emissions technology and will assess proposed infrastructure modifications and the need for future infrastructure modifications in the light of evolving technology.	Port	Final 2020 and Beyond Plan (Note 5)	X	X	X					Yes	N/A	N/A	Yes	Yes	YES	NO - Already Underway. NTAP Item 12 is Completed.	Several items were included in the NTAP (Items 9, 10, and 12) for this Suggested Action. Items 9 and 10 are in progress; Item 12 complete.
210	Technology Assessment for Hydrogen and Hydrogen Fuel Cells	Hydrogen fuel cells are one of the potential primary alternatives to electricity and battery-electric technology. Fuel cell technology has significant potential for use in heavy-duty trucks and other mobile applications, and for distributed generation. Hydrogen is the preferred fuel for fuel cells in clean energy applications; however, currently, hydrogen is typically generated by steam reforming of methane gas (SRM). This type of hydrogen is non-renewable and has a higher carbon intensity than petroleum diesel. The cost for SRM hydrogen is approximately two times the cost of diesel on a per-mile basis; renewable hydrogen, made by electrolysis using renewable sources of energy is approximately five to six times as expensive as diesel on a per-mile basis. A technology assessment for hydrogen fuel cells needs to address the source(s) of hydrogen, the hydrogen fueling infrastructure, and the fuel cell technology itself.	Port	Final 2020 and Beyond Plan (Note 5)	X	X						Yes	N/A	N/A	Yes	Yes	YES	YES	
211	Electricity Supply	The Port serves as the electric utility to a large container terminal in the Seaport as well as to several small Seaport support facilities. At portions of the Seaport served by the Port, the Port purchases most of its electricity from the wholesale power market and resells the electricity to its end users. The State-mandated Renewables Portfolio Standard (RPS) program requires investor-owned utilities, publicly owned utilities, electric service providers, and community choice aggregators to increase electricity procurement from eligible renewable energy resources to 60% of their retail sales by 2030 and to procure 100% of the electricity from carbon-free resources by 2045. The Port, PG&E, and East Bay Community Energy will continue to increase the renewable content of the electricity they sell to comply with the RPS. Increases in renewable electricity due to the RPS will reduce GHG emissions from electricity use at the Seaport. Electricity generation within and near the Seaport area is limited. Aside from the excess electricity generated by the East Bay Municipal Utility District (EBMUD) Wastewater Treatment Plant and the Dynegy Oakland Power Plant (Dynegy) adjacent to Jack London Square, electricity is mainly transmitted from outside the Bay Area into the Seaport area through a network of transmission lines (a transmission system) owned by PG&E. The Dynegy plant is more than 30 years old and is nearing the end of its useful life. If the Dynegy plant is retired, transmission system upgrades or new transmission lines or locally generated renewable energy will be required to meet the electrification needs of the region and provide transmission reliability.	Port	Final 2020 and Beyond Plan (Note 5)	X	X	X					Yes	Yes	Yes	Yes	Yes	YES	YES	There is no electricity generation currently within the Seaport. The only energy generation currently occurring in the vicinity of the Seaport is at the EBMUD waste water treatment plant and at the Dynegy plant.
212	Local Solar Power Generation	The Port will continue to work with tenants considering or willing to consider installing solar panels on rooftops of large warehouses and other canopy-type structures to generate electricity within the Seaport. While the overall amount of electricity that could be generated within the footprint of the Seaport is likely to be small relative to the total demand (given that there are relatively few large buildings because Seaport uses are land-intensive), doing so would contribute towards moving the Port to a zero-emissions future.	Port	Final 2020 and Beyond Plan (Note 5)	X	X	X					Yes	Yes	Yes	Yes	Yes	YES	YES	

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213	Renewable Diesel Fuel	Renewable diesel can reduce DPM emissions by 30% to 40%, and GHG emissions by 50% to 80% relative to petroleum diesel. RD shipped to or produced in California typically provides GHG reductions of 60% or greater. RD also provides NO <sub>x</sub> reduction benefits on the order of 10% to 20%. Many OEMs have approved the use of pure RD in their engines, meaning that there is no loss of warranty coverage with the use of RD. RD fuel is readily available and due to Low-Carbon Fuel Standard (LCFS) subsidies, costs little or no more than regular diesel. It is completely interchangeable with traditional petroleum diesel fuel in engines and in storage tanks. The Port is currently investigating the use of RD for its fleet. The Port will also further evaluate the benefits of RD for on-road and off-road use and share the results of that evaluation with its tenants. Further evaluation is required to determine if RD would provide emissions reductions benefits in marine applications. The Port will continue to track information pertaining to the performance of RD in marine applications and share the results with ocean carriers and harbor craft operators.	Port	Final 2020 and Beyond Plan (Note 5)	X						Yes	Yes	Yes	Yes	Yes	YES	NO - Already Underway	This action is in progress. It is being implemented as Items 19 and 20 in the NTAP.
214	Biodiesel	Biodiesel is a renewable fuel. Pure biodiesel provides approximately a 55% reduction in DPM (also on an engine-out basis) and typically, depending on feedstocks, processing efficiency, and other factors, reduces GHG emissions by 80% to 85%, compared to petroleum diesel. In California, biodiesel has reached cost parity with petroleum diesel (when accounting for credits under the LCFS). Biodiesel is typically used in a blended form (20% biodiesel with petroleum diesel, referred to as B20). However, it is also possible to operate on 100% biodiesel (referred to as B100). Pure biodiesel has proven successful in fleets and some trains. B20 delivers 20% of the emission reduction benefits of B100. Warranties may be a consideration. Using a fuel that is not approved by an OEM may void a warranty. Most manufacturers approve blends of up to 20% biodiesel (B20) when blended using biodiesel approved by the American Society for Testing and Materials. All diesel fuel is subject to microbial breakdown in storage. However, because of its structure, biodiesel is more susceptible to biological breakdown than petroleum diesel or RD. If engines are expected to be out of service for a period of time, it may be necessary to drain the engine of all fuel before storage, change back to petroleum diesel before storage, or add a fuel stabilizer.	Port	Final 2020 and Beyond Plan (Note 5)	X						Yes	Yes	Yes	Yes	Yes	YES	YES	
215	Natural Gas	Natural gas generated from fossil results in lower levels of GHG emissions compared to diesel for the same engine output. In addition, engines using natural gas do not generate DPM and may burn cleaner overall than diesel engines. One advantage to natural gas vehicles is their ability to meet stringent emissions standards with less complicated emissions controls. Natural gas technology is well established in certain equipment, including forklifts and light- to medium-duty vehicles. At least one 12-liter natural gas engine has been certified to the low-NO <sub>x</sub> standard and is available in trucks from a variety of truck manufacturers. Natural gas is typically used in a CNG or LNG form; CNG is preferred due to its lower carbon intensity. Typical dispensing rates for CNG stations designed for heavy-duty vehicles are in the 5 to 10 DGE per minute range, which allows heavy-duty natural gas trucks to fully refuel in approximately 15 to 30 minutes, compared to a typical fueling period of 3 to 6 minutes for diesel trucks.	Port	Final 2020 and Beyond Plan (Note 5)	X						Yes	Yes	Yes	N/A	Yes	YES	YES	
216	Renewable Natural Gas	Renewable natural gas (RNG) is methane that is captured from landfills, wastewater treatment facilities, meat production, dairies, and other organic sources. It is fully interchangeable with fossil natural gas. RNG does not provide any particulate matter (PM) reduction benefits compared to conventional natural gas, but does provide substantial GHG reductions, ranging from 85% to 355% (where 100% GHG reduction is equivalent to eliminating the use of diesel or other fossil fuel). In other words, depending on the source of the RNG, use of RNG in one engine may offset the GHG emissions from more than one engine using diesel fuel. EBMUD is currently considering providing RNG at its West Oakland treatment plant.	Port	Final 2020 and Beyond Plan (Note 5)	X						Yes	Yes	Yes	Yes	Yes	YES	YES	

