California Environmental Protection Agency

Air Resources Board

LOCATION:
Air Resources Board
Byron Sher Auditorium, Second Floor
1001 I Street
Sacramento, California 95814

This facility is accessible by public transit. For transit information, call (916) 321-BUSS, website: http://www.sacrt.com
(This facility is accessible to persons with disabilities.)

TO SUBMIT WRITTEN COMMENTS ON AN AGENDA ITEM IN ADVANCE OF THE MEETING GO TO: http://www.arb.ca.gov/lispub/comm/bclist.php

PUBLIC MEETING AGENDA

June 24, 2010

June 24, 2010
9:00 a.m.

CONSENT CALENDAR:

All items on the consent calendar will be voted on by the Board immediately after the start of the public meeting. Any item may be removed from the consent calendar by a Board member or if someone in the audience wishes to speak on that item. The following item is on the consent calendar:

Consent Item #

10-6-1: Public Meeting to Consider Approval of the Coso Junction PM10 Redesignation Request and Maintenance Plan

Staff will present to the Board for approval the 2010 PM10 Maintenance Plan and Redesignation Request for the Coso Junction Planning Area. Coso Junction has attained the 24-hour PM10 National Ambient Air Quality Standard based on 2007-2009 air quality data.

DISCUSSION ITEMS:

Note: The following agenda items may be heard in a different order at the Board meeting.

Agenda Item #

10-5-3: THIS ITEM HAS BEEN POSTPONED TO THE JULY BOARD MEETING
Continuation from the May Board Meeting--Public Meeting to Provide a Status Report on new United States Environmental Protection Agency Requirements for Near-Roadway Monitoring of Nitrogen Dioxide

Staff will present to the Board information on new near-roadway monitoring requirements for nitrogen dioxide that were adopted earlier this year by the United States Environmental Protection Agency

10-6-2: Public Hearing to Consider Adoption of Proposed Amendments to the Regulation to Reduce Emissions from Diesel Engines on Commercial Harbor Craft Operated Within California Waters and 24 Nautical Miles of the California Baseline

Staff will present to the Board proposed amendments to the Commercial Harbor Craft Regulation to impose on certain crew and supply, barge, and dredge vessels in-use engine requirements and provide other clarifying amendments.

10-6-5: Public Meeting to Consider Staff Recommendations for Commitments between ARB and UP and BNSF Railroads to Accelerate Further Diesel PM Emission Reductions at Four High Priority Railyards in the South Coast Air Basin

Staff will present to the Board proposed railyard-specific commitments in which UP and BNSF will be required to meet interim and final railyard specific diesel PM emissions levels between 2010 and 2020 and provide other specified periodic reporting requirements.

10-6-3: Public Meeting to Consider the Adoption of Prop 1B: Grants for FY 2008-09 and FY 2009-10 Funds to Reduce Emissions from Goods Movement

Staff will present to the Board for adoption a list of grant awards totaling up to $200 million in incentive funding for specific local agency projects to reduce freight-related emissions in the four trade corridors.

10-6-4: Public Meeting to Consider the Proposed Assembly Bill 118: Air Quality Improvement Program FY 2010-11 Funding Plan

Staff will present to the Board a Proposed Air Quality Improvement Program (AQIP) FY 2010-11 Funding Plan which provides recommendations for program changes and the allocation of AQIP funds to specific project categories. Assembly Bill (AB) 118 (Nunez, 2007) provides the Air Resources Board with up to $50 million annually. AB 118 allows for the AQIP to fund a variety of air quality incentive projects to address criteria pollutant emissions, including low-emission vehicles and equipment, research, and workforce training.

10-6-6: Public Meeting to Report to the Board on Target Setting Efforts under Senate Bill 375

Staff will present to the Board a status report on efforts to establish regional greenhouse gas reduction targets pursuant to Senate Bill 375 (Steinberg, Chapter 728, Statutes of 2008).

CLOSED SESSION – LITIGATION

The Board will hold a closed session, as authorized by Government Code section 11126(e), to confer with, and receive advice from, its legal counsel regarding the following pending or potential litigation:

Pacific Merchant Shipping Association v. Goldstene, U.S. District Court (E.D. Cal Fresno), Case No. 2:09-CV-01151-MCE-EFB.

American Trucking Associations, et al. v. U.S. Environmental Protection Agency, et al., U.S. Court of Appeals, District of Columbia Circuit, Case No. 09-1090.

POET, LLC, et al. v. Goldstene, et al., Superior Court of California (Fresno County), Case No. 09CECG04850.

Rocky Mountain Farmers Union, et al. v. Goldstene, U.S. District Court (E.D. Cal. Fresno), Case No. 1:09-cv-02234-LJO-DLB.

National Petroleum & Refiners Association, et al. v. Goldstene, et al., U.S. District Court (E.D. Cal. Fresno) Case No. 1:10-cv-00163-AWI-GSA.

OPPORTUNITY FOR MEMBERS OF THE BOARD TO COMMENT ON MATTERS OF INTEREST

Board members may identify matters they would like to have noticed for consideration at future meetings and comment on topics of interest; no formal action on these topics will be taken without further notice.

OPEN SESSION TO PROVIDE AN OPPORTUNITY FOR MEMBERS OF THE PUBLIC TO ADDRESS THE BOARD ON SUBJECT MATTERS WITHIN THE JURISDICTION OF THE BOARD

Although no formal Board action may be taken, the Board is allowing an opportunity to interested members of the public to address the Board on items of interest that are within the Board's jurisdiction, but do not specifically appear on the agenda. Each person will be allowed a maximum of three minutes to ensure that everyone has a chance to speak.

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http://www.arb.ca.gov/lispub/comm/bclist.php

IF YOU HAVE ANY QUESTIONS, PLEASE CONTACT THE CLERK OF THE BOARD:
OFFICE: (916) 322-5594
1001 I Street, Floor 23, Sacramento, California 95814
ARB Homepage: www.arb.ca.gov

SPECIAL ACCOMMODATION REQUEST

Special accommodation or language needs can be provided for any of the following:

- An interpreter to be available at the hearing;
- Documents made available in an alternate format (i.e., Braille, large print, etc.) or another language;
- A disability-related reasonable accommodation.

To request these special accommodations or language needs, please contact the Clerk of the Board at (916) 322-5594 or by facsimile at (916) 322-3928 as soon as possible, but no later than 10 business days before the scheduled Board hearing. TTY/TDD/Speech to Speech users may dial 711 for the California Relay Service.

Comodidad especial o necesidad de otro idioma puede ser proveído para alguna de las siguientes:

- Un intérprete que esté disponible en la audiencia;
- Documentos disponibles en un formato alterno (por decir, sistema Braille, o en impresión grande) u otro idioma;
- Una acomodación razonable relacionados con una incapacidad.

Para solicitar estas comodidades especiales o necesidades de otro idioma, por favor llame a la oficina del Consejo al (916) 322-5594 o envíe un fax a (916) 322-3928 lo más pronto posible, pero no menos de 10 días de trabajo antes del día programado para la audiencia del Consejo. TTY/TDD/Personas que necesiten este servicio pueden marcar el 711 para el Servicio de Retransmisión de Mensajes de California.

SMOKING IS NOT PERMITTED AT MEETINGS OF THE CALIFORNIA AIR RESOURCES BOARD

California Environmental Protection Agency

Air Resources Board

PUBLIC MEETING AGENDA

LOCATION:
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June 24, 2010 at 9:00 a.m.

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CALIFORNIA AIR RESOURCES BOARD

NOTICE OF PUBLIC MEETING TO CONSIDER APPROVAL OF THE COSO JUNCTION PM10 REDESIGNATION REQUEST AND MAINTENANCE PLAN

The Air Resources Board (ARB or Board) will conduct a public meeting at the time and place noted below to consider the approval of the proposed PM10 Redesignation Request and Maintenance Plan for the Coso Junction Planning Area that was developed and approved by the Great Basin Unified Air Pollution Control District (District). If adopted, ARB will submit these elements to the United States Environmental Protection Agency (U.S. EPA) for approval as a revision to the California State Implementation Plan.

DATE: June 24, 2010

TIME: 9:00 a.m.

PLACE: California Environmental Protection Agency
Air Resources Board
Byron Sher Auditorium, Second Floor
1001 I Street
Sacramento, California 95814

This item will be considered at a two-day meeting of the Board, which will commence at 9:00 a.m., June 24, 2010, and may continue at 8:30 a.m., June 25, 2010. This item is scheduled to be heard on the Board's Consent Calendar. All items on the consent calendar will be voted on by the Board immediately after the start of the public meeting. Any item may be removed from the consent calendar by a Board member or at the request of a Board member or if someone in the audience would like to speak on that item.

BACKGROUND

The federal Clean Air Act establishes planning requirements for those areas that exceed the health-based National Ambient Air Quality Standards (standards). Areas are designated as nonattainment based on monitored exceedances of air quality standards. These nonattainment areas must develop and implement a State Implementation Plan (SIP) that demonstrates how they will attain the standards by specified dates.

The District adopted the first PM10 attainment plan for the Coso Junction Planning Area (Coso Junction) in 1991. The Coso Junction attainment demonstration was based on controlling dust from Owens Lake. In addition, in a 2004 plan update, the District included a dispersion model analysis that indicated that after dust controls were implemented at Owens Lake, Coso Junction would be in attainment.
On May 19, 2010, the U.S. EPA finalized its determination in the Federal Register that Coso Junction attained the 24-hour PM10 standard. In this clean data finding, U.S. EPA waived certain planning requirements including those for reasonable further progress,

an attainment demonstration, reasonably available control measures, and contingency measures, since these provisions have the sole purpose of helping achieve attainment of the standard.

On May 17, 2010, the District adopted the PM10 Redesignation Request and Maintenance Plan (Plan) for Coso Junction. The Plan officially requests that this area be redesignated to attainment for the PM10 standard and charts the course for continued maintenance of the standard. The adoption of controls on Owens Lake resulted in the Coso Junction attaining the 24-hour PM10 standard based on 2007-2009 PM10 data.

PROPOSED ACTION

ARB staff has reviewed the District's Maintenance Plan for Coso Junction and has concluded that it meets applicable Clean Air Act requirements. ARB staff has also determined that the Maintenance Plan would ensure continued maintenance of the standard for the required ten years following redesignation. Staff is recommending that the Board approve the Maintenance Plan, as well as the corresponding emissions inventory and maintenance demonstration as a revision to the California SIP. In addition, ARB staff is recommending that the Board approve the District's request that Coso Junction be redesignated from nonattainment to attainment for the federal PM10 standard.

AVAILABILITY OF DOCUMENTS

ARB staff has prepared a written Staff Report. Copies of the Staff Report may be obtained from the ARB Public Information Office, 1001 "I" Street, First Floor, Environmental Services Center, Sacramento, California 95814, (916) 322-2990. This notice, the Staff Report, and the District's Coso Junction PM10 Maintenance Plan will be available from ARB's website at:
http://www.arb.ca.gov/planning/sip/sip.htm

SUBMITTAL OF COMMENTS

Interested members of the public may also present comments orally or in writing at the meeting, and in writing or by e-mail before the meeting. To be considered by the Board, written comment submissions not physically submitted at the meeting must be received **no later than 12:00 noon, June 23, 2010,** and addressed to the following:

Postal mail: Clerk of the Board, Air Resources Board
1001 I Street, Sacramento, California 95814

Electronic submittal: http://www.arb.ca.gov/lispub/comm/bclist.php

The Board requests, but does not require that 20 copies of any written statement be submitted and that written and e-mail statements be filed at least 10 days prior to the

meeting so that ARB staff and Board members have time to fully consider each comment.
Please note that under the California Public Records Act (Government Code section 6250 et seq.), your written and oral comments, attachments, and associated contact information (e.g., your address, phone, email, etc.) become part of the public record and can be released to the public upon request. Additionally, this information may become available via Google, Yahoo, and any other search engines.

Further inquiries regarding this matter should be directed to Ms. Sylvia Zulawnick, Manager of the Particulate Matter Analysis Section, Planning and Technical Support Division at (916) 324-7163, or Elizabeth Melgoza, Air Pollution Specialist, Planning and Technical Support Division at (916) 322-6161.

To request a special accommodation or language needs for any of the following:

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- Tener documentos disponibles en un formato alterno (por decir, sistema Braille, o en impresión grande) u otro idioma.
- Una acomodación razonable relacionados con una incapacidad.

Por favor llame a la oficina del Secretario del Consejo de Recursos Atmosféricos al (916) 322-5594 o envíe un fax al (916) 322-3928 no menos de diez (10) días laborales antes del día programado para la audiencia. Para el Servicio Telefónico de California para Personas con Problemas Auditivos, ó de teléfonos TDD pueden marcar al 711.