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217	Low Sulfur Diesel Fuel in Ocean-Going Vessels	Sulfur is a significant contributor to PM emissions. Ships maneuvering within the North American Emission Control Area (ECA), including California, are required to use fuel that contains no more than 0.1% sulfur. Reducing the sulfur content of fuel used in OGVs could reduce PM emissions by approximately 10.6% for fuel containing 0.01% sulfur, and by 9.5% for fuel containing 0.02% sulfur. The Port could investigate the feasibility of creating incentives for vessel operators to use ultra-low-sulfur fuels in vessels calling the Port of Oakland.	Port	Final 2020 and Beyond Plan (Note 5)	X						Yes	Yes	Yes	N/A	Yes	YES	YES	Board Resolution 19-41 directs staff to "submit an Agenda Report t o the Board, within 18 months following the date of this Resolution, on "...performance incentive programs for ocean vessels and rail tenants"
218	Container Yard Electrification Feasibility Study	The Port commissioned the <i>Container Yard Electrification Feasibility Study</i> in 2018 (M&N 2018). The study concluded that some electrically powered equipment is commercially viable, such as rubber-tired gantry (RTG) cranes and automated stacking cranes (ASCs) that connect to the electrical grid through a cable or bus bar. However, grid electric equipment is not compatible with operations at the Seaport. Full battery-electric solutions for these types of equipment are in the development or prototype stage. The study also indicated that for CHE operating on the Seaport marine terminals, fully electric solutions are limited and primarily include early commercial technologies for yard tractors. The battery power required to operate the types of CHE on the Seaport's marine terminals and the required rapid recharging of the batteries are stretching the limits of current battery technology.	Port	Final 2020 and Beyond Plan (Note 5)	X	X	X				Yes	N/A	N/A	Yes	Yes	YES	NO - Completed; Moved to Pool #4	This action has been completed.
219	Equipment Operations and Cost Assessment to Assist with Electric Infrastructure Planning (Appendix F)	As a follow-up to the container yard electrification feasibility study, the Port commissioned an equipment operations cost assessment (provided in Appendix F: Equipment Operations Cost Assessment to Assist with Electric Infrastructure Planning of the 2020 and Beyond Plan). The assessment corroborated the findings of the container yard electrification study. It found that yard tractors were the only type of zero-emissions CHE that was well developed enough to allow long-term cost projections. In addition, the study concluded that hybrid RTG cranes were developed enough for a cost assessment. The remaining hybrid and zero-emissions CHE as well as zero-emissions drayage trucks are not developed enough for a cost assessment.	Port	Final 2020 and Beyond Plan (Note 5)	X	X	X				Yes	N/A	N/A	N/A	Yes	YES	NO - Completed; Moved to Pool #4	This action has been completed.
220	Shore Power Improvements - Achieve 90% Shore Power Use	Use of shore power eliminates criteria air pollutant and GHG emissions from vessels at berth within the Seaport. Ships need to continue to power lighting, ventilation, navigation equipment and other systems while at berth. These systems are typically powered by auxiliary engines while the vessels are at sea. Ships can either continue to run their auxiliary engines while at berth or plug into shore power. Plugging into shore power avoids emissions from the auxiliary engines while the vessel is in port. The CARB regulation ramps up the required shore power usage until 2020, when fleets must demonstrate an 80% reduction in at-berth power generation from auxiliary engines. Through grant commitments, the requirement for the use of shore power at most Port of Oakland berths is 80% through 2019, and 90% for 2020 and beyond. The Port is continuing to evaluate the issues that prevent maximum shore power use, and will work with the marine terminal operators and vessel owners to address these issues and improve the plug-in rates.	Port	Final 2020 and Beyond Plan (Note 5)	X	X	X				Yes	Yes	Yes	Yes	Yes	YES	NO - Already Underway	This action is in progress. It is NTAP Item 2.
221	Barge-Based Exhaust Scrubber System (Bonnet)	For vessels that are not able to plug into shore power, it may be possible to control criteria air pollutants by capturing and filtering the emissions from vessel stacks (using a "bonnet" over the stacks). CARB has certified two alternative technologies (AMECS [Advanced Maritime Emission Control System] and METS-I) for container vessels that can be used to comply with the At-Berth rule. Both technologies are barge-based systems. A bonnet would only reduce criteria air pollutants; it would not provide any GHG reductions. Because ships have different stack configurations and more than one vessel may be at berth at any time, several barge-based systems would be required to achieve 100% at-berth control of the vessels that are not currently shore power capable.	Port	Final 2020 and Beyond Plan (Note 5)	X						Yes	Yes	Yes	N/A	Yes	YES	YES	

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222	Increased Shore Power Capability on Vessels	According to Port data, approximately 20% of the vessels calling on the Port are currently not shore power capable. Retrofitting a vessel to make it shore power capable may cost up to \$1 million. New vessels are typically put into service on the Asia-Europe routes and are later transferred to the Asia-North America routes. The vessels are retrofitted for shore power when they are transferred to North American routes. Steamships, which represent approximately 6.5% of the vessel calls at the Port of Oakland, are not required to be shore power capable under the At-Berth rule. Steamships will be phased out by 2020 and will most likely be replaced by shore-power-capable vessels. Amendments to the CARB At-Berth rule will probably require that certain vessels that are infrequent callers must also be shore power capable by 2023, which would be another approximately 4% of the vessels calling at the Port.	Port	Final 2020 and Beyond Plan (Note 5)	X	X					Yes	Yes	Yes	Yes	Yes	YES	YES	
223	Enhanced Ship and Engine Design	Vessels in transit represent by far the greatest residual source of DPM in the 2017 Seaport Emissions Inventory. Overall, GHG emissions on a unit (per ton of cargo) basis have decreased as vessels have gotten larger and more efficient; however, most of those gains have been offset by increased cargo volume. Ship and engine design is driven by economics and international environmental agreements, such as the International Convention for the Prevention of Pollution from Ships, known as MARPOL 73/78. With the recent goals for GHG emissions reductions announced by IMO, it is likely that on a per-unit-cargo basis, future vessels will have substantially lower emissions than current vessels. At least one shipping company has announced that it intends to be carbon-neutral by 2050, and it is clear that emissions from OGVs while in transit will continue to decline over time.	Port	Final 2020 and Beyond Plan (Note 5)	X	X					Yes	N/A	N/A	Yes	Yes	YES	YES	
224	Provide Harbor Craft Engine Retrofit Incentives	CARB proposes to update the Commercial Harbor Craft regulation by 2020, but new regulatory measures would not be implemented until after 2023. For this Action, the remaining HC with Tier 2 engines would be repowered with Tier 4 by implementing incentives. Repowering costs are estimated at \$1.4 million per engine or \$2.6 million per tug, as most tugs are equipped with two engines. On average, DPM emissions per engine will be reduced by 85%. The only reductions in GHGs by implementing this measure will result from improvements in efficiency. GHG reductions will depend on tug efficiency improvements.	Port	Final 2020 and Beyond Plan (Note 5)	X												NO - Duplicate	
225	Hybrid Harbor Craft Retrofit	It is possible to reduce emissions from existing tug engines by retrofitting them to hybrid technology. In 2013, Foss Maritime Company (Foss) received verification from EPA for their XeroPoint Tugboat Hybrid Retrofit system. The hybrid technology will reduce DPM emissions by at least 25% and GHGs measured as carbon dioxide equivalents (CO <sub>2</sub> e) by at least 30. Fuel savings and emission benefits are dependent on reduced operation of the main propulsion engines and operation with the XeroPoint system while in transit, idling, and stopped (i.e., during the times when power demands are relatively low). The technology is certified for harbor tugboat vessels with auxiliary generator engines (rated horsepower [hp] range between 100 and 750 hp) and main propulsion engines (up to 5,000 hp each). In 2017, Wärtsilä launched new eco-friendly tug designs based on hybrid technology that reduces criteria pollutants as well as GHG emissions. The company's website does not provide any specific emissions reductions performance.	Port	Final 2020 and Beyond Plan (Note 5)	X						Yes	Yes	Yes	Yes	Yes	YES	YES	
226	Plug-in Hybrid Harbor Craft	In September 2018, the Red and White Fleet put a new plug-in hybrid ferry into service. The ferry uses shore power to initially charge the ferry's batteries and then transitions to diesel fuel (the Red and White Fleet uses RDJ) to supplement the battery. The Red and White Fleet partnered with Cummins Engines to repurpose a hybrid-electric bus motor for use in a maritime environment and worked with BAE Systems to design the propulsion system. Currently, the ferry can run for an hour on one charge; eventually, the battery system is supposed to be capable of recharging in 9 minutes. The ferry was between 10% and 15% more expensive to build than a similar-sized vessel with a diesel engine. Maintenance costs are projected to be lower than typical diesel engines. All the data about the ferry boat's operations will be released publicly. This type of technology is likely to be transferable to tugs in the future.	Port	Final 2020 and Beyond Plan (Note 5)	X	X					Yes	Yes	Yes	Yes	Yes	YES	YES	

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					1	2	3	4	5	6	Criterion 1	Criterion 2	Criterion 3	Criterion 4	Criterion 5			
227	Fuel Cell Harbor Craft	CARB recently awarded Golden Gate Zero Emission Marine a \$3 million grant to construct the first U.S. ferry powered solely by hydrogen fuel cells. The grant follows several years of feasibility studies by Sandia National Laboratories in Livermore. When the ferry is built, the Red and White Fleet will operate it. No dock-side fueling stations will be needed; a hydrogen fueling truck will be able to drive onto the dock and refuel the vessel straight from the truck. Maintenance is expected to be less expensive than maintenance for diesel-powered vessels. Construction of the ferry began in November 2018 and is expected to be completed at the end of 2019. After completion, the ferry will undergo a 3-month demonstration and analysis period, and will be tested at various speeds and for various uses. The designers believe that the technology will be adaptable to a wide range of vessels, including tugs.	Port	Final 2020 and Beyond Plan (Note 5)	X	X					Yes	Yes	Yes	Yes	Yes	YES	YES	
228	LNG-Powered Tugs	Natural-gas-powered tugs are available to order or in development from several manufacturers. A very small number of LNG-powered tugs are currently in service at various locations around the world. A natural-gas-powered tug can either rely solely on natural gas as fuel for starting, running without a load, and operating continuously at any engine load, or it can be designed or retrofitted to be a dual-fuel vessel. A dual-fuel vessel may be able handle longer trips. In addition, requiring less LNG storage can reduce capital expenditures for retrofit projects and/or preserve the ability to sell the vessel to users who may not have access to LNG. Given the state of the technology for natural-gas-powered tugs, a dual-fuel system can also increase reliability if the natural gas system fails to perform.	Port	Final 2020 and Beyond Plan (Note 5)	X						Yes	Yes	Yes	N/A	Yes	YES	YES	
229	Shore Power for Tugs	Like OGV, tugs could also plug into shore power while at berth. The Port currently provides berthing to one tug company, AMNAV. AMNAV already uses shore power for its tugs, and other tug operators are based outside of the Port of Oakland. Thus, there is little opportunity for reducing local DPM emissions from expanding shore power capability for tugs at the Port.	Port	Final 2020 and Beyond Plan (Note 5)	X		X				Yes	Yes	Yes	Yes	Yes	YES	NO - Completed; Moved to Pool #4	This action has been completed on Port property.
230	Expand Use of Hybrid Cargo-Handling Equipment Where Zero-Emissions Equipment is Not Commercially Available or Affordable	Terminal operator SSA Terminals, Inc. (SSAT) secured Carl Moyer program grant funding to repower all its existing RTG cranes in use at the Oakland International Container Terminal with new hybrid-electric engines. Converting to these hybrid engines will reduce criteria air pollutant emissions from the RTG cranes by 90% to 99%. The hybrid engines' reduced fuel consumption will also substantially reduce GHG emissions. The first hybrid repower system was delivered and installed in February 2019. Over time, other types of hybrid CHE may become available. Depending on the availability and cost of suitable zero-emissions equipment, it may be appropriate for tenants to implement hybrid equipment on an interim basis. Tenants would make the determination as to which type of equipment is most suitable to their operations based on their criteria for equipment purchases and regulatory compliance.	Port	Final 2020 and Beyond Plan (Note 5)	X	X	X	X			Yes	Yes	Yes	Yes	Yes	YES	NO - Already Underway	This action is in progress. It is NTAP Item 1.
231	Electrically Powered Cargo-Handling Equipment	Progress is being made with development of electrically powered CHE. If yard operations permit and if the required electrical infrastructure is in place, replacement of existing CHE with electric equipment may become an option in the foreseeable future for most of the CHE in use today. However, none of the equipment currently meets the feasibility criteria for commercial availability, and there is insufficient operating experience (including operating performance over the typical life of the CHE) to demonstrate operational feasibility. Yard tractors are the CHE type that is most likely to become commercially available in the near future; further pilot-scale testing is still required to refine designs and evaluate operational issues, and costs will remain substantially higher than for comparable diesel-powered equipment for the foreseeable future. Incentive funding, which is currently available to help fund the acquisition of battery-electric yard tractors, would be critical to speed purchases of zero-emissions yard tractors. The terminal operators will continue to evaluate their operational and infrastructure needs, and then develop a plan to replace CHE with commercially available electric alternatives over time, where feasible. The Port will continue to work with tenants to identify and apply for grants and other incentive funding.	Port	Final 2020 and Beyond Plan (Note 5)	X	X	X	X			Yes	Yes	Yes	Yes	Yes	YES	NO - Already Underway	This Suggested Action is being implemented as Interim Equipment Goal 1.