CALIFORNIA AIR RESOURCES BOARD

James N. Goldstene
Executive Officer

Date: June 8, 2010

State of California

California Environmental Protection Agency
AIR RESOURCES BOARD

Staff Report

Analysis of the Coso Junction PM10 Redesignation Request and Maintenance Plan

Release Date: June 7, 2010
Scheduled for Consideration: June 24, 2010

This document has been reviewed by the staff of the California Air Resources Board and approved for publication. Approval does not signify that the contents necessarily reflect the views and policies of the Air Resources Board, nor does the mention of trade names or commercial products constitute endorsement or recommendation for use.

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I. BACKGROUND

The Coso Junction Planning Area (Coso Junction) was initially designated as a PM10 nonattainment area in 1987 along with the Indian Wells Valley and Trona areas. Together they comprised the Searles Valley PM10 nonattainment area. The Great Basin Unified Air Pollution Control District (District) adopted the first PM10 attainment plan for the Coso Junction portion of the Searles Valley PM10 nonattainment area in November 1991. The Coso Junction attainment demonstration was based on controlling dust from Owens Lake. In August 2002, the US Environmental Protection Agency (U.S. EPA) redesignated the Searles Valley into three separate PM10 nonattainment areas; Coso Junction, Indian Wells Valley, and Trona.

On May 19, 2010, the U.S. EPA finalized its determination in the Federal Register that Coso Junction attained the 24-hour PM10 standard. Based on their clean data finding, U.S. EPA has determined that certain nonattainment area requirements do not apply, including those for reasonable further progress (RFP), an attainment demonstration, reasonably available control measures (RACM), and contingency measures, because these provision's sole purpose is to achieve attainment of the standard. On May 17, 2010, the District adopted the PM10 Redesignation Request and Maintenance Plan (Plan) for Coso Junction. The Plan officially requests that this area be redesignated to attainment for the PM10 standard and charts the course for continued maintenance of the standard. The concerted adoption of controls on Owens Lake resulted in the Coso Junction attaining the 24-hour PM10 standard based on 2007-2009 PM10 data.

II. REDESIGNATION REQUIREMENTS

Air Resources Board (ARB) staff reviewed the Coso Junction PM10 Maintenance Plan within the context of the Clean Air Act (Act), which identifies the following requirements an area must meet to be redesignated to attainment:

A. The PM10 standard has been attained;
B. The District has an approved State Implementation Plan (SIP) and the State has met all applicable Act requirements for PM10 in the nonattainment area;
C. The improvement in PM10 air quality is due to permanent and enforceable emission reductions; and
D. U.S. EPA has approved a maintenance plan.

The Act also sets the general framework for maintenance plans[1]. Each PM10 maintenance plan must provide for continued maintenance of the PM10 standard for ten years after redesignation and includes the following components:

1. Attainment emission inventory;

[1] Calcagni, John, Memorandum, *Procedures for Processing Requests to Redesignate Areas to Attainment, Office of Air Quality Planning and Standards*, Research Triangle Park, North Carolina, September 4, 1992. http://www.epa.gov/ttn/oarpg/t5/memoranda/redesignmem090492.pdf

2. Maintenance demonstration;
3. Commitment to continue the monitoring network operation;
4. Commitment for verification of continued attainment; and
5. Contingency plan to promptly correct any violation of the PM10 standard that occurs after the area has been redesignated.

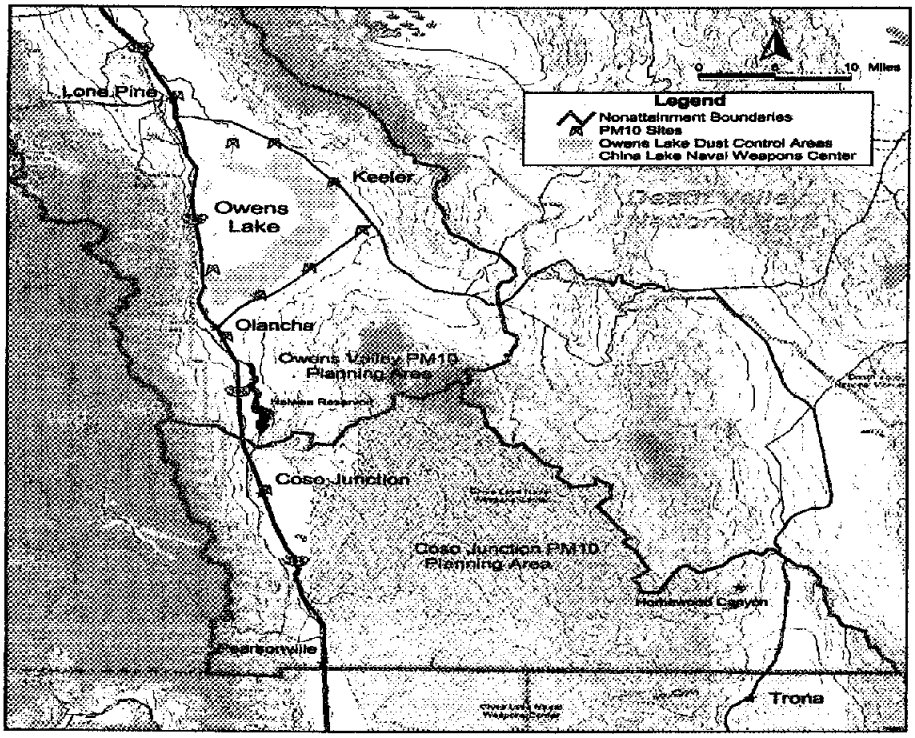
III. EVALUATION OF THE COSO JUNCTION PLAN

Based on review of the Coso Junction PM10 Maintenance Plan and the District's supporting technical analysis, ARB staff concurs that the Plan meets the Act's requirements. The following sections describe the major elements of the Plan and the redesignation request.

A. Coso Junction Attains the 24-Hour PM10 Standard

PM10 is measured at one monitoring station in Coso Junction (Figure 1). A TEOM (tapered element oscillating microbalance) collects hourly PM10 samples at this site. The 24-hour standard is met when the estimated number of exceedances measured over a three year period averages one or less per year. Daily PM10 monitoring data collected at Coso Junction over the last 3 years has shown on average no more than 1 exceedance of the PM10 standard per year as required to demonstrate attainment of the federal standard. Figure 1 illustrates the Coso Junction PM10 nonattainment area, monitor locations, and the area's close proximity to Owens Lake.

Figure 1. PM10 Monitoring Stations in Coso Junction



On three days over the 2007 to 2009 period, the 24-hour standard was exceeded due to high wind conditions that suspended fugitive dust from an unpaved parking area and from Owens Lake. The owner of the unpaved parking area was notified and the area was graveled in 2008 and surfaced with asphalt in 2009 to control fugitive dust. Table 1 shows the maximum 24-hour concentration at the Coso Junction site between 2007 and 2009 and average exceedance days, demonstrating attainment.

Table 1. Coso Junction PM10 Data from 2007 to 2009

Monitoring Station	Observed Maximum 24-hour Concentration (μg/m^3)			24-Hour Exceedance Days	3-year Average Exceedance Days
	2007	2008	2009	2007-2009	2007-2009
Coso Junction	283	137	168	3	1

B. The State Has Met Applicable Act Requirements

ARB and the District have met all of the Act requirements applicable for a moderate PM10 nonattainment area to be considered for redesignation. Due to the clean data finding, this Plan will serve as meeting the requirement of an approved SIP.

C. Improvement in Coso Junction's PM10 Air Quality is Due to Permanent and Enforceable Reductions in Emissions

Coso Junction is an isolated area with a population of roughly 100 people. The main source of PM10 pollution in Coso Junction is transport of fugitive dust from the Owens Valley. In 1998, the Owens Valley SIP was adopted and approved by the U.S. EPA including a control strategy that required dust controls on 16.5 square miles of the lakebed. Under the Owens Valley SIP, the City of Los Angeles is responsible for mitigating the dust generated from Owens Lake in order to bring the area into attainment with the PM10 standard. (GBUAPCD, 1998) The Owens Valley SIP was revised in 2003 to expand dust controls to 29.8 square miles of the lake bed by December 31, 2006. The City of Los Angeles successfully implemented these control measures by the required deadline.

In 2008, the Owens Valley SIP was amended to expand control requirements to a total of 43.1 square miles of the Owens Lake bed. The City of Los Angeles is expected to have dust control measures implemented on 39.6 square miles of the lakebed by April 1, 2010, and then to expand the control area to 43.1 square miles by October 1, 2010. Overall, PM10 emissions from the Owens Lake bed have been reduced by 90% since 2000 when the City of Los Angeles initiated efforts to control windblown dust at Owens Lake. Thus, the improvement in Coso Junction is due to permanent and enforceable reductions.

D. Maintenance Plan

The Coso Junction PM10 Maintenance Plan includes the following components: emission inventory; commitment to continue monitoring network operation; commitment for verification of continued attainment; and contingency plan.

1. Attainment Emission Inventory

An emission inventory is a critical tool used to support evaluation, control, and mitigation of air pollution which is comprised of a systematic listing of the sources of air pollutants along with the amount of pollutants emitted from each source or category over a given period of time. Emission inventories are estimates of the air pollutant emissions released into the environment – they are not direct ambient concentration measurements. To determine the expected emissions in future years, emission inventories incorporate the effects of growth and existing regulations (baseline inventories). An attainment inventory identifies the level of emissions during the period when air quality data show attainment.

The Coso Junction PM10 Maintenance Plan presents an updated 2009 attainment inventory of direct PM10 emissions split by source subcategory. Inventory updates include the latest point, area, and mobile source emissions for the Coso Junction. Total PM10 emissions are estimated at 1,427 pounds per day for the Coso Junction, which is less than 0.1% of the emissions caused by windblown dust from Owens Lake. In addition to the 2009 adjusted baseline PM10 emissions, the Coso Junction PM10 Maintenance Plan provides emission projections out to 2025. No significant growth or changes in the emission inventory are expected for Coso Junction through the year 2025.

Table 2. Coso Junction PM10 Emissions Inventory

Daily PM10 Emissions for 2009 through 2025	
Stationary Sources	Pounds/day
California Lightweight Pumice	167
China Lake Naval Air Weapons Station	84
Coso Operating Company	953
Halliburton Services	20
Twin Mountain Rock	58
Area Sources	
Unpaved Roads	33
Paved Roads	101
Mobile Sources	
On-Road Motor Vehicles	12
Total PM10 (pounds per day)	1,427

2. Maintenance Demonstration

Coso Junction is projected to maintain attainment with the PM10 standards due to ARB, District, and other State and local control measures already in place. No significant growth or changes in the emission inventory are expected for Coso Junction through the year 2025. Thus, Coso Junction is expected to maintain the PM10 standard. In addition, regional PM10 emissions are projected to decrease even further in the future as a result of the additional controls on Owens Lake.

3. PM10 Monitoring Network

The District commits to continue PM10 monitoring to verify continued attainment of the PM10 standard. The existing PM10 monitoring network in Coso Junction includes a PM10 TEOM monitor located at the Highway 395 rest area in Coso Junction (Figure 1). Federal regulations require daily sampling at the site reporting peak PM10 concentrations. This real-time PM10 monitor meets this daily monitoring requirement.

4. Verification of Continued Attainment

To verify continued attainment of the PM10 standard, the District commits to continue daily PM10 monitoring at the Coso Junction rest area to help ensure new sources of PM10 are identified and controlled, if necessary.

5. Contingency Plan

The Act requires the maintenance plan to include contingency provisions for prompt correction of any PM10 standard violation that might occur after the area has been redesignated to attainment. The maintenance plan is not required to contain fully adopted contingency measures that will go into effect without further state action as is required in attainment SIPs. Instead, for maintenance plans, the area must have a plan to ensure that contingency measures are adopted once they are triggered.

District staff believes the control strategy and contingency requirements in the 2008 Owens Valley PM10 SIP are adequate to protect air quality in the Coso Junction area. Therefore, no additional contingency measures will be needed to ensure future compliance with the federal PM10 standard in Coso Junction.

IV. STAFF RECOMMENDATION

ARB staff has reviewed the PM10 Redesignation Request and Maintenance Plan for Coso Junction and consulted with District staff during this review. ARB staff finds that the Coso Junction PM10 Maintenance Plan meets all applicable Act requirements. ARB staff believes that implementation of this Plan will continue to maintain PM10 levels below the national air quality standard in Coso Junction. Therefore, we recommend that the Board adopt the Coso Junction PM10 Maintenance Plan as a revision to the California SIP for submittal to U.S. EPA. In addition, ARB staff recommends that the Board approve the District's request that Coso Junction be redesignated from nonattainment to attainment for the national PM10 standard.