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232	Demonstration Testing of Electrically Powered Cargo-Handling Equipment	The Port of Long Beach was recently successful in obtaining a ZANZEFF grant from CARB. The Oakland component of the grant includes deploying five battery-electric yard tractors and one battery-electric top-pick at the Matson Terminal (Berths 60-63) (CARB 2018a). As part of that grant, SSAT will be testing five battery-electric yard tractors and a battery-electric top-pick at Matson Terminal. None of the equipment is commercially available, and therefore all of it will be built specifically for the test.	Port	Final 2020 and Beyond Plan (Note 5)	X	X	X	X			Yes	Yes	Yes	Yes	Yes	YES	NO - Already Underway	This action is in progress. It is being implemented as NTAP Items 4 and 5.
233	CTMP Implementation/Clean Truck Program	The Comprehensive Truck Management Plan (CTMP) is an element of the MAQIP. The CTMP consists of five primary elements: (1) Truck Ban Ordinance, (2) Drayage Truck Retrofit Project, (3) Idling Restrictions, (4) Truck Parking, and (5) CTMP Web Page. In addition, the Port conducted studies on parking supply and demand, and conducted West Oakland truck parking surveys every year from 2015 through 2017. Although implementation of the CTMP is considered to be complete, the measures described above will continue to remain in effect. The Port is collaborated with the City of Oakland to complete the joint City of Oakland-Port of Oakland West Oakland Truck Management Plan (TMP). The TMP is considered a related plan.	Port	Final 2020 and Beyond Plan (Note 5)	X						Yes	Yes	Yes	N/A	Yes	YES	NO - Completed; Moved to Pool #4	This action has been completed.
234	Truck Emissions Control Equipment Repair Facilities	DPM emissions from Port-related truck trips have dropped by 98% since 2005. These emissions reductions are attributable in part to the use of DPFs and, increasingly, to the use of SCR. When emissions control equipment fails, especially on older model-year trucks, emissions from those trucks can increase by more than a factor of 10. Consequently, to maintain emissions reductions that have already been achieved, it is critical for truckers to have ready access to qualified repair facilities that can service the emissions control equipment. Furthermore, modern trucks have onboard monitoring equipment that does not allow the engine to run if the emissions control equipment is out of specification range. Emissions control repair facilities are available in Oakland and nearby communities. At least one provider also offers a mobile DPF repair service.	Port	Final 2020 and Beyond Plan (Note 5)	X						Yes	No				NO	NO	This action would support compliance with existing regulations, and would not provide surplus emissions reductions.
235	Incentives to Upgrade to Zero-Emissions Drayage Trucks	The truck-related emissions attributed to the Seaport have been greatly reduced and currently only make up 0.6% of the total DPM emissions at the Port. Converting to zero-emissions drayage trucks on a significant scale is not technologically feasible at present. Zero-emissions short-haul drayage trucks (short-haul drayage trucks are those that cover less than 100 miles per day) are not commercially available yet and are not expected to be commercially available for several years (2022 or later). Long-haul zero-emissions drayage trucks are not expected to be commercially available until 2027 or later. Most truck owners need the flexibility to be able to do short or long hauls, depending on their clients' needs on any given day. Currently, zero-emissions trucks are much more costly than diesel-powered trucks. The total cost per truck for the 10 zero-emissions drayage trucks that are part of the ZANZEFF grant is estimated to be approximately \$470,000 each. This cost includes charging infrastructure costs estimated at \$200,000 per truck. Converting the entire drayage truck fleet would result in very high costs, given the thousands of trucks that would need to be converted and the cost of installing the necessary infrastructure. Replacement of all drayage trucks in the STEP registry with zero-emissions vehicles would eliminate 100% of residual DPM emissions from trucks 100% reduction of tailpipe GHG emissions. After accounting for PG&E grid emissions, overall GHG emissions would be reduced by 88%.	Port	Final 2020 and Beyond Plan (Note 5)	X	X					Yes	Yes	Yes	Yes	Yes	YES	YES	
236	Short-Haul Drayage Truck Demonstration Testing	A Port tenant is currently evaluating a Phase 1 electric drayage truck, and the manufacturer is currently working with several other Port tenants to deploy 10 Phase 2 electric drayage trucks. The ZANZEFF grant (see Action 232) provides funding for an additional 10 electric drayage trucks. These trucks are being built by a different vendor and will be used by Shippers Transport Express. Pursuant to the Memorandum of Understanding (MOU) between the Port and the Port of Long Beach regarding the ZANZEFF grant, dated February 7, 2019, the Port committed to construct the necessary charging infrastructure for the drayage trucks to be deployed at Shippers Transport Express. All of the test trucks are being used in short-haul service (between marine terminals and near-dock rail yards, warehouses, or container storage yards) due to the electric trucks' limited range. The Port will track the results of the testing.	Port	Final 2020 and Beyond Plan (Note 5)	X	X	X										NO - Duplicate	

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237	Incentives for Low-NO <sub>x</sub> Emissions Drayage Trucks	Low-NO <sub>x</sub> trucks (90% cleaner than current NO <sub>x</sub> standards) are currently available, and CARB is working on a regulation to introduce low-NO <sub>x</sub> truck standards. However, those standards are targeted only toward NO <sub>x</sub> and will not achieve DPM and GHG emissions reductions. There are currently no CNG- or LNG-fueled trucks in the STEP registry.	Port	Final 2020 and Beyond Plan (Note 5)							Yes	Yes	Yes	N/A	Yes	YES	YES	
238	High-Emitting Truck Detection System	As discussed in Appendix B: Background, studies have shown that a small fraction of trucks with apparent emissions control systems failures emit a greatly disproportionate amount of air pollutants. The studies have also shown that it is possible to identify these high-emitting trucks. For this Action, permanent emissions sensors would be installed at key entry points to the Port. When a high-emitting truck is detected by a sensor, the sensor's reading along with the identifying truck information, such as a photo of the license plate, would be transmitted to an enforcement agency, such as CARB or the DMV, for follow-up.	Port	Final 2020 and Beyond Plan (Note 5)	X						No					NO	NO	This action is under CARB purview as part of SB 210, which is underway. The Port would support CARB's action, potentially be making locations for sensor installation available.
239	Switch Locomotive Replacement (Upgrade to Tier 4)	Several switcher locomotives are assigned to the OIG and OGRE rail yards. Replacing the existing Tier 0 switcher locomotives with Tier 4 switcher locomotives would provide 95% control of PM compared to Tier 0 engines. Because the activity of the switcher locomotives at OIG and OGRE is relatively low, their emissions are relatively low. Incentives or grants could be used to encourage replacement of the OIG and OGRE switcher locomotives. Both rail yards have several switcher locomotives sharing the switching duties. Unless the yard operators can operate the new Tier 4 locomotive exclusively, several of the switchers would need to be replaced. In addition, switchers are not necessarily tied to one rail yard, so upgraded switchers may not stay in the rail yard at all times. Replacing one switcher engine and using it for the majority (greater than 90%) of the switching would yield a more than 90% reduction of DPM (approximately 0.13 to 0.37 tons per year in 2030). GHG emission reductions are expected to be approximately 40%, or approximately 250 to 750 MT of CO <sub>2</sub> e per year in 2030.	Port	Final 2020 and Beyond Plan (Note 5)	X						Yes	Yes	Yes	N/A	Yes	YES	YES	Board Resolution 19-41 directs staff to "submit an Agenda Report to the Board, within 18 months following the date of this Resolution, on "...performance incentive programs for ocean vessels and rail tenants"
240	Support CARB Petition for Tier 5 Line-Haul Locomotives	In an effort to reduce emissions from line-haul locomotives, CARB petitioned EPA to issue Tier 5 emissions standards for line-haul locomotives. This Action consists of having the Port submit a letter in support of CARB's petition to EPA.	Port	Final 2020 and Beyond Plan (Note 5)	X			X			Yes	N/A	N/A	N/A	Yes	YES	YES	
241	Battery-Electric Switcher Engines	The Ports of Los Angeles and Long Beach are collaborating with CARB and the South Coast Air Quality Management District to test a lithium-ion battery-electric switcher engine. The two ports have the heaviest-duty switching operations in the U.S. At 2,100 hp, the engine is unusually large for a switcher. It has a design 12-hour running-time target and is equipped with a 2,800 kilowatt-hour (kWh) battery pack. The locomotive is currently being built, is scheduled for battery installation and testing from January through April of 2019, and is to be delivered to the Ports of Los Angeles and Long Beach in June 2019. Grant conditions require that the switcher complete 900 operating hours by the fourth quarter of 2019.	Port	Final 2020 and Beyond Plan (Note 5)	X	X					Yes	Yes	Yes	Yes	Yes	YES	YES	
242	Battery-Electric Locomotive for Hybrid Consist	BNSF Railway (BNSF) teamed with the San Joaquin Air Quality Management District on a ZANZEFF grant to develop a battery-powered locomotive that would be used in combination with diesel locomotives in what is termed a <i>hybrid consist</i> . (A "consist" is combination of locomotives used to power a train.) The concept includes replacing the engine and associated equipment in a locomotive with an approximately 2,400 kWh battery pack and developing software to optimize the operation of the overall consist. The optimization software is essential, as improper use of the engine could increase fuel use. The hybrid consist will be tested on the Stockton to Barstow run as well as on within-yard movements. BNSF is assessing the new technology for safety, operational fit, total cost of ownership, and reliability. BNSF anticipates overall fuel savings of 10% to 15% on the Stockton to Barstow run.	Port	Final 2020 and Beyond Plan (Note 5)	X	X					Yes	Yes	Yes	Yes	Yes	YES	YES	
243	Encourage Railroads to Use Cleanest Engines in Oakland	The Class 1 railroads have discretion over the locomotives that are used in their Oakland yards as well as the line-haul locomotives that are used to haul trains into and out of Oakland. Existing locomotives have variable emissions, depending on their emissions tier. Tier 4 engines are the cleanest engines. For this Action, the Port would write a letter to the Class 1 railroads encouraging the railroads use locomotives with Tier 4 engines for both their line-haul locomotive coming through Oakland and in their switcher locomotives at the Oakland rail yards.	Port	Final 2020 and Beyond Plan (Note 5)	X			X			Yes	N/A	N/A	N/A	Yes	YES	NO - Already Underway	This action is in progress. It is NTAP Item 32.



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244	Port Fleet Conversion and Charging Infrastructure	The Port is committed to evaluating the conversion of its own vehicles to battery-electric or other zero-emissions technology as the equipment is replaced at the end of its useful life, using the feasibility criteria presented in this Plan. The Port recently evaluated 13 types of fleet equipment for replacement by battery-electric or other alternatively fueled equipment. Equipment purchase costs for the alternatively fueled vehicles ranged from 136% to 218% of equivalent diesel-powered equipment. In addition, none of the equipment met the Carl Moyer criterion for cost-effectiveness for zero-emissions equipment. Nonetheless, Port staff recommended, and the Board of Port Commissioners approved, the purchase of six electric vehicles as part of a larger fleet vehicle replacement effort. In Resolution No. 18-117, the Board authorized the purchase of one electric van, one electric flatbed truck, two electric forklifts, and two electric work trucks. These vehicles are specifically being purchased as pilot test vehicles; three of the vehicles are slated for maritime use. The Port previously purchased a battery-electric passenger van. The Port will continue to evaluate the feasibility of replacing diesel-powered equipment with alternatively fueled equipment as each piece of diesel-fueled equipment reaches the end of its useful life. The Port has available capacity to support up to six electric vehicle charging plugs at its Harbor Facilities building. In the future, the Port will have to evaluate the existing electrical system serving the Harbor Facilities building to determine the additional infrastructure required to support proposed electric vehicle purchases. In addition, the Port may evaluate the feasibility of light-duty vehicle charging stations in Port parking areas to encourage the transition of personal vehicles to zero-emissions or hybrid-electric vehicles.	Port	Final 2020 and Beyond Plan (Note 5)	X	X	X				Yes	Yes	Yes	Yes	Yes	YES	NO - Already Underway	This action is in progress. It is being implemented as NTAP Items 6 through 8, and 16.
245	Highest-Tier Construction Equipment on Port Projects	Lower-tier diesel engines emit considerably more DPM and other pollutants than the highest-tier engines. If construction conducted within the Seaport were to use only the highest-tier equipment, DPM emissions would be reduced and some reductions in GHGs would also occur, as newer engines are typically more efficient. For example, the CenterPoint Oakland project is using Tier 4 construction equipment except for those items for which Tier 4 equipment is unavailable.	Port	Final 2020 and Beyond Plan (Note 5)	X						Yes	Yes	Yes	Yes	Yes	YES	YES	
246	Retrofit Older Construction Equipment with Emissions Control Devices	Older construction equipment with lower-tier diesel engines (i.e., not equipped with emissions control devices) could be retrofitted with these devices to reduce emissions. The emissions reductions achieved would depend on the engine model year of the equipment to be retrofit, the operating of that equipment, and the specific type(s) of retrofit equipment.	Port	Final 2020 and Beyond Plan (Note 5)	X						Yes	Yes	Yes	N/A	Yes	YES	YES	
247	Zero-Emissions Loading and Unloading Equipment	Mobile equipment used at warehouses, maintenance facilities, and other support services within the Seaport area could be converted from their existing fuel sources (typically diesel, and propane or LNG/CNG) to battery-electric service. Battery-electric forklifts are considered to be commercially available. Also, forklifts powered by hydrogen fuel cells are commercially available. The Cool Port facility will use battery-electric equipment in its operation and provide electrical plug-ins for transport refrigeration units (refrigerated containers).	Port	Final 2020 and Beyond Plan (Note 5)	X	X					Yes	Yes	Yes	Yes	Yes	YES	YES	
248	Fixed Asset Energy Efficiency Measures Studies and Implementation	Buildings and other infrastructure can be made more energy-efficient through energy-efficient lighting, insulation, low-carbon intensity building materials, painting to reduce heat absorption, and related improvements.	Port	Final 2020 and Beyond Plan (Note 5)	X	X	X				Yes	Yes	Yes	N/A	Yes	YES	YES	

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249	Overall Seaport Operating Efficiency (Studies)	Efficiencies at a container terminal and within a seaport are achieved through a more rapid and smoother cargo-loading and unloading process, including the process of moving the containers onto or off the container yard. The more the various elements of a seaport operation are working well together, the more efficient the overall cargo movement process becomes. Higher efficiencies result in a reduction in air pollutant emissions per unit amount of cargo. Terminal velocity provides an overall measure of the relative efficiency of each terminal within a seaport. The greatest efficiencies are achieved when the various elements are integrated. Truck turn-time data (the amount of time it takes a truck to enter the terminal and load or unload a container) can identify bottlenecks in the system. As described in the 2020 and Beyond Plan, FITS will provide turn-time information when it is implemented (see Appendix B, Background, subsection Related Plans, Programs, and Projects). Port of Oakland Seaport terminal tenants and operators are constantly working on and investing in increasing efficiency. Currently, a combined drop-off and pickup occurs for roughly 25% to 35% of truck trips. Improving marine terminal operating efficiency requires extensive coordination with ocean carriers, shippers, and truckers. Facilitating coordinated operations requires use of terminal operating systems, which help avoid bottlenecks through proper planning, thereby increasing productivity. While each container terminal has its own terminal operating system, terminals are currently unable to communicate with each other. A secure community network is required to optimize terminal and Seaport operations. The Port Efficiency Task Force (PETF) will continue to meet and identify potential efficiency improvements.	Port	Final 2020 and Beyond Plan (Note 5)	X			X				Yes	Yes	Yes	N/A	Yes	YES	NO - Already Underway	Multiple efficiency projects are being implemented at the Port as part of the Freight Intelligent Transportation Systems (FITS) Program led by the Alameda County Transportation Commission.
250	Evaluate Voluntary Vessel Speed Reduction Program	Under a Voluntary Vessel Speed Reduction (VSR) program, participating OGVs voluntarily reduce their speed while in transit. When OGVs slow down, the load on the main engines decreases considerably compared to the engine load when transiting at higher speeds. This leads to a decrease in the total energy required to move the OGV through the water. The energy reduction in turn reduces emissions for this segment of the transit. This strategy can significantly reduce PM (including DPM), NO <sub>x</sub> , sulfur oxide, and GHG emissions. Experience shows that incentivizing these programs increases participation rates from around 70% to nearly 100% (Starcrest 2018). A voluntary VSR program could be included as part of an overall environmental incentive program.	Port	Final 2020 and Beyond Plan (Note 5)	X							Yes	Yes	Yes	N/A	Yes	YES	NO - Already in the NTAP	Board Resolution 19-41 directs staff to "submit an Agenda Report t o the Board, within 18 months following the date of this Resolution, on "...performance incentive programs for ocean vessels and rail tenants." In addition, evaluation of a voluntary vessel speed reduction program is included in the NTAP (Item 21) but has not yet commenced.
251	Monitor Shore Power Use	Under CARB's At-Berth rule, shipping lines calling the Port are required to reduce onboard auxiliary diesel engine power generation by 70% (2018 requirement) on a fleet-wide basis while at berth. To date, all shipping lines that visit the Port have chosen to plug into shore power, although in the future, some vessels may use a barge-based emissions reduction system (bonnet; see the discussion in the Ocean-Going Vessel section). Port staff have been monitoring the success of shore-power plug-ins to determine the issues preventing the use of plug-ins and to enhance usage. For issues that are identified, the Port works with the shipping lines and marine terminal operators to evaluate potential solutions.	Port	Final 2020 and Beyond Plan (Note 5)	X							Yes	N/A	N/A	N/A	Yes	YES	NO - Already Underway	This action is in progress. It is NTAP Item 24.
252	Combined Environmental Performance Incentive Program for Ocean Carriers	A combined environmental performance incentive program provides an opportunity for ocean carriers to earn incentives for each vessel call, depending on specific types of actions they take to meet performance requirements in two or more categories of incentivized actions. Depending on the type of program implemented, ocean carriers may be incentivized at different levels for achieving certain levels of environmental performance. For example, a program that includes an incentive to use ultra-low-sulfur diesel fuel (see the discussion in the Fuels section) may offer different levels of incentive award points, depending on the specific sulfur content of the fuel, with the lowest-sulfur fuel resulting in the highest incentive points. Other environmental performance measures that could be added to a combined incentive program include VSR, use of vessels with cleaner engines, shore-power plug-in performance, and use of alternative fuels such as RD (if beneficial in marine use) or, longer-term, natural gas. A combined incentive program could be similar to the Environmental Ship Index currently used by the Port of Los Angeles.	Port	Final 2020 and Beyond Plan (Note 5)	X	X						Yes	Yes	Yes	N/A	Yes	YES	YES	Board Resolution 19-41 directs staff to "submit an Agenda Report t o the Board, within 18 months following the date of this Resolution, on "...performance incentive programs for ocean vessels and rail tenants"