PROPOSED

State of California
AIR RESOURCES BOARD

Resolution 10-25

June 24, 2010

Agenda Item No: 10-6-1

WHEREAS, the Legislature in Health and Safety Code section 39602 has designated the State Air Resources Board (ARB or Board) as the air pollution control agency for all purposes set forth in federal law;

WHEREAS, the ARB is responsible for the preparation of the State Implementation Plan (SIP) for attaining and maintaining the national ambient air quality standards (NAAQS) as required by the federal Clean Air Act (the Act; 42 U.S.C. section 7401 et seq.), and to this end is directed by Health and Safety Code section 39602 to coordinate the activities of all local and regional air pollution control and air quality management districts (districts) necessary to comply with the Act;

WHEREAS, section 39602 of the Health and Safety Code also provides that the SIP shall include only those provisions necessary to meet the requirements of the Act;

WHEREAS, ARB has responsibility for ensuring districts meet their responsibilities under the Act pursuant to sections 39002, 39500, 39602, and 41650 of the Health and Safety Code;

WHEREAS, ARB is authorized by section 39600 of the Health and Safety Code to do such acts as may be necessary for the proper execution of its powers and duties;

WHEREAS, sections 39515 and 39516 of the Health and Safety Code provide that any power, duty, purpose, function or jurisdiction of the Board may be delegated to the Board's Executive Officer as the Board deems appropriate;

WHEREAS, the local air districts have primary responsibility for the control of air pollution from non-vehicular sources and for adopting control measures, rules, and regulations to attain the NAAQS within their boundaries pursuant to sections 39002, 40000, 40001, 40701, 40702, and 41650 of the Health and Safety Code;

WHEREAS, the Great Basin Unified Air Pollution Control District (District) was established pursuant to section 40150 of the Health and Safety Code as the air pollution control district responsible for carrying out these responsibilities in the Coso Junction Planning Area located in Inyo County;

WHEREAS, the United States Environmental Protection Agency (U.S. EPA) designated the Coso Junction Planning Area as a "moderate" PM10 nonattainment area in 2002;

WHEREAS, in November 2004, the District adopted a SIP for the Coso Junction Planning Area which relied on implementing dust controls at Owens Lake, which was scheduled to implement dust control measures on 30 square miles of the lake bed by December 31, 2006;

WHEREAS, a dispersion modeling analysis showed these dust mitigation efforts would be adequate to bring the Coso Junction Planning Area into attainment;

WHEREAS, due to a consent decree, U.S. EPA is required to either redesignate the Coso Junction Planning Area to attainment for PM10 or bump the area up to "serious" by July 31, 2010;

WHEREAS, section 107(d)(3)(D) of the Act provides that a state may request U.S. EPA to redesignate an area from nonattainment to attainment for the NAAQS;

WHEREAS, section 107(d)(3)(E) of the Act sets forth the requirements which must be met for U.S. EPA to redesignate an area from nonattainment to attainment;

WHEREAS, consistent with section 107(d)(3)(E) of the Act, the District has demonstrated attainment of the PM10 NAAQS in the 2007-2009 period for the Coso Junction Planning Area, based on quality-assured federal reference method monitoring data from the State and local monitoring network;

WHEREAS, on May 19, 2010, U.S. EPA issued a final clean data finding for the Coso Junction Planning Area;

WHEREAS, the clean data finding relieves the Coso Junction Planning Area from developing an attainment demonstration, Reasonable Further Progress, Reasonable Available Control Measures, and contingency measures;

WHEREAS, the District developed the Coso Junction Maintenance Plan to address the requirements of the Act;

WHEREAS, the Coso Junction Maintenance Plan contains:

1. Attainment Emission Inventory;
2. Maintenance Demonstration; and
3. Contingency Plan.

WHEREAS, no significant growth is expected in the emissions inventory through the year 2025;

WHEREAS, since transportation sources were not found to significantly contribute to the nonattainment problem in the Coso Junction Planning Area, transportation conformity budgets are not required;

WHEREAS, federal law set forth in section 110(l) of the Act and Title 40, Code of Federal Regulations, section 51.102, requires that one or more public hearings, preceded by at least 30 days notice and opportunity for public review, must be conducted prior to the adoption and submittal to the U.S. EPA of any SIP revision;

WHEREAS, as required by federal law, the District made the Coso Junction Maintenance Plan available for public review at least 30 days prior to the hearing date;

WHEREAS, following a public hearing on May 17, 2010, the District Board voted to:

1. Adopt the Coso Junction Maintenance Plan to fulfill the applicable requirements of the Act for a moderate PM10 nonattainment area to be redesignated to attainment; and
2. Request a redesignation for the Coso Junction Planning Area to attainment for the PM10 standard.

WHERAS, the District submitted the Coso Junction Maintenance Plan to ARB as a SIP revision on May 17, 2010, in accordance with State and federal law;

WHEREAS, the District requests that the Coso Junction Planning Area be redesignated from nonattainment to attainment with the federal PM10 standard;

WHEREAS, the California Environmental Quality Act (CEQA) requires that no project which may have significant adverse environmental impacts may be adopted as originally proposed if feasible alternative or mitigation measures are available to reduce or eliminate such impacts, unless specific overriding considerations are identified outweigh the potential adverse consequences of any unmitigated impacts;

WHEREAS, the District determined they are exempt from CEQA because the SIP will not result in a direct or reasonably foreseeable indirect physical change in the environment; and

WHEREAS, the Board finds that:

1. California's air pollution control programs have successfully reduced PM10 ambient concentrations leading to PM10 NAAQS attainment in the Coso Junction Planning Area;
2. The Coso Junction PM10 Maintenance Plan is necessary for U.S. EPA to redesignate the Coso Junction to attainment for the PM10 NAAQS;
3. The District's Coso Junction PM10 Maintenance Plan complies with the requirements of section 107(d)(3)(E) of the Act;

4. The Coso Junction PM10 Maintenance Plan provides for maintenance of the PM10 NAAQS through 2025;
5. Consistent with U.S. EPA guidance, the Coso Junction PM10 Maintenance Plan includes an attainment emission inventory, commitments by the District to continue operating the PM10 monitoring network; and a process to verify continued PM10 attainment;
6. The Coso Junction PM10 Maintenance Plan includes contingency provisions to ensure prompt correction of any post-redesignation violation of the PM10 NAAQS; and
7. The Coso Junction PM10 Maintenance Plan relies entirely on adopted regulations to demonstrate continued maintenance. ARB regulations which have been adopted and are reflected in the baseline emission projections were subject to environmental review and no further analysis is required at this time.

WHEREAS, the Board further finds the ARB has reviewed and considered the Coso Junction Maintenance Plan, along with the comments presented by interested parties, and ARB staff finds the SIP meets the requirements of the Act and CEQA.

NOW, THEREFORE, BE IT RESOLVED that the Board hereby adopts the Coso Junction Maintenance Plan and Redesignation Request as a revision to the California SIP.

BE IT FURTHER RESOLVED that the Board hereby directs the Executive Officer to submit the Coso Junction Maintenance Plan together with the appropriate supporting documentation to the U.S. EPA for approval as revision to the California SIP; to be effective, for purposes of federal law, upon approval by U.S. EPA.

BE IT FURTHER RESOLVED that the Board directs the Executive Officer to work with the District and U.S. EPA and take appropriate action to resolve any completeness or approvability issues that may arise regarding the SIP submission.

BE IT FURTHER RESOLVED that the Board authorizes the Executive Officer to include in the SIP submittal any technical corrections, clarifications, or additions that may be necessary to secure U.S. EPA approval.

BE IT FURTHER RESOLVED, that the Board certifies pursuant to 40 C.F.R. Section 51.102 that the proposed SIP revision was adopted after notice and public hearing as required by 40 C.F.R. Section 51.102.

TITLES 13 AND 17. CALIFORNIA AIR RESOURCES BOARD

NOTICE OF PUBLIC HEARING TO CONSIDER THE ADOPTION OF PROPOSED AMENDMENTS TO THE REGULATIONS TO REDUCE EMISSIONS FROM DIESEL ENGINES ON COMMERCIAL HARBOR CRAFT OPERATED WITHIN CALIFORNIA WATERS AND 24 NAUTICAL MILES OF THE CALIFORNIA BASELINE

The Air Resources Board (ARB or Board) will conduct a public hearing at the time and place noted below to consider the adoption of amendments to the regulations affecting commercial harbor craft (title 17, California Code of Regulations (CCR) section 93118.5 and title 13, CCR section 2299.5).[1] These amendments will further reduce emissions of diesel particulate matter (PM) and oxides of nitrogen (NO_x) from diesel engines on commercial harbor craft operating in any California port, roadstead or terminal facility, or within all California inland waters; all California estuarine waters; and within 24 nautical miles, except as otherwise specified in this proposal, of the California baseline (collectively referred to hereinafter as "Regulated California Waters"). The Board adopted regulations affecting Commercial Harbor Craft (CHC) on November 17, 2007. These regulations became effective on January 1, 2009. The primary purpose of the proposed amendments is to require that diesel-fueled engines on crew and supply, barge, and dredge vessels be subject to in-use engine requirements of the CHC regulation (title 17, CCR section 93118.5). The proposed amendments also include several additional clarifying and/or editorial amendments to the CHC regulation. Minor conforming amendments are proposed to the Low Sulfur Fuel Requirement Regulation for Commercial Harbor Craft (title 13, CCR section 2299.5) to align numbering changes to the CHC regulation.

DATE: June 24, 2010

TIME: 9:00 a.m.

PLACE: California Environmental Protection Agency
Air Resources Board
Byron Sher Auditorium, Second Floor
1001 I Street
Sacramento, California 95814

This item may be considered at a two-day meeting of the Board, which will commence at 9:00 a.m., June 24, 2010, and may continue at 8:30 a.m., June 25, 2010. This item may not be considered until June 25, 2010. Please consult the agenda for the meeting, which will be available at least 10 days before June 24, 2010, to determine the day on which this item will be considered.

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[1]Title 17, CCR section 93118.5. is known as the Commercial Harbor Craft Regulation (CHC regulation) and establishes emission standards, reporting, record keeping, fuel, and monitoring requirements for certain categories of marine vessels. Title 13, CCR section 2299.5 is the corresponding Low Sulfur Fuel Regulation for Commercial Harbor Craft.

INFORMATIVE DIGEST OF PROPOSED ACTION AND POLICY STATEMENT OVERVIEW

Sections Affected: Proposed amendment of title 13, California Code of Regulations (CCR) section 2299.5 and title 17, CCR section 93118.5. The following documents would be incorporated in the amendments by reference: (1) the following National Oceanic and Atmospheric Administration (NOAA) Nautical Chart, as authored by the NOAA Office of Coast Survey: (G) Chart 18740, San Diego to Santa Rosa Island (March 2007); (2) U.S. Environmental Protection Agency (U.S. EPA) Tier 2 Nonroad Emission Standards, set forth in Title 40, Code of Federal Regulations (CFR) Part 89.112(a), (as it existed on April 27, 2010); (3) the U.S. EPA Tier 2 Family Emissions Limit set forth in Title 40, CFR Part 89.112(d), (as it existed on April 27, 2010); (4) U.S. EPA Tier 3 Nonroad Emission Standards set forth in Title 40, CFR Part 89.112(a), (as it existed on April 27, 2010); (5) the U.S. EPA Tier 3 Family Emissions Limit set forth in Title 40, CFR Part 89.112(d) (as it existed on April 27, 2010); (6) the U.S. EPA Final Tier 4 Nonroad Emission Standards, set forth in Title 40, CFR section Part 1039.101, (as it existed on April 27, 2010); (7) the U.S. EPA Tier 4 FEL set forth in Title 40, CFR Part 1039.101 (as it existed on April 27, 2010); (8) the U.S. EPA Interim Tier 4 Nonroad Emission Standards, set forth in Title 40, CFR Part 1039.101, (as it existed on April 27, 2010); (9) The methods and procedures set forth in Title 40, CFR Parts 94 and 1042 (as they existed on April 27, 2010); and (10) The methods and procedures set forth in Title 40, CFR Parts 89 and 1039 (as they existed on April 27, 2010).

Background: Over 90 percent of Californians breathe unhealthful air at times. To improve air quality and human health, ARB establishes requirements to reduce emissions from new and in-use on-road and off-road vehicles, engines, and other sources. The CHC regulation (title 17, CCR section 93118.5) and the corresponding Low Sulfur Fuel Requirement for Commercial Harbor Craft (title 13, CCR section 2299.5) are part of ARB's ongoing effort to reduce PM and NO_x emissions from diesel-fueled engines and vehicles and improve air quality associated with goods movement.

Health and Safety Code (H&SC) sections 43013 and 43018 direct ARB to adopt standards and regulations that the Board has found to be necessary, cost-effective, and technologically feasible for all mobile source categories, including off-road diesel engines and equipment such as marine vessels, through the setting of emission control requirements. Specifically, H&SC 43013 directs ARB to adopt such standards and regulations on marine vessels to the extent permitted by federal law.