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253	Track Other Incentive-Based Programs	The SPBP are considering measures to incentivize energy efficiency improvements and use of cleaner technologies. These ports are also considering imposing a differential rate system to incentivize newer, cleaner vessels. The Port of Oakland and other ports along the West Coast are likely to benefit from any successful incentives. It will be important to track the benefits of any such program against the improvements in ship emissions reductions pursuant to the most recent MARPOL guidance (IMO 2018). The SPBP are also planning to develop a Green Terminal program. The Port of Oakland will continue to track various efficiency and incentive measures tested at the SPBP along with implementation of the 2017 CAAP in general. Successful programs will be evaluated for their applicability to the Port of Oakland.	Port	Final 2020 and Beyond Plan (Note 5)	X	X					Yes	N/A	N/A	N/A	Yes	YES	YES	
254	Track San Pedro Bay Ports CAAP Progress and Technology Advancement Program	The SPBP currently provide progress updates to their CAAP online and specific quarterly reporting. Port staff will continue to track CAAP progress using the online resource as well as the Port of Oakland relationships with SPBP staff. Likewise, SPBP also provide annual reports on their Technology Advancement Program (TAP) online and the Port will continue to check in on the progress of the TAP directly with SPBP staff.	Port	Final 2020 and Beyond Plan (Note 5)			X	X			Yes	N/A	N/A	Yes	Yes	YES	NO - Already Underway	This action is in progress. It is NTAP Item 29.
255	Participate in Trucker Working Groups	Three primary trucker groups represent the interests and concerns of truckers serving the Seaport: the Port of Oakland-specific Trucker Working Group, the Harbor Trucking Association, and the Western States Trucking Association. The Trucker Working Group meets every other month and is an organized forum for Port staff, marine terminal operators, chassis equipment providers, regulatory agencies, the Oakland Police Department, logistics/wayage software developers, trucking associations, and others to provide updates to each other and those in the trucking community. Port staff will continue coordinating, attending, and using the Trucker Working Group as a forum for sharing updates on Plan implementation as well as receiving feedback on Implementing Actions. In addition, Port of Oakland staff receive regular email updates multiple times a week from the Harbor Trucking Association and weekly newsletters from the Western States Trucking Association. Port staff will continue tracking the information provided and the concerns expressed by each respective trucking association.	Port	Final 2020 and Beyond Plan (Note 5)				X	X		Yes	N/A	N/A	N/A	Yes	YES	NO - Already Underway	Tracking information provided by and concerns expressed by truckers is an on-going activity of the Port.
256	Port Environmental Office Hours for Trucking Companies and Truckers	Port environmental staff have weekly standing environmental office hours at the Maritime Harbor Facilities building. The goal of these weekly office hours is to make staff available to various trucking companies (primary motor carriers and licensed motor carriers) as well as independent owner-operators to assist with truck compliance and potential grant or incentive funding for newer diesel, low-NO <sub>x</sub> , and zero-emissions equipment. Port staff also use the Port Environmental Office Hours to distribute information from BAAQMD. The Port will continue environmental office hours and work with BAAQMD staff on how best to provide information on and assistance with grant opportunities for those in the trucking community.	Port	Final 2020 and Beyond Plan (Note 5)	X	X		X	X	X	Yes	N/A	N/A	N/A	Yes	YES	NO - Already Underway	This action is in progress. It is NTAP Item 34.
257	ZANZEFF Grant MOU with Port of Long Beach	Pursuant to the MOU with the Port of Long Beach, Port of Oakland staff will manage the Port-of-Oakland-related component of the Port of Long Beach's ZANZEFF grant project. This will include providing project updates and coordinating data collection and monitoring by consultants, as needed, to meet the ZANZEFF grant reporting requirements. The Port will use this partnership opportunity to strengthen its relationship with the ports of Long Beach and Stockton.	Port	Final 2020 and Beyond Plan (Note 5)		X		X		X	Yes	N/A	N/A	Yes	Yes	YES	NO - Already Underway	This action is in progress. The Port is currently carrying out its obligation under the MOU with the Port of Long Beach.
258	Meet with Port Tenants	As part of the Port's agreements with tenants, annual meetings are held between Port environmental staff and tenants to review tenant environmental responsibilities with respect to air quality. Port environmental staff will continue having annual meetings with Port tenants to jointly look for opportunities to improve air quality (e.g., by upgrading equipment, implementing efficiency measures, and pursuing grant project partnering opportunities). These annual meetings are in addition to the ongoing coordination by Port environmental staff with Port tenants.	Port	Final 2020 and Beyond Plan (Note 5)	X	X	X	X	X		Yes	N/A	N/A	Yes	Yes	YES	NO - Already Underway	This action is in progress. It is NTAP Item 31.