The California Toxic Air Contaminant Identification and Control Program, established under California law by Assembly Bill 1807 (Stats. 1983, Ch. 1047) and set forth in H&SC sections 39650-39675, requires ARB to identify and control air toxicants in California. In 1998, the Board identified diesel PM as a toxic air contaminant (TAC) with no Board-specified threshold exposure level.

Following the identification of a substance as a TAC, H&SC section 39665 requires ARB, with participation of the air pollution control and air quality management districts (districts) and in consultation with affected sources and interested parties, to prepare a report on the need and appropriate degree of regulation for that substance. Health and Safety Code section 39665(b) requires that this "needs assessment" address, among other things, the technological feasibility of proposed airborne toxic control measures (ATCMs) and the availability, suitability, and relative efficacy of substitute products or processes of a less hazardous nature.

A needs assessment for diesel PM was conducted between 1998 and 2000, which resulted in ARB's development of the Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles (Diesel RRP). The Diesel RRP presented information that identified the available options for reducing diesel PM and recommended control measures to achieve further reductions. The scope of the Diesel RRP was broad, addressing all categories of engines, both mobile and stationary.

Once ARB has evaluated the need and appropriate degree of regulation for a TAC, H&SC section 39666(c) requires ARB to adopt regulations to reduce emissions of the TAC from nonvehicular sources to the lowest level achievable through the application of best available control technology (BACT) or a more effective control method, in consideration of cost, risk, environmental impacts, and other specified factors. In developing the proposed amendments, State law also requires an assessment of the appropriateness of substitute products or processes.

The purpose of this proposed regulatory action is to reduce emissions of diesel PM and NO_x from in-use engines on crew and supply, barge and dredge vessels. Diesel PM emission reductions from commercial harbor craft are needed to reduce cancer risk, premature mortality, and other adverse health impacts from exposure to people who live in the vicinity of California's major ports and shipping lanes. The proposed amendments help to achieve the 2020 goals set forth in the 2000 Diesel RRP and the 2006 Emission Reduction Plan for Ports and Goods Movement of reducing diesel PM emissions and health risks by 85 percent. Reductions in diesel PM and NO_x (which forms "secondary" nitrate PM in the atmosphere as well as contributes to the formation of ozone) will also assist California in its goal of achieving and maintaining State and federal air quality standards.

Staff estimates about a 55 percent reduction in diesel PM emissions and a 25 percent reduction in NO_x emissions from crew and supply, barge, and dredge vessels due to the proposed amendments in 2025. The proposed amendments will reduce about 275 tons of diesel PM and 3,475 tons of NO_x emissions between 2011 and 2025. These emission reductions will occur in areas along waterways and near ports where environmental justice concerns are especially prevalent.

ARB staff has prepared a Staff Report: Initial Statement of Reasons (Staff Report) as part of this rulemaking. Together with the needs assessment (i.e., the Diesel RRP), this document serves as a report on the need and appropriate degree of regulation of diesel

engines used on in-use crew and supply boats, barges, and dredges operating in Regulated California Waters.

DESCRIPTION OF THE PROPOSED REGULATORY ACTION

The ARB staff is proposing to amend the CHC regulation (title 17, CCR section 93118.5) that the Board adopted on November 17, 2007, and became effective January 1, 2009. The amendments primarily subject the diesel-fueled engines on crew and supply, barge, and dredge vessels to in-use engine requirements in the CHC regulation. Other clarifying and/or editorial amendments are also included. A more detailed description of the proposed amendments is presented below. Minor amendments to align section numbering are also proposed to the Low Sulfur Fuel Regulation for Commercial Harbor Craft (title 13, CCR section 2299.5).

Commercial Harbor Craft Regulation (title 17, CCR section 93118.5)

Applicability

The proposed amendments would extend the applicability of in-use engine requirements of the CHC regulation to in-use (existing) crew and supply, barge, and dredge vessels operating within any of the Regulated California Waters. Regulated California Waters include all California inland waters, all California estuarine waters, and all waters within a zone 24 nautical miles seaward of the California coastline, except for specified areas along the Southern California coastline.

Emission Limits

The proposed amendments would require in-use diesel engines on crew and supply, barge, and dredge vessels to meet United States Environmental Protection Agency (U.S. EPA) Tier 2 or Tier 3 marine or off-road (nonroad) engine standards in effect at the time the engine is required to comply under the proposed requirements.

In-Use Vessels

The proposed amendments would require that currently unregulated ("Tier 0") and Tier 1 in-use propulsion and auxiliary engines on crew and supply, barge, and dredge vessels meet emission limits equal to or more stringent than the U.S. EPA engine standards in effect for the year that in-use engine compliance is required under this proposal. Separate compliance schedules are proposed for crew and supply vessels and for barge and dredge vessels. The compliance schedules are based on engine model and horsepower and designed to remove the oldest, dirtiest engines first.

Allowing Certified Off-Road or Nonroad Engines to be used as Auxiliary Engines

The proposed amendments would allow vessel owners/operators more flexibility to comply with the CHC regulation by allowing currently available Tier 2 or higher certified off-road engines to meet the regulatory requirements for auxiliary engines. Owners/operators may elect to install a Tier 3 (marine or off-road) engine on a vessel as a replacement auxiliary engine after Tier 4 marine, interim Tier 4 and final Tier 4 off-road standards are in effect, but only if the engine being replaced is not a Tier 4 certified engine.

Adding "Swing Engine" Recordkeeping Requirements

The proposed amendments add a definition and reporting and recordkeeping requirements for swing engines. A swing engine is used to replace an existing engine that has to be removed from service for maintenance or repair. Swing engines would be considered in-use engines and must meet the applicable in-use engine compliance requirements.

Delete Multipurpose Harbor Craft Definition and Low Use Exemption

The "multipurpose harbor craft" term and definition, and the low use exemption in section (c)(12) have been removed in the proposed amendments. Instead, language has been added that allows a vessel owner/operator to operate vessel engines for up to 300 hours per year in any single category or combination of categories that are subject to in-use requirements. Barge and dredge vessels are limited to operating less than 80 hours per year to be exempt from the in-use engine compliance.

Special Circumstances to Use Non-CARB Diesel Fuel

The current CHC regulation requires CARB diesel fuel or specific alternative diesel fuel to be used. The proposed amendments would allow the use of U.S. EPA on-road diesel fuel or U.S. EPA nonroad diesel fuel (after June 1, 2010), in those situations where the vessel operator cannot obtain CARB diesel fuel prior to operating in Regulated California Waters.

Deadline for Alternative Control of Emission Plans

The current CHC regulation does not specify the date by which a vessel owner/operator must submit an annual Alternative Control of Emission (ACE) Plan. The proposed amendments would require the ACE to be submitted prior to or before February 28 of the year the vessel engine compliance is required.

Out-of-State Vessels Operating in California

The proposed amendments clarify that out-of-state CHC vessel owners/operators must complete an initial report within 30 days of a vessel being brought into California to operate in Regulated California Waters and to submit a Compliance Plan within 90 days demonstrating how the in-use engine requirements shall be met. All other applicable requirements of the CHC regulation shall be met upon initial operation of a vessel in Regulated California Waters.

Replacement Engine Exemption

The current CHC regulation requires that if an engine is replaced, the replacement engine must meet the U.S. EPA current model year marine engine standards. The proposed amendments provide the vessel owner/operator an exemption, in specific cases, to install a non-compliant engine if the owner/operator can demonstrate that a suitable engine replacement is not available, or that a new engine will not operate properly with the existing engines. The Executive Officer must approve any exemption request.

Allowing the Use of an Available Engine to Replace an Older Engine Subject to In-use Requirements

The proposed amendments would allow, in certain situations, an engine that does not meet the Tier 2 or Tier 3 requirements to be used on a temporary basis. The engine must be within the same fleet, and the original compliance date of the older, replaced engine must be kept.

Clarification of Requirements Applicable to Newly Acquired Ferry Vessels

The proposed amendments have been reworded to clarify existing requirements that owners/operators of new ferries having the capacity to transport 75 or more passengers are required to equip diesel propulsion engines that meet either Tier 2 or Tier 3 marine standards with BACT. BACT is not required for diesel propulsion engines that are certified to Tier 4 marine standards.

Compliance Extensions

The proposed amendments would expand the availability of the current compliance extension of subsection (e)(6)(E)4 to allow an owner to also request a compliance extension in situations where that owner has multiple vessels that are subject to compliance dates of 2011 or 2012 for crew and supply, barge, and dredge vessels, similar to the current compliance extension allowed for ferries, excursion vessels, tugboats, towboats, and push boats.

Exemptions

The proposed amendments would eliminate the exemption in section (c)(7)(C) of the current CHC regulation. This change will make harbor craft engines registered in the Portable Equipment Registration Program (PERP) or permitted by air districts prior to January 1, 2009 subject to the CHC regulation. This amendment aligns the CHC regulation with recent amendments to PERP, making all commercial harbor craft vessels, including barge and dredge vessels, subject to a single statewide regulation.

Definitions

The proposed amendments revise section (d) of the existing regulation by adding several definitions and deleting one to clarify the proposed amended language. Definitions that were added include, "certified nonroad engine", "dredge", "family emission limit", "permanently affixed to a harbor craft", "regulated in-use vessel", "swing engine", "tier 2 off-road or nonroad emission standards", "tier 3 off-road or nonroad emission standards", "tier 4 final off-road or nonroad emission standards", "tier 4 interim off-road or nonroad emission standards" and deleting the definition of "multipurpose harbor craft." The amendments would also update a new chart incorporated by reference in "California Baseline" - "Chart 18740, San Diego to Santa Rosa Island" (March 2007 for April 2005).

Low Sulfur Fuel Requirements for CHC (title 13, CCR section 2299.5)

The proposed amendments to the CHC regulation will change the section numbers that are referenced in the Low Sulfur Fuel Requirement for CHC regulation. Proposed amendments to section 2299.5, title 13, CCR would align section numbers with proposed amendments to section 93118.5, title 17, CCR.

COMPARABLE FEDERAL REGULATIONS

U.S. EPA has already promulgated Tier 3 and Tier 4 standards for new marine and off-road (nonroad) engines. However, no federal standards have been promulgated addressing emission reductions from in-use commercial harbor craft engines. Under federal Clean Air Act (CAA) section 213, U.S. EPA is without authority to adopt in-use standards for off-road (nonroad) engines, including marine engines.[2]

California is the only governmental entity in the United States authorized by the CAA, in the first instance, to adopt emission requirements for in-use off-road engines.[3] Section 209(e)(1) of the CAA conclusively preempts states, including California, from adopting requirements for new off-road engines less than 175 horsepower that are used in farm or construction equipment. However, the proposed amendments address off-

[2] The California term "off-road" and the federal term "nonroad" refer to the same sources and are used interchangeably.

[3] See *Engine Manufacturers Association v. U.S. EPA* (D.C. Cir. 1996) 88 F.3d 1075, 1089-1091.

road engines used in marine vessels, rather than those used in farm or construction equipment. Under section 209(e)(2), California may adopt and enforce emission standards and other requirements for off-road engines and equipment not conclusively preempted by section 209(e)(1), so long as California applies for and receives authorization from the Administrator of U.S. EPA.

AVAILABILITY OF DOCUMENTS AND AGENCY CONTACT PERSONS

The Board staff has prepared a Staff Report: Initial Statement of Reasons (ISOR) for the proposed regulatory action, which includes a summary of the economic and environmental impacts of the proposed regulatory amendments and which also describes the basis of the proposed action in more detail. The Staff Report is entitled, "Staff Report: Initial Statement of Reasons for the Proposed Rulemaking – Proposed Amendments to the Regulations to Reduce Emissions from Diesel Engines on Commercial Harbor Craft Operated Within California Waters and 24 Nautical Miles of the California Baseline."

Copies of the ISOR with the full text of the proposed regulatory language may be accessed on the ARB's website listed below, or may be obtained from the Public Information Office, Air Resources Board, 1001 I Street, Visitors and Environmental Services Center, First Floor, Sacramento, California 95814, (916) 322-2990 at least 45 days prior to the scheduled hearing on June 24, 2010.

Upon its completion, the Final Statement of Reasons (FSOR) will be available and copies may be requested from the agency contact persons in this notice, or may be accessed on the ARB's website listed below.

Inquiries concerning the substance of the proposed regulation may be directed to the designated agency contact persons, Todd Sterling, Air Pollution Specialist, at (916) 445-1034, or Carolyn Suer, Staff Air Pollution Specialist in the Control Strategies Section, at (916) 327-5985.

Further, the agency representative and designated back-up contact persons to whom nonsubstantive inquiries concerning the proposed administrative action may be directed are Lori Andreoni, Manager, Board Administration & Regulatory Coordination Unit, (916) 322-4011, and Amy Whiting, Regulations Coordinator, (916) 322-6533. The Board has compiled a record for this rulemaking action, which includes all the information upon which the proposal is based. This material is available for inspection upon request to the contact persons.

This notice, the Staff Report, and all subsequent regulatory documents, including the FSOR, when completed, are also available on the ARB website for this rulemaking at http://www.arb.ca.gov/regact/2010/chc10/chc10.htm.

COSTS TO PUBLIC AGENCIES AND TO BUSINESSES AND PERSONS AFFECTED

Costs to Businesses and Private Individuals

The determinations of the Board's Executive Officer concerning the costs or savings necessarily incurred by public agencies and private persons and businesses in reasonable compliance with the proposed amendments are presented below.

The total regulatory cost of compliance with the proposed amendments to the CHC regulation is expected to be about $15 million in 2009 expenditure-equivalent dollars (2009 dollars). Regulatory costs are the estimated costs resulting from the proposed amendments taking into consideration the residual value of the in-use engine being replaced, the residual value of the most recent engine rebuild work, recordkeeping and reporting costs, and the time value of money associated with the early engine replacement. These costs would be spread over the years 2011 to 2022. On an annual basis, the cost would vary between approximately $178,000 and $2.7 million per year, averaging about $1.3 million per year. Approximately 60 percent of the compliance costs will be incurred by the crew and supply boat fleets and 40 percent by the barge and dredge fleets.

New equipment costs are the total out-of-pocket costs of complying with the regulation, not taking into consideration the remaining useful life of the engine being replaced. New equipment costs are estimated to be approximately $46 million (2009 dollars) spread over the years 2011 to 2022, with an average annual cost of about $3.9 million. Specifically, the new equipment costs for purchasing and installing a new engine – are costs that the vessel owner would eventually pay, but the proposed amendments require this service to be performed earlier than normal.

Staff estimates the cost-effectiveness of the proposed amendments in terms of dollars per pound of PM emission reduction to be about $35 per pound (2009 dollars) if all the total annualized cost is attributed solely to the PM reduction. Since the proposal would also result in NO_x emission reductions, staff also evaluated cost-effectiveness by attributing half the total annualized cost to the PM emission reductions and half to the NO_x emission reductions. The resulting cost-effectiveness values using the latter method are about $17 per pound of PM and $2,700 per ton of NO_x. These values are based on the cost of regulatory compliance.

California businesses are affected by the proposed annual cost of the amendments to the extent that the implementation of the proposed amendments reduces their profitability. Overall, most affected businesses will be able to absorb the costs of the proposed amendments with no significant adverse impacts on their profitability. This finding is based on the staff's analysis of the estimated change in "return on owner's equity" (ROE). Dun and Bradstreet financial data were used for the analysis, when available, to determine the change in ROE for typical businesses from each industry category. The staff found that the average overall change in ROE was a 0.95 percent

decline. This range in ROE reduction is not considered to represent a significant impact on profitability. Because the proposed amendments would not alter significantly the profitability of most businesses, we do not expect a noticeable change in employment, business creation, elimination, or expansion, and business competitiveness in California for these industries. The change in ROE is expected to be larger for a small business.

The Executive Officer has made an initial determination that the proposed regulatory action will not have a significant statewide adverse economic impact directly affecting businesses, including the ability of California businesses to compete with businesses in other states, or on representative private persons based on the estimated change in ROE. A number of businesses are integrally linked to California ports. However, we do not believe that the added costs of the proposed amendments are high enough for crew and supply, barge, and dredge vessel operators to consider alternate ports outside of California. The ARB staff has considered proposed alternatives and evaluated the economic impact on businesses.

Alternatives that staff considered are described in more detail in the Staff Report.

In accordance with Government Code section 11346.3, the Executive Officer has determined that the proposed regulatory action may affect the creation or elimination of jobs within the State of California, the creation of new businesses or elimination of existing businesses within the State of California, or the expansion of businesses currently doing business within the State of California. Some businesses that provide vessel repower services could expand due to the volume of business created by the regulatory requirements. A detailed assessment of the economic impacts of the proposed regulatory action can be found in the Staff Report.

The Executive Officer has also determined, pursuant to title 1, CCR, section 4, that the proposed regulatory action would affect small businesses.

In accordance with Government Code sections 11346.3(c) and 11346.5(a)(11), the Executive Officer has found that the reporting requirements of the proposed amended regulation which apply to businesses are necessary for the health, safety, and welfare of the people of the State of California.

In accordance with Health and Safety Code sections 43013(a) and (b), the Executive Officer has determined that the standards and other requirements in the proposed amended regulation are necessary, cost-effective, and technologically feasible for diesel engines on all commercial harbor craft and specifically crew and supply, barge, and dredge vessels operated within Regulated California Waters.

Before taking final action on the proposed regulatory action, the Board must determine that no reasonable alternative considered by the Board or that has otherwise been identified and brought to the attention of the Board would be more effective in carrying out the purpose for which the action is proposed or would be as effective and less burdensome to affected private persons than the proposed action.

Costs to Local and State Government Agencies

Pursuant to Government Code sections 11346.5(a)(5) and 11346.5(a)(6), the Executive Officer has determined that the proposed regulatory action would create costs to one State agency, one federal agency, and two local agencies. The California Department of Parks and Recreation operates two crew and supply vessels service Angel Island in the San Francisco Bay area and would be impacted by the in-use engine requirements. Regulatory cost to this state agency is estimated to be about $60,000. Barge and dredge vessels are owned and operated by two local agencies in Santa Cruz and Monterey and by the federal agency, the United States Army Corps of Engineers. The estimated regulatory costs range from approximately $1,900 to $45,000 over the life of the regulation for these agencies that operate barge and dredge vessels. ARB may incur an additional cost of less than $200,000 per year for implementation and enforcement beginning in 2011. The Executive Officer has also determined that the proposed regulatory action would not create savings to any State agency or in federal funding to the State, costs or mandate to any local agency or school district, whether or not reimbursable by the State pursuant to Government Code, title 2, division 4, part 7 (commencing with section 17500), or other nondiscretionary cost or savings to State or local agencies.

In developing this regulatory proposal, ARB staff evaluated the potential economic impacts on representative private persons or businesses. The ARB is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with the proposed action.

A detailed assessment of the economic impacts of the proposed regulatory action can be found in the Staff Report.

SUBMITTAL OF COMMENTS

Interested members of the public may also present comments orally or in writing at the meeting, and comments may be submitted by postal mail or by electronic submittal before the meeting. The public comment period for this regulatory action will begin on May 10, 2010. To be considered by the Board, written comments, not physically submitted at the meeting must be submitted on or after May 10, 2010 and received **no later than 12:00 noon, Pacific Standard Time, June 23, 2010,** and must be addressed to the following:

Postal mail: Clerk of the Board, Air Resources Board
1001 I Street, Sacramento, California 95814

Electronic submittal: http://www.arb.ca.gov/lispub/comm/bclist.php

Please note that under the California Public Records Act (Gov. Code, § 6250 et seq.), your written and oral comments, attachments, and associated contact information (e.g.,

your address, phone, email, etc.) become part of the public record and can be released to the public upon request. Additionally, this information may become available via Google, Yahoo, and any other search engines.

The Board requests, but does not require, that 20 copies of any written statement be submitted and that all written statements be filed at least 10 days prior to the hearing so that ARB staff and Board members have time to fully consider each comment. The Board encourages members of the public to bring to the attention of staff in advance of the hearing any suggestions for modification of the proposed regulatory action.

STATUTORY AUTHORITY AND REFERENCES

This regulatory action is proposed under the authority granted to ARB in Health and Safety Code sections 39600, 39601, 39650, 39658, 39659, 39666, 41511, 43013, and 43018. This action is proposed to implement, interpret, or make specific Health and Safety Code sections 39000, 39001, 39515, 39516, 39650, 39658, 39659, 39666, 41510, 41511, 43013, 43016, and 43018; and *Western Oil and Gas Ass'n v. Orange County Air Pollution Control District*, 14 Cal.3rd 411, 121 Cal.Rptr. 249 (1975).

HEARING PROCEDURES

The public hearing will be conducted in accordance with the California Administrative Procedure Act, title 2, division 3, part 1, chapter 3.5 (commencing with §11340) of the Government Code.

Following the public hearing, the Board may adopt the regulatory language as originally proposed, or with non-substantial or grammatical modifications. The Board may also adopt the proposed regulatory language with other modifications if the text as modified is sufficiently related to the originally proposed text that the public was adequately placed on notice that the regulatory language as modified could result from the proposed regulatory action. In the event that such modifications are made, the full regulatory text, with the modifications clearly indicated, will be made available to the public for written comment at least 15 days before it is adopted.

The public may request a copy of the modified regulatory text from ARB's Public Information Office, Air Resources Board, 1001 I Street, Visitors and Environmental Services Center, First Floor, Sacramento, California, 95814, (916) 322-2990.

To request a special accommodation or language needs for any of the following:

- An interpreter to be available at the hearing.
- Have documents available in an alternate format (i.e. Braille, Large print) or another language.
- A disability-related reasonable accommodation.

Please contact the Clerk of the Board at (916) 322-5594 or by facsimile at (916) 322-3928 as soon as possible, but no later than 10 business days before the

scheduled Board hearing. TTY/TDD/Speech to Speech users may dial 711 for the California Relay Service.

Para solicitar alguna comodidad especial o necesidad de otro idioma para alguna de las siguientes:

- Un intérprete que esté disponible en la audiencia
- Tener documentos disponibles en un formato alterno (por decir, sistema Braille, o en impresión grande) u otro idioma.
- Una acomodación razonable relacionados con una incapacidad.

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CALIFORNIA AIR RESOURCES BOARD

James N. Goldstene
Executive Officer

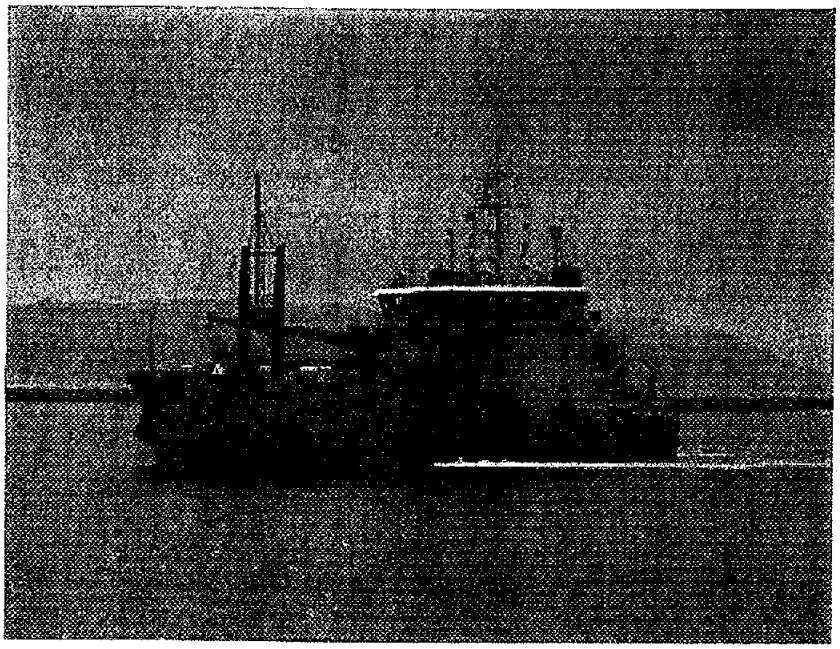
Date: April 27, 2010

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs see our Website at www.arb.ca.gov.

California Environmental Protection Agency

AIR RESOURCES BOARD

STAFF REPORT: INITIAL STATEMENT OF REASONS FOR THE PROPOSED RULEMAKING



AMENDMENTS TO THE REGULATIONS TO REDUCE EMISSIONS FROM DIESEL ENGINES ON COMMERCIAL HARBOR CRAFT OPERATED WITHIN CALIFORNIA WATERS AND 24 NAUTICAL MILES OF THE CALIFORNIA BASELINE

Stationary Source Division
Emissions Assessment Branch

May 2010

STAFF REPORT:
INITIAL STATEMENT OF REASONS
FOR THE PROPOSED RULEMAKING

Public Hearing to Consider

AMENDMENTS TO THE REGULATIONS TO REDUCE EMISSIONS FROM DIESEL ENGINES ON COMMERCIAL HARBOR CRAFT OPERATED WITHIN CALIFORNIA WATERS AND 24 NAUTICAL MILES OF THE CALIFORNIA BASELINE

To be considered by the Air Resources Board on June 24, 2010 at:

California Environmental Protection Agency
Headquarters Building
Byron Sher Auditorium
1001 I Street
Sacramento, California

This report has been prepared by the staff of the Air Resources Board. Publication does not signify that the contents reflect the views and policies of the Air Resources Board, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

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EXECUTIVE SUMMARY

Summary of Proposed Action

The California Air Resources Board (ARB or Board) staff is proposing amendments to the regulations affecting commercial harbor craft.[1] These proposed amendments primarily affect the Commercial Harbor Craft Regulation (CHC regulation) that the Board adopted on November 17, 2007. This regulation became effective on January 1, 2009. In addition, the staff is proposing minor conforming amendments to a complimentary regulation, the Low Sulfur Fuel Requirement for Commercial Harbor Craft, to align numbering changes due to the proposed amendments to the CHC regulation. A copy of the proposed amendments to both regulations is provided in Appendix A of this report. (ARB, 2007a) (ARB, 2007b) (ARB, 2007c)

The primary purpose of the proposed amendments is to subject diesel-fueled engines on crew and supply, barge, and dredge vessels to in-use engine requirements of the CHC regulation. The staff is proposing to add crew and supply vessels because updated information shows that these vessels have similar or greater emissions than vessel categories currently controlled by the CHC regulation. The addition of barge and dredge vessels will amend a situation where this class of vessels are subject to two different statewide regulations. Approximately 175 crew and supply, barge, and dredge vessels operate in California, and are equipped with about 640 diesel-fueled engines. These engines emit about 66 tons per year of diesel particulate matter (PM) and 1,430 tons per year oxides of nitrogen (NO_x). Other amendments are being proposed to clarify requirements and to address issues that have arisen during the implementation of the 2007 CHC regulation.