Table 1: Pass/Fail Screening of Suggested Actions																		
No.	Name of Suggested Action	Description of Suggested Implementing Action	Source	Document	Associated Strategy (see p.9 of 2020 & Beyond Plan)						Step 2 Screening: Does Suggested Action Pass Indicated Criterion? (Yes/No)					Retained (Moved to Pool #2?) (Yes/No)	To Be Evaluated in Step 3?	Notes
					1	2	3	4	5	6	Criterion 1	Criterion 2	Criterion 3	Criterion 4	Criterion 5			
259	Participate in Industry Stakeholder Groups	Port industry stakeholder groups provide an opportunity to share information about port air quality improvement initiatives. Port of Oakland environmental staff will continue to participate, as invited, in the PETF to provide the PETF updates regarding Port air quality initiatives, and they will use the PETF to continue building relationships with the Pacific Merchant Shipping Association and other industry stakeholders. In addition, the Port is in weekly contact with Pacific Merchant Shipping Association staff regarding air quality initiatives and technologies.	Port	Final 2020 and Beyond Plan (Note 5)				X	X		Yes	N/A	N/A	N/A	Yes	YES	NO - Already Underway	This action is in progress. It is NTAP Item 35.
260	Attend Industry Trade Conferences	Port environmental staff attend and participate in numerous industry trade conferences focused on clean technology. For example, in 2018, the conferences included the Advanced Clean Transportation Expo, the American Association of Port Authorities Green Ports conference, the NorCal Clean Technology Summit, and the West Coast Collaborative. In 2018 Port staff also spoke at VERGE, a conference and expo for accelerating clean energy, and participated on a Clean Truck Panel for an Intermodal Association of North America conference-related event. In addition, Port staff regularly participate in industry trade webinars organized by such agencies as CalStart and the Hydrogen Business Council. Port environmental staff will continue to attend conferences for both learning and connecting with those associated with clean energy and zero-emissions technology.	Port	Final 2020 and Beyond Plan (Note 5)				X			Yes	N/A	N/A	N/A	Yes	YES	YES	
261	Collaborate with Public Agencies	The Port of Oakland can collaborate with other public agencies in identifying opportunities for sharing Implementing Actions and grant opportunities.	Port	Final 2020 and Beyond Plan (Note 5)				X	X		Yes	N/A	N/A	N/A	Yes	YES	YES	
262	Collaborate with Regulatory Agencies	In 2018, the Port of Oakland, BAAQMD, CalStart, and CARB hosted two grant and incentive funding workshops for truckers and trucking companies to learn about opportunities for cleaner equipment. The Port plans to continue hosting such events and evaluate other outreach events that may be held in the future.	Port	Final 2020 and Beyond Plan (Note 5)				X	X		Yes	N/A	N/A	N/A	Yes	YES	YES	
263	Outreach Regarding Potentially Applicable Grants and Incentives	In addition to the Port Environmental Office Hours held at the Maritime Harbor Facilities building and the 2018 Grant and Incentive Funding Workshops, the Port will continue to reach out to tenants and marine terminal operators to inform them about potential grant and incentive opportunities. Outreach may be through events or may occur informally during other meetings, such as the annual meetings with tenants. Additionally, Port staff can connect successful grantees with others in the Seaport community seeking the same grants so that the grantees can share grant application information and lessons learned.	Port	Final 2020 and Beyond Plan (Note 5)		X		X	X	X	Yes	N/A	N/A	Yes	Yes	YES	YES	
264	Provide Support during Development of Grant Applications	For marine terminal operators or Port tenants developing grant applications, the Port can provide letters of support and initial evaluation of projects if requested and deemed appropriate.	Port	Final 2020 and Beyond Plan (Note 5)		X		X		X	Yes	N/A	N/A	Yes	Yes	YES	YES	
265	Develop a Workforce Development Program	The Port will continue its workforce development program with adjustments to account for zero-emissions technology, as described in Appendix E: Workforce Development Plan.	Port	Final 2020 and Beyond Plan (Note 5)				X	X		Yes	N/A	N/A	N/A	Yes	YES	NO - Already Underway	This action is in progress. It is NTAP Item 36 and see Appendix E.
266	Partner with other Ports on Grant Applications	In 2018, the Port of Oakland signed an MOU with the Port of Long Beach to implement the Oakland components of a ZANZEFF grant to the Port of Long Beach. The Port of Oakland will continue identifying future opportunities for collaborating on applications with other ports as time and resources allow.	Port	Final 2020 and Beyond Plan (Note 5)				X		X	Yes	N/A	N/A	Yes	Yes	YES	YES	
267	Advocate for cleaner OGVs and Fuels	Ocean-going vessels are regulated at the international level, and Class 1 railroads are regulated at the federal level. The Port will continue to advocate for cleaner vessels and locomotives with the appropriate agencies.	Port	Final 2020 and Beyond Plan (Note 5)	X			X			Yes	N/A	N/A	Yes	Yes	YES	YES	
268	Seaport Air Quality 2020 and Beyond Task Force Meetings	The Port intends to continue to hold Seaport Air Quality 2020 and Beyond Task Force (Task Force) meetings during Plan implementation, as described in Appendix G: Public Engagement Plan. The Port will also provide documentation for Steps 1 through 4 of the screening and evaluation process to the Task Force Co-Chairs for review (see Screening and Evaluation Process for Implementing Actions in the Main Text of the Plan). Additionally, Selected Actions will be provided to the Task Force Co-Chairs for their feedback. Where needed or desired, the Task Force Co-Chairs will convene a working session for collaborative problem-solving on specified Selected Actions. Task Force Co-Chairs will present the results of Steps 1 through 4 to the Task Force for its feedback.	Port	Final 2020 and Beyond Plan (Note 5)					X		Yes	N/A	N/A	N/A	Yes	YES	NO - Already Underway	This action is included in Appendix G of the Plan, and is on-going.

**Table 1: Pass/Fail Screening of Suggested Actions**

No.	Name of Suggested Action	Description of Suggested Implementing Action	Source	Document	Associated Strategy (see p.9 of 2020 & Beyond Plan)						Step 2 Screening: Does Suggested Action Pass Indicated Criterion? (Yes/No)					Retained (Moved to Pool #2?) (Yes/No)	To Be Evaluated in Step 3?	Notes
					1	2	3	4	5	6	Criterion 1	Criterion 2	Criterion 3	Criterion 4	Criterion 5			
269	Community Town Hall Meetings	A Community Town Hall meeting can be a method of reporting to the community regarding the progress of the 2020 and Beyond process, as described in Appendix G: Public Engagement Plan. Community Town Halls would be scheduled at times and on dates when more stakeholders are able to attend, such as during the evening or on weekends.	Port	Final 2020 and Beyond Plan (Note 5)					X		Yes	N/A	N/A	N/A	Yes	YES	NO - Already Underway	This action is included in Appendix G of the Plan, and is on-going.
270	Conduct Directed Outreach	While the Seaport Air Quality 2020 and Beyond Task Force has engaged a wide range of stakeholders, some community members and organizations may not be aware of or may not be engaged in the 2020 and Beyond process. As described in Appendix G: Public Engagement Plan, the Port intends to do directed outreach to these community members and organizations. Directed outreach may be done through social media, by telephone, and through direct contact. It may also be done through announcements and information provided at locations that community members frequent, such as faith groups, grocery stores, and laundromats. Other directed outreach includes public workshops and tours, community and business surveys, questionnaires, and polls, as described in Appendix G.	Port	Final 2020 and Beyond Plan (Note 5)					X		Yes	N/A	N/A	N/A	Yes	YES	NO - Already Underway	This action is included in Appendix G of the Plan, and is on-going.
271	Document Responses to Comments on the 2020 and Beyond Plan	Several commenters requested that the Port provide specific, written responses to all comments received. The Port developed the <i>Responses to Comments on the June 29, 2018 Draft Seaport Air Quality 2020 and Beyond Plan</i> document, which provides responses to all comments (emails and comment letters, etc.), as Volume II of the Revised Draft. Similarly, the Port developed the <i>Volume II Responses to Comments on the Revised Draft Seaport Air Quality 2020 and Beyond Plan, December 14, 2018</i> , document, which provides responses to all comments received on the Revised Draft.	Port	Final 2020 and Beyond Plan (Note 5)					X		Yes	N/A	N/A	N/A	Yes	YES	NO - Completed; Moved to Pool #4	This action has been completed.
272	Outreach to Individuals with Limited English Proficiency	Meaningful engagement with the whole community requires outreach to community members with limited English proficiency. Informational materials for those with limited English proficiency will be developed using graphics and minimal text with simple language, and the materials will be produced in appropriate languages.	Port	Final 2020 and Beyond Plan (Note 5)					X		Yes	N/A	N/A	N/A	Yes	YES	NO - Already Underway	This action is included in Appendix G of the Plan, and is on-going.
273	Estimate Overall Costs Associated with the 2020 and Beyond Plan	The Port continues to assess funding needs relative to Plan goals. The Port has conducted several feasibility studies for infrastructure and equipment to date. The total Plan cost will be highly dependent on the long-term cost of zero-emissions technology and the availability of incentive programs.	Port	Final 2020 and Beyond Plan (Note 5)						X	Yes	N/A	N/A	N/A	Yes	YES	YES	Board Resolution 19-41 directs staff to "submit an Agenda Report to the Board, within 18 months following the date of this Resolution, on "...costs and financing aspects associated with the 202 and Beyond Plan including discussion of grant and incentive funding opportunities from outside sources (i.e., CARB, BAAQMD, and the California Energy Commission, etc.) and private sector and Port resources"
274	Financing Mechanisms and Sources	A wide range of potential financing mechanisms could be used to advance the goals of the Plan. In addition to self-funding and external grants and incentives, the Port will consider a variety of potential debt-financing mechanisms for larger-scale infrastructure improvements. These improvements would be planned and constructed in accordance with the Port's project delivery process. Identification of suitable mechanisms will include tracking grant and incentive opportunities, as well as opportunities provided by OEMs.	Port	Final 2020 and Beyond Plan (Note 5)						X	Yes	N/A	N/A	N/A	Yes	YES	NO - Already Underway	This action is in progress. It is NTAP Item 37.
275	Grant and Incentive Funding Program Requirements	Port staff will continue to become educated on established grant and incentive funding programs so that they are better able to strategically pursue the most appropriate opportunities and to provide general guidance and information on opportunities for Port tenants and truckers.	Port	Final 2020 and Beyond Plan (Note 5)						X	Yes	N/A	N/A	N/A	Yes	YES	YES	
276	Track SPBP Truck Rate Study	In addition to tracking the progress of the SPBP CAAP and TAP, Port staff will track the current SPBP truck rate study to understand the projected benefits and effects of implementing a truck rate as well as the mechanics of implementing such a rate. The results of the SPBP study can help inform the feasibility and suitability of a similar program at the Port of Oakland.	Port	Final 2020 and Beyond Plan (Note 5)	X	X				X	Yes	N/A	N/A	Yes	Yes	YES	NO - Already Underway	This action is in progress. It is NTAP Item 30.