In developing the proposed amendments, ARB staff worked closely with stakeholders including vessel owner/operators, marine engine industry representatives, and staff from air pollution control and air quality management air districts (districts). The early turnover of in-use, pre-Tier 1 and Tier 1 diesel-engines on crew and supply, barge, and dredge vessels to lower emitting Tier 2 and Tier 3 marine or off-road engines would reduce diesel PM, NO_x, and other air pollutant emissions. These emission reductions will reduce exposures and health risks across California, particularly along the shoreline and near ports. The proposed amendments are technologically feasible, cost-effective, and necessary to carry out the Board's responsibilities and goals, including; 1) the goal of the Diesel Risk Reduction Plan to reduce diesel PM emissions from all sources by 85 percent by 2020; and 2) the Emissions Reduction Plan for Ports and Goods Movement that the Board approved in April 2006. Finally, the emission reductions from

[1]Title 17, CCR section 93118.5 is known as the Commercial Harbor Craft Regulation (CHC regulation) and establishes emission standards, reporting, recordkeeping, fuel, and monitoring requirements for certain categories of marine vessels. Title 13, CCR section 2299.5 is the corresponding Low Sulfur Fuel Regulation for Commercial Harbor Craft.

the proposed amendments are necessary to help attain and maintain ambient air quality standards for fine particulate matter (PM2.5) and ozone.

Proposed Amendments

The proposed amendments to the CHC regulation would:

- Establish in-use emission limits and compliance schedules for auxiliary and propulsion diesel-fueled engines on crew and supply, barge, and dredge vessels that operate in Regulated California Waters. The compliance schedules are based on engine model years and annual hours of operation, and are designed to remove the oldest, dirtiest engines first.
- Eliminate the current exemption for vessel engines registered in PERP or that were permitted by districts before January 1, 2009.
- Allow the use of certified off-road or nonroad engines as auxiliary engines.
- Allow CHC vessels that cannot obtain CARB diesel fuel outside of California to use United States Environmental Protection Agency (U.S. EPA) on-road or nonroad diesel when travelling from their non-California home port.
- Add a definition of "swing engine" and require these engines to meet applicable in-use emission limits and recordkeeping provisions.
- Delete the definition of "multipurpose harbor craft" and "low use exemption", and reword the in-use engine section to clarify that vessels in categories with in-use emissions limits do not have to comply with those limits for engines if they operate less than 300 hours in any single regulated vessel category or combination of categories (or 80 hours for barge and dredge vessels).
- Add a deadline of February 28 for submitting the annual Alternative Control of Emission plans.
- Clarify that the initial reporting and compliance plan reporting requirements also apply to out-of-state vessels that operate in California.
- Allow owners/operators of vessels with multiple engines to apply for an exemption from the new engine requirements if one engine has a catastrophic failure.
- Reword the new ferry vessels Best Available Control Technology section for clarity.
- Allow the use of an available engine to replace an older engine subject to in-use requirements until the original scheduled compliance date of the older engine.
- Make other changes to definitions and edits to regulatory language to improve clarity.

Staff is also proposing minor amendments to the Low Sulfur Fuel Regulation (section 2299.5, title 13, CCR) to align numbering with the amendments to the CHC regulation.

Background

Commercial Harbor Craft

Commercial harbor craft (CHC) include ferries, excursion vessels, tugboats, towboats, crew and supply vessels, work boats, commercial and charter fishing boats, and barge and dredge vessels. Staff estimates there are approximately 4,300 commercial harbor craft vessels with 8,700 diesel-fueled engines operating in California coastal waters.

2007 Commercial Harbor Craft Regulation

In 2007, ARB adopted the CHC regulation, which requires engines on all new vessels to meet applicable U.S. EPA marine engine emission standards at the time the vessel is acquired. The marine emission standards are divided into four increasingly stringent levels (Tiers); the allowed emission level and effective dates vary with horsepower. Replacement engines installed on any in-use harbor craft are required to meet the Tier 2 or Tier 3 standards in effect at the time of purchase of the engine. Existing or in-use engines on ferries, excursion vessels, tugboats, towboats, and pushboats must meet U.S. EPA Tier 2 or Tier 3 standards based on phased-in compliance schedule.

Authority

ARB has authority under California law to adopt the proposed regulation. California Health and Safety Code (HSC) sections 43000, 43000.5, 43013(b) and 43018 provide broad authority for ARB to adopt emission standards and other regulations to reduce emissions from new and in-use vehicular and other mobile sources. Under HSC sections 43013(b) and 43018, ARB is authorized to adopt emission standards for off-road vehicular sources, as expeditiously as possible, to meet State ambient air quality standards. ARB is further mandated by HSC section 39666 to adopt airborne toxic control measures (ATCM) for new and in-use vehicular sources, including Commercial Harbor Craft, for identified toxic air contaminants, such as diesel PM.

Public Outreach

Staff has made a concerted effort to provide opportunities for public participation in this rulemaking action. Staff's public outreach efforts included three public workshops at which draft regulatory concepts, language, and cost estimates were provided. In addition, the Commercial Harbor Craft website was updated with all workshop materials. Staff also held meetings with owner/operators of crew and supply, barge, and dredge vessels, districts, and other interested parties.

Basis for the Proposed Amendments

Crew and Supply Vessels

Crew and supply vessels are primarily used to transport equipment and personnel to and from offshore oil rigs and other offshore vessels. About 60 percent of the companies that own crew and supply vessels are considered small businesses, having less than 100 employees. When ARB adopted the CHC regulation in 2007, crew and supply vessels were subject to the new engine provisions, but existing vessels were not required to meet in-use engine emission limits, because information at that time showed

these vessels had limited hours of operation and emissions. We are now proposing to require existing crew and supply vessels to meet in-use engine emission standards because updated information shows their emissions are similar in magnitude to the emissions from other vessels that are currently subject to the CHC regulation's in-use requirements. Approximately 70 crew and supply vessels with about 240 engines operate in California Regulated Waters. In 2008, these vessels emitted approximately 33 tons of diesel PM and 670 tons of NO_x.

Barge and Dredge Vessels

Barges are marine vessels, usually moved by tugboats or towboats, are used to transport fuel or equipment via water. Dredges are marine vessels used to remove bottom sediment from waterways. Approximately half of the businesses operating barges and dredges are considered small business. Historically, most barge and dredge vessel engines were either regulated under the Portable Engine ATCM by being registered in the Portable Equipment Registration Program (PERP) or subject to district permits. Registration in PERP allows a piece of equipment to operate anywhere in the State, but subject to district authorization. The 2007 CHC regulation was designed to allow barge and dredge vessels that had been registered in PERP or subject to a district permit prior to January 1, 2009, to continue to be subject to the requirements of the Portable Engine ATCM or the district permit. Barge and dredge vessels that were not in PERP or permitted by a district by that date were subject to the requirements of the CHC regulation. However, in-use emission limits were not established for these vessel engines. (ARB, 2007d) (ARB, 2009)

During 2009, it became clear that having some barge and dredges subject to the Portable Engine ATCM and others subject to the CHC regulation was creating compliance and enforcement issues and was confusing to the regulated industry. To address this issue, ARB staff proposed modifying the PERP and the CHC regulation to allow permanently installed auxiliary engines on barges and dredges to register in PERP, and to make these engines subject to the CHC regulation instead of the Portable Engine ATCM. In January 2010, the PERP regulation was amended to allow certified marine engines to register in PERP. These amendments will align the two regulations and allow auxiliary engines on harbor craft vessels to be registered in PERP, but subject only to the requirements of a single statewide regulation - the CHC regulation. Approximately 100 barge and dredge vessels with about 400 engines operate in California Regulated Waters. In 2008, these vessels emitted approximately 33 tons of diesel PM and 760 tons of NO_x.

Two separate compliance schedules are being proposed. One compliance schedule is for crew and supply vessels and one compliance schedule is for barge and dredge vessels. Separate compliance schedules were developed in consideration of the profile of the engine fleets and to provide a transition period for barge and dredge operators from planned compliance with the Portable Engine ATCM to the CHC regulation.

Impacts of the Proposed Amendments

Anticipated Actions to Comply

ARB staff anticipates that, in most cases, engine replacement will be the option used by most vessel owner/operators to meet the proposed emission standards for vessel engines. However, other options such as retrofitting and rebuilding can be used to comply.

Emission Reductions

The proposed amendments would reduce diesel PM and NO_x emissions in coastal areas of the State. The proposed amendments affect about 60 percent of the diesel engines in the crew and supply vessel fleet and 30 percent of the engines in the barge and dredge fleet. Many engines in these vessel fleets are either already at Tier 2 or Tier 3, or exempt due to engine size, or annual hours of operation. Staff estimates about a 55 percent reduction in diesel PM emissions and a 25 percent reduction in NO_x emissions from crew and supply, barge, and dredge vessels due to the proposed amendments in 2025. Staff estimates that the proposed in-use requirements will provide reductions of about 275 tons of diesel PM and 3,475 tons NO_x emissions between 2011 and 2025.

The current impacts of the economy are not expected to significantly affect the estimated emission reductions because crew and supply vessels primarily service oil platforms which have continued production despite the economic downturn. Many barge vessels are used to transport petroleum products which also have not seen significant changes despite the economic downturn. Additionally, dredge operations related to the maintenance of waterways are essential in nature. A slight reduction in GHG emissions should occur due to the replacement of older engines with more fuel efficient new engines.

Public Health Benefits

The proposed amendments will reduce public health risk from exposure to emissions of diesel PM and NO_x. ARB listed Diesel PM as a toxic air contaminant in 1998. In addition, NO_x is a precursor to the formation of ozone and contributes to secondarily formed PM in the lower atmosphere.

Cost to Industry

Staff estimates that the regulatory costs for complying with the proposed amendments would be approximately $15 million (2009 dollars), or about $1.3 million annually over the 2011 through 2022 compliance time period. These regulatory costs are the incremental costs of compliance, and include those costs associated with the early replacement of engines (the residual value of the engine being replaced), the residual value of the most recent engine rebuild work, and the time value of money associated with the early engine replacement. Staff also estimated the new equipment or out-of-pocket cost to industry at approximately $46 million (2009 dollars) over the 2011 through 2022 time period. The new equipment costs are ones that the vessel

owner would eventually pay, but the proposed amendments require this service to be performed earlier than normal.

Economic Impact to Industry

Staff estimated the economic impact of complying with the in-use engine requirements on the crew and supply, barge, and dredge vessel businesses by evaluating the impact of the regulatory cost on typical businesses' "return on owner's equity" (ROE), and found that the overall change in ROE is a 0.95 percent decline for the average regulated business. A decrease in ROE within this range is not considered to represent a significant impact on profitability. These values are based on the regulatory cost of compliance.

Cost to Public Agencies

Staff has determined that a few public agencies would be impacted by the proposed amendments. One state agency, the California Department of Parks and Recreation, owns two crew and supply vessels that are used to service Angel Island in the San Francisco Bay and would be impacted by the in-use engine requirements. Regulatory cost to this state agency would be about $60,000 over the life of the regulation. Barge and dredge vessels are owned and operated by two local agencies in Santa Cruz and Monterey and by the federal agency, the United States Army Corps of Engineers. The estimated regulatory costs range from approximately $1,900 to $46,000 over the life of the regulation for these agencies that operate barge and dredge vessels.

ARB staff will implement and enforce the proposed amendments. An additional enforcement staff person may be needed to enforce the proposed amendments.

Cost-Effectiveness

The cost-effectiveness of the proposed amendments is estimated, based on the regulatory costs, to be about $35 per pound (2009 dollars) of diesel PM reduced if all the cost is attributed to diesel PM reductions. The cost-effectiveness for this regulation is consistent with those of other diesel PM regulations adopted by the Board.

Incentive Funding

Carl Moyer Program funding is a potential funding source for companies that comply early or achieve emission reductions beyond the amendments. However, Carl Moyer funds are only available to self-propelled marine vessels and most barge and dredge vessels would not be eligible. Proposition 1B funds should also be available to specific commercial harbor craft operators. At the Board meeting held on March 25, 2010, the *Proposed Update to the Proposition 1B Program Guidelines* were approved, which included project options for the harbor craft category. The total amount of funding available will depend upon bond sales.

Environmental Justice

The proposed amendments are consistent with ARB environmental justice policies. The proposed amendments will reduce diesel PM and NO_x emissions in coastal areas and near ports where crew and supply, barge, and dredge vessels operate.

Public Comments

Comments have been made by barge and dredge owners regarding the implementation of the proposed amendments in relation to the PERP program. Pursuant to the PERP regulation, districts can establish additional requirements beyond the statewide regulation for auxiliary engines on marine vessels that operate within three nautical miles of shore. The authority for districts to establish additional requirements is provided by the PERP regulation in order to allow the districts to mitigate any potential local emissions impacts. Barge and dredge vessel owner/operators have stated that the districts requirements can be burdensome and vary greatly by district. Staff has begun discussions with some of the affected districts to identify ways to achieve greater consistency and develop an effective solution. Staff is committed to continue to meet with affected stakeholders to discuss options.

Recommendation

ARB staff recommends the Board approve the proposed amendments to the regulations as presented in Appendix A of the Staff Report.

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1. INTRODUCTION

A. Overview

This Staff Report: Initial Statement of Reasons (Staff Report) provides the basis for the Air Resources Board (ARB or Board) staff's proposal to amend the regulations affecting commercial harbor craft.[2] The primary purpose of the proposed amendments is to require the diesel-fueled engines on crew and supply, barge, and dredge vessels to be subject to in-use engine requirements of the Commercial Harbor Craft (CHC) regulation. Several other clarifying and/or editorial amendments are also proposed to the CHC regulation. Staff is also proposing minor amendments to the Low Sulfur Fuel Regulation to align numbering with the CHC regulation. The proposed amendments would reduce diesel particulate matter (PM) and oxides of nitrogen (NO_x) emissions from CHC in California. The proposed amendments are provided in Appendix A of this Staff Report.

The staff is proposing to add crew and supply vessels because updated information shows that these vessels have similar or greater emissions than vessel categories currently controlled by the CHC regulation. The addition of barge and dredge vessels will amend a situation where this class of vessels are subject to two different statewide regulations. Approximately 175 crew and supply, barge, and dredge vessels operate in California, and are equipped with about 640 diesel-fueled engines. These engines emit about 66 tons per year of diesel PM and 1,430 tons per year NO_x.

This report discusses California's estimated population of crew and supply, barge, and dredge vessels and associated emissions, the regulatory proposal to require these vessel categories to be subject to in-use engine requirements of the original CHC regulation, other proposed amendments, regulatory alternatives considered, and potential environmental and economic impacts. The basis of the original CHC regulation and background information can be found in the *Staff Report: Initial Statement of Reasons for Regulations to Reduce Emissions from Diesel Engines on Commercial Harbor Craft Operated Within California Waters and 24 Nautical Miles of the California Baseline*, September 2007, and the accompanying *Technical Support Document.* For the remainder of this report, the 2007 report will be referred to as the September 2007 Staff Report.

B. Need for the Regulation

The ARB's mission is to protect public health, welfare, and ecological resources through the effective and efficient reduction of air pollutants, while recognizing and considering the effects on the economy of the State. The ARB's vision is that all individuals in California, especially children and the elderly, can live, work, and play in a healthful environment – free from potential harmful exposure to air pollution. To help achieve

[2]Title 17, CCR section 93118.5. is known as the Commercial Harbor Craft Regulation (CHC regulation) and establishes emission standards, reporting, record keeping, fuel, and monitoring requirements for certain categories of marine vessels. Title 13, CCR section 2299.5 is the corresponding Low Sulfur Fuel Regulation for Commercial Harbor Craft.

this, ARB has adopted numerous regulations to control emissions from many different sources, including diesel-fueled engines. Diesel-fueled engine exhaust is a significant health concern because it is a source of unhealthful air pollutants including particulate matter, gaseous and particulate-phase toxic air contaminants (TACs), NO_x, carbon monoxide, and hydrocarbons.

In 1998, the Board identified diesel PM as a TAC with no specified threshold exposure level to which adverse health impacts would be expected, pursuant to Health and Safety Code (HSC) sections 39650 through 39675. A needs assessment for diesel PM was conducted between 1998 and 2000 pursuant to HSC sections 39658, 39665, and 39666. This resulted in ARB staff developing, and the Board approving, the *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles* (Diesel RRP) in 2000. The Diesel RRP presented information on the available options for reducing diesel PM and recommended regulations to achieve these reductions. The Diesel RRP's scope was broad, addressing all categories of mobile and stationary diesel engines. It included control measures for off-road diesel PM sources, such as those covered by the proposed amendments to the CHC regulation. The ultimate goal of the Diesel RRP is to reduce, by 2020, California's diesel PM emissions and associated potential cancer risks by 85 percent from the 2000 levels.

In January 2005, the Goods Movement Cabinet Workgroup – created by Governor Schwarzenegger and led by the California Environmental Protection Agency and the Business, Transportation and Housing Agency – established a policy for goods movement and ports to improve and expand California's goods movement industry and infrastructure while improving air quality and protecting public health. The workgroup worked collaboratively with the logistics industry, local and regional governments, neighboring communities, business, labor, environmental groups, and other interested stakeholders to create a two-phased Goods Movement Action Plan (Action Plan), which outlines a comprehensive strategy to address the economic and environmental issues associated with moving goods via the State's highways, railways, and ports. In April 2006, the Board approved the *Emissions Reduction Plan for Ports and Goods Movement in California* as part of the Action Plan. The final phase of the Action Plan was completed in January 2007 and includes a framework that identifies the key contributors to goods movement-related emissions. The Action Plan emission reduction goals for existing harbor craft engines are 25 percent reductions for both diesel PM and NO_x compared to baseline 2001 levels by 2010, 30 percent reductions compared to 2001 baseline levels by 2015, and 40 percent reduction by 2020. (ARB, 2006)

The federal Clean Air Act (CAA) requires the United States Environmental Protection Agency (U.S. EPA) to establish National Ambient Air Quality Standards (standards) for pollutants considered harmful to public health, including fine particulate matter (PM2.5) and ozone. The South Coast and San Joaquin Valley Air Basins are the two areas in the State that exceed the annual PM2.5 standards. These air basins are required by federal law to develop State Implementation Plans (SIPs) describing how they will attain the standards by 2015. The U.S. EPA further requires that all necessary emission

reductions be achieved one calendar year sooner – by 2014 – in recognition of the annual average form of the standard. Reductions of NO_x emissions are needed because NO_x contributes to the formation in the atmosphere of both ozone and PM2.5; diesel PM emission reductions are needed because diesel PM contributes to ambient concentrations of PM2.5. The South Coast and San Joaquin Valley air basins are also in non-attainment for the federal ozone standard. However, they have until 2023 to attain the federal ozone standard, by invoking the "bump-up" provision in the CAA.

While all sources of PM and NO_x emissions are important, marine vessels play an especially significant role in California's efforts to reach attainment. About one third of the 2008 inventory of diesel PM and NO_x emissions from crew and supply, barge and dredge vessels are estimated to be in the South Coast Air Basin. Emissions from marine vessels, which include CHC engines, collectively represent one of several key contributors to ambient PM2.5 levels. Successfully controlling these sources is essential in determining whether California is able to meet the 2014 deadline for PM2.5 attainment in the South Coast Air Basin.

C. Regulatory Authority

ARB has authority under California law to adopt the proposed regulation. California Health and Safety Code (HSC) sections 43013(b) and 43018 provide broad authority for ARB to adopt emission standards and other regulations to reduce emissions from new and in-use nonvehicular sources. Under HSC sections 43013(b) and 43018, ARB is directly authorized to adopt emission standards for marine vessels as expeditiously as possible to meet State ambient air quality standards and to the extent permitted by federal law. The ARB is further mandated by California law under HSC section 39666 to adopt airborne toxic control measures (ATCM) for new and in-use nonvehicular sources, including commercial harbor craft, for identified toxic air contaminants such as diesel PM.

Under federal and California law, ARB is the primary agency in California responsible for ensuring that all regions of the State attain and maintain state and federal ambient air quality standards (HSC section 39606; CAA section 110). To achieve this, California must adopt all feasible measures to obtain the necessary emission reductions, including measures for mobile sources. (HSC sections 39602.5 and 43013(h)). The federal Clean Air Act section 209(e)(1) conclusively preempts states, including California, from adopting requirements for locomotive engines and new off-road engines less than 175 horsepower that are used in farm or construction equipment. However, the proposed regulation addresses off-road engines used in marine vessels, rather than those used in locomotives or farm or construction equipment.

Under CAA section 209(e)(2), California may adopt and enforce emission standards and other requirements for off-road engines and equipment not conclusively preempted by section 209(e)(1), if California applies for and receives authorization from the Administrator of U.S. EPA.

2. EMISSIONS INVENTORY

ARB staff used several sources to gather the most accurate information regarding CHC vessels. Staff conducted a 2008 survey that was used to evaluate the need for the proposed amendments for crew and supply vessels. Staff also developed the emissions inventories presented in this section with the most current information obtained from the 2009 "Initial Reports" (required by the 2007 CHC regulation), the PERP database, a survey of barge and dredge vessels, and information from districts. Table 1 below presents an overview of the various surveys and reports used by staff to develop the corresponding emission inventories.

Table 1: Overview of Surveys, Reports, and Inventories

Year Data Submitted	Data Source: Surveys and Reports	Inventory Year	Inventories Developed
2004	ARB CHC Survey	2004	CHC Emissions Inventory*
2008	ARB Crew and Supply Vessel Survey	2007	Interim Crew and Supply Inventory Used in Evaluating Need for Proposed Amendments
2009	CHC Initial Reports	2008	Crew and Supply Vessels Emissions Inventory
2009	ARB Barge and Dredge Survey, PERP Database, and CHC Initial Reports	2008	Barge and Dredge Vessel Emissions Inventory

*As presented in the 2007 Staff Report

Approximately 8,700 marine engines currently operate on about 4,300 CHC in California. These vessels are mostly located along the California coastline, with some on inland waterways. A summary of the estimated number of vessels and engines in each category are provided in Table 2 below.

Table 2: Commercial Harbor Craft Vessels and Engines (2008)*

Vessel Category	Number of Vessels	Number of Engines
Commercial Fishing	2,727	4,308
Charter Fishing	563	1,419
Ferries/Excursion	416	1,348
Tug	128	450
Tow	35	115
Barge	88	318
Crew and Supply	70	236
Workboats	89	158
Dredge	18	83
Pilot	27	50
Other	136	214
Total	4,297	8,699

*Estimates are updated for crew and supply boats and barge and dredge vessels from the 2004 CHC Survey.

Detailed information on the updated emissions inventory and methodology used to estimate emissions is included in Appendix C.

A. Updating the Crew and Supply Vessel and Engine Data

The September 2007 Staff Report inventory for crew and supply vessels and engines was based on the 2004 Statewide Commercial Harbor Craft Survey (2004 Survey). The following overview compares the 2004 inventory from the September 2007 Staff Report and an updated inventory of the crew and supply vessels which is derived primarily from the 2009 Initial Reports.

Table 3 shows that the total number of engines did not change significantly, but engine average horsepower (hp) was larger for both propulsion and auxiliary engines than previously estimated.

Table 3: Crew and Supply Vessels and Engines Inventories

	2004 Inventory	2008 Updated Inventory
Total Number of Vessels	64	70
Total Number of Engines	230	236
Number of Propulsion Engines	160	163
Average Horsepower of Propulsion Engines	440	500
Number of Auxiliary Engines	70	73
Average Horsepower of Auxiliary Engines	90	110

While the total number of crew and supply vessel engines did not change dramatically from the estimates used in the September 2007 Staff Report, the total average annual hours of operation did significantly change for the propulsion engines, the most significant engines in this class of vessels. Table 4 presents the updated average annual hours of operation.