Table 1: Pass/Fail Screening of Suggested Actions																		
No.	Name of Suggested Action	Description of Suggested Implementing Action	Source	Document	Associated Strategy (see p.9 of 2020 & Beyond Plan)						Step 2 Screening: Does Suggested Action Pass Indicated Criterion? (Yes/No)					Retained (Moved to Pool #2?) (Yes/No)	To Be Evaluated in Step 3?	Notes
					1	2	3	4	5	6	Criterion 1	Criterion 2	Criterion 3	Criterion 4	Criterion 5			
277	Evaluate the Feasibility of Providing Incentives	Provided funding allows, the Port could evaluate incentives for voluntary VSR to increase participation (provided BAAQMD's VSR pilot program shows that VSR would provide net emissions reductions benefits) and/or implement a combined environmental incentive program such as the Environmental Ship Index. A combined environmental incentive program typically awards points to each vessel depending on its performance on certain environmental indicators, such as fuel sulfur content and shore power use. The feasibility evaluation would consider both the costs involved with providing a meaningful level of incentives and the administrative requirements of implementing such an incentive program.	Port	Final 2020 and Beyond Plan (Note 5)	X					X	Yes	N/A	N/A	Yes	Yes	YES	YES	Board Resolution 19-41 directs staff to "submit an Agenda Report to the Board, within 18 months following the date of this Resolution, on "...performance incentive programs for ocean vessels and rail tenants"
278	Advocate for New or Expanded State and Federal Grant and Incentive Funding Programs	Through the identification of a full range of financing mechanisms and sources, the Port may identify additional needs for grant and incentive funding programs. Port staff participate in agency working groups to provide feedback on grant programs. Through its stakeholder engagement process, the Port may also become aware of barriers to the use of existing grant or incentive programs and could advocate for changes in these programs to make them more accessible to potential applicants.	Port	Final 2020 and Beyond Plan (Note 5)						X	Yes	N/A	N/A	Yes	Yes	YES	YES	
279	Offer Employee Incentives for ZE Vehicles	Have Port offer incentives to employees to purchase or lease ZE vehicles	Port	New	X	X					Yes	Yes	Yes	Yes	Yes	YES	YES	
280	Pursue a Hydrogen Fuel Cell Demonstration Project	Identify opportunities for demonstration testing of a hydrogen fuel cell commercial vehicle.	Port	New	X	X		X			Yes	N/A	N/A	Yes	Yes	YES	YES	
281	Install Additional Shorepower Outlets	At times vessels are unable to plug into shore power because there are no accessible plugs where the vessel is berthed. Installing additional shore power outlets (vaults) would enable additional vessels to plug in. The specific increase is dependent on the number and location of shore power outlets currently installed at a given berth, and the types and numbers of vessels using that berth.	Port	New	X	X	X	X			Yes	Yes	Yes	Yes	Yes	YES	YES	

Source: Port of Oakland 2020

For a description of the screening criteria, please see the text of this screening memorandum.

- = Indicates a duplicate action
- = Criterion not evaluated/Action not passing screening

Acronyms and abbreviations are defined in the list of acronyms and abbreviations found following the table of contents of this screening memorandum.

#### Notes

1. BAAQMD Emissions Reductions Actions for the Port of Oakland/Former Oakland Army Base (August 2017): attached to Nov 3, 2017 letter to the Board of Port Commissioners entitled *Re: Ordinance and Resolution to approve Lease with CenterPoint-Oakland Development I, LLC for a Transload and Distribution Facility on the Former Oakland Army Base*. The Nov 3, 2017 letter and the attachment were in turn attached to the August 31, 2018 BAAQMD comments on the Draft Seaport Air Quality 2020 and Beyond Plan. The summary of suggested actions excludes those specifically designated for the City-owned portion of the OAB.
2. The attachment refers to this as "Port-Wide" although what is likely meant is the Port's maritime area including the OAB (Port-owned and City-owned)
3. Earth Justice attached a December 8, 2017 letter, entitled *Re: Investigation of West Oakland Title VI Administrative Complaint (DOT # 2017-0093, EPA File No. 13R-17-R9 (City of Oakland) and 14R-17-R9 (Board of Port Commissioners and Port of Oakland))* to the comments it submitted on behalf of WOEIP on the Draft Seaport Air Quality 2020 and Beyond Plan. The letter contains a table of suggested actions and an attachment of suggested actions (the table and attachment contain the same list of actions). The letter also included a letter dated April 10, 2018, entitled: EARTHJUSTICE Letter of December 8, 2017 Regarding the West Oakland Title VI Administrative Complaint and Subsequent Meeting on February 7, 2018. That letter contains an attachment providing BAAQMD's response to the series of actions proposed in the Dec 8, 2017 EARTHJUSTICE letter. The EARTHJUSTICE actions are shown as being from EARTHJUSTICE; where the BAAQMD response suggests a different action, it is listed as BAAQMD.
4. Source is the *Final Owning Our Air: The West Oakland Community Action Plan* dated October 2019; Suggested Actions taken from Table 6-4. *Owning Our Air: The West Oakland Community Action Plan Implementation Schedule*.
5. Source is the *Final Seaport Air Quality 2020 and Beyond Plan* dated June 13, 2019, Table C-2 Initial Implementing Actions.