Table 4: Annual Engine Hours of Operation for Crew and Supply Vessels

	2004 Inventory	2008 Updated Inventory
Propulsion Engine Average Annual Hours	800	1,800
Auxiliary Engine Average Annual Hours	3,000	2,300

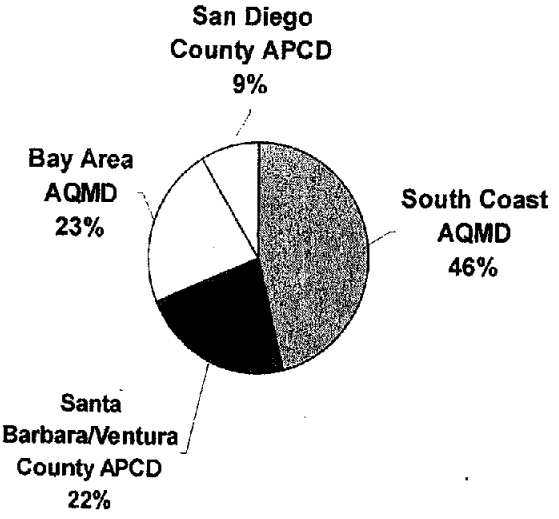
The distance that crew and supply vessels operate from shore is also important to consider. These vessels typically operate in harbors and generally close to shore. Therefore, most of the related emissions impact communities near ports. Information on the total hours of operation by distance from shore was gathered through the 2008 survey and Initial Reports. Table 5 shows the percentage of time that crew and supply vessels operate by distance from shore.

Table 5: Hours of Operation by Distance from Shore

Vessel Type	% Total Annual Hours (Distance from Shore)		
	0-3 nm	3-24 nm	>24 nm
Crew	86%	5%	9%
Supply	33%	65%	2%

All of these vessels primarily operate within five APCD's: South Coast Air Quality Management District (AQMD), Ventura County APCD, Santa Barbara County APCD, San Diego County APCD, and Bay Area AQMD. Figure 1 shows the distribution of crew and supply vessels by district.

Figure 1. Distribution of Crew and Supply Vessels by District



B. Updated Emissions from Crew and Supply Vessel Engines

The emissions from crew and supply vessel engines were derived from several sources and show an increase in emissions compared to the emission estimates reported in the September 2007 Staff Report. The updated crew and supply vessel emissions inventory was compiled from the "Initial Reports" and input from Santa Barbara County and Ventura County districts. Using this data, we estimate that the diesel PM emissions from crew and supply vessel engines are approximately 75 percent higher than estimated in the September 2007 Staff Report, and NO_x emissions are about 60 percent higher. In the September 2007 Staff Report, crew and supply vessel emissions were based on the average emission factors for all CHC. Diesel PM emissions from crew and supply vessels are now estimated to be 33 tons per year (tpy) and NO_x emissions are estimated to be 670 tpy as shown in Table 6 below.

Table 6: 2008 Emissions from Crew and Supply Vessels

	Original 2008 Inventory*	Updated 2008 Inventory**
PM Emissions (tpy)	19	33
NOx Emissions (tpy)	420	670

* 2008 emissions estimates based on 2004 CHC Emissions Inventory
** Inventory based on 2009 Initial Reports and data from Santa Barbara and Ventura County districts

As shown in Figure 1, over 22 percent of crew and supply vessels operate in the districts Santa Barbara County and Ventura County. In these two districts, crew and supply vessels make up a much higher portion of the total emissions from CHC. This

distribution and proportional emissions impact from crew and supply boats in Santa Barbara County and Ventura County districts in comparison to the other districts that have crew and supply vessels is shown in Table 7. ARB estimates that about 20 percent of the CHC emissions in the Santa Barbara County and Ventura County districts are from diesel-fueled engines on crew and supply vessels. Currently, permitted crew and supply vessels operating in Santa Barbara County APCD are required to use turbo charging, enhanced inter-cooling, and 4 degrees of timing retard on their engines to reduce the NO_x emissions. The impact of these changes on emissions has been accounted for in the emissions inventory.

Table 7: Proportion of Emissions from Crew and Supply Vessel Engines by District

District	NOx (tpy)			Diesel PM (tpy)		
	Crew & Supply Vessels	Total Harbor Craft	% Harbor Craft	Crew & Supply Vessels	Total Harbor Craft	% Harbor Craft
Santa Barbara / Ventura	280	1,650	17%	17	75	22%
South Coast	340	6,350	5%	14	270	6%
Bay Area	40	8,950	< 1%	1.0	380	< 1%
San Diego	10	3,100	< 1%	< 1	130	< 1%
Statewide Total*	670*	20,000	3%	33	855	4%

* Rounded using conventional rounding practices.

C. Barge and Dredge Vessel Data

Barge and dredge vessels were included in the September 2007 Staff Report as "Other CHC Vessels." The following section provides a detailed look at the population of barge and dredge vessels and associated engines operating in Regulated California Waters. ARB staff compiled the information by using data from PERP, a barge and dredge survey conducted by ARB staff in August 2009, district permits, and information from the "Initial Reports" required by the 2007 CHC regulation. Staff combined these sources of information to develop a statewide inventory of barge and dredge vessels, engines, and emissions.

Approximately 400 engines currently operate on barge and dredge vessels in California. Auxiliary engines on barges and dredges are mainly off-road (nonroad) engines. These vessels are located mostly along the California coastline, with some on inland waterways. Fuel barges are the most common barge used in California. The engines on fuel barges power pumps and generators. Construction barges are also common and the engines on these vessels typically power winches, generators, and hoists.

Dredge vessels are used to excavate underwater material for cleaning waterways, construction projects, restoration projects, and various other excavation activities. Table 8 provides an overview of the numbers of barge and dredge vessels and engines and the average horsepower of those engines.

Table 8: Barge and Dredge Vessels and Engines 2008 Inventory Overview

	Barge	Dredge
Total Number of Vessels	88	18
Total Number of Engines	318	83
Number of Auxiliary Engines	314	77
Average Horsepower of Auxiliary Engines	346	812
Number of Propulsion Engines	4	6
Average Horsepower of Propulsion Engines	251	2,708

As shown in Table 8, only a few barge and dredge vessels have propulsion engines. Most of these vessels are towed or pushed by other vessels. The total average annual hours of operation for barges and dredges is shown in Table 9. Propulsion engines have much higher annual hours of operation compared to auxiliary engines. Auxiliary engines have lower average annual hours, but have a larger population. Because of the large population, auxiliary engines make up the majority of barge and dredge emissions.

Table 9: Annual Engine Hours of Operation for Barge and Dredge Vessels

	2008 Inventory
Propulsion Engine Average Annual Hours	1,510*
Auxiliary Engine Average Annual Hours	550

* Average annual hours for propulsion engines is from the 2009 barge and dredge survey based on very few data points, given small number of engines.

Table 10 shows the percentage of time that barge and dredge vessels operate by distance from shore. Like crew and supply vessels, the distance that barge and dredge vessels operate from shore is important to consider. These vessels typically operate in harbor and generally close to shore. Therefore, most of the related emissions impact those communities near the ports.

Table 10: Percent of Barge and Dredge Vessel Engine Operations by Distance from Shore (2009 Survey)

Vessel Type	% Total Annual Hours (Distance from Shore)		
	0-3 nm	3-24 nm	>24 nm
Barge	83%	2%	15%
Dredge	100%	0%	0%

D. Emissions from Barge and Dredge Vessel Engines

Emissions from barge and dredge vessel engines are estimated to be 33 tpy of diesel PM and 760 tpy of NO_x as shown in Table 11 below.

Table 11: Barge and Dredge Vessel Engine Emissions

	2008 Inventory
PM Emissions (tpy)	33
NOx Emissions (tpy)	760

E. Total Combined Emissions from Crew and Supply Vessels and Barge and Dredge Vessels

Table 12 presents the total 2008 baseline emissions inventory for crew and supply, barge, and dredge vessels. Total combined emissions from both vessel categories are 66 tpy of diesel PM and 1,430 tpy of NO_x.

Table 12: Combined Total Emissions from Crew and Supply Vessels and Barge and Dredge Vessels – 2008 Inventory

	Crew and Supply	Barges and Dredges	Total Combined Emissions
PM Emissions (tpy)	33	33	66
NOx Emissions (tpy)	670	760	1,430

3. HEALTH RISK

The Board listed Diesel PM as a toxic air contaminant in 1998 based on its potential to cause cancer, premature death, and other health effects. NO_x is a precursor to the formation of ozone and contributes to secondarily formed PM in the lower atmosphere. Therefore, the reductions in diesel PM emissions and NO_x emissions will benefit public health by reducing exposure to diesel PM and helping to attain ambient air quality standards. The estimated potential cancer and non-cancer risks from CHC that were presented in the September 2007 Staff Report are not expected to change significantly as a result of the proposed amendments. Crew and supply, barge, and dredge vessel emissions are a small percentage of the total overall CHC emissions statewide. In the September 2007 Staff Report, crew and supply vessels accounted for about 2 percent of the total statewide 2004 CHC diesel PM emissions. However, using the updated emission estimates for crew and supply, barge, and dredge vessels, the overall increase contribution to the total 2004 CHC statewide inventory less than 10 percent. This increase in the total statewide CHC inventory is not expected to significantly affect the results of the health risk analysis done for the September 2007 Staff Report. A summary of the risks reported in the September 2007 Staff Report are provided below.

A. Potential Cancer Risk

In the September 2007 Staff Report, ARB staff estimated potential cancer risks from CHC using the results from a risk assessment for the Ports of Los Angeles and Long Beach (POLA/LB). The POLA/LB health risk assessment estimated that CHC are responsible for the third highest impact on cancer risk from port activities. That analysis showed that approximately 1.7 million people are exposed to a 10 in a million risk from all CHC emissions.

Estimates of potential cancer risks from harbor craft activity at these two ports would represent the upper range of cancer risks, given the magnitude of CHC emissions in the area and the proximity of the emissions to highly urbanized areas. Qualitative estimates of the relative impact of CHC emissions for other areas can be made based on a comparison of the relative magnitude of emissions and the proximity of the emissions to urbanized areas.

B. Non-Cancer Risk

In the September 2007 Staff Report, staff estimated that exposures to direct and secondary diesel PM emissions from all harbor craft can be associated with about 90 premature deaths per year. Approximately half of these premature deaths are due to direct diesel PM and half from secondary diesel PM. A complete discussion of the methodology used to develop this estimate is found in the *Technical Support Document* of the September 2007 Staff Report. ARB staff is currently updating the methodology to estimate non-cancer health risks from diesel PM. The new methodology is anticipated to project somewhat fewer premature deaths than those reported in the September 2007 Staff Report and in this report.

4. SUMMARY OF THE PROPOSED AMENDMENTS

Staff is proposing to amend the CHC Regulation[3] to require the vessel categories of crew and supply, barge, and dredge vessels to be subject to in-use engine requirements. Staff anticipates that in most cases, engine replacement will be the option used by vessel owner/operators to meet the proposed emission standards for vessel engines. The accelerated phase-in of newer engines will result in emission reductions of diesel PM and NO_x. Additional clarifying amendments are also proposed. The following sections provide background information on marine and nonroad engine standards and more details regarding the proposed amendments.

A. Background Information on Emission Standards for Marine Engines

Under the staff's proposal, the emission limits for PM and NO_x from a regulated diesel-fueled marine engine would be identical to those specified by the U.S. EPA marine engine standards for new engines in effect at the time compliance is required. The U.S. EPA marine engine emission standards have phased effective dates and emission levels dependent on the engine size.

The U.S. EPA classifies marine engines as either Category 1, 2, or 3, depending on engine size or cylinder displacement, with the engine size increasing with the higher category number. All of the marine engines used in California's CHC are Category 1 or 2 engines, with about 90 percent of the engines being Category 1 engines. The engine size and approximate maximum horsepower (hp) rating for Category 1 and 2 engines are provided in Table 13. Category 1 engines are rated at less than 5.0 liters per cylinder and can range as high as 2,500 hp. Category 2 engines range in size from 5.0 liters per cylinder to 30 liters per cylinder and from about 750 to 5,000 hp.

Table 13: U.S. EPA Marine Engine Categories Used in Commercial Harbor Craft

Category	Liters per Engine Cylinder	Approximate Horsepower
Category 1	< 5.0[A]	50[B] to <~2500 hp
Category 2	5.0 to ≤30[A]	≥750 to <5000 hp

[A] U.S. EPA Tier 3 and Tier 4 marine standards established Category 1 to < 7.0 L/cyl. and Category 2 to 7.0 to 30 L/cyl.
[B] Category 1 Tier 3 standards include engines rated less than 50 hp.

The emission limits for Category 1 and 2 engines used in CHC are summarized in Table 14.

[3] Title 17, California Code of Regulations (CCR) section 93118.5, and title 13, CCR section 2299.5.

Table 14: U.S. EPA Marine Engine Standards Effective Dates and Emissions Limits for Category 1 and Category 2 Engines Used in Commercial Harbor Craft

Category	Tier Level	Adoption Date	Effective Date	PM (g/bhp-hr)	NOx (g/bhp-hr)
1	1	IMO 1997 U.S EPA 2003	2000 2004	N/A	7.3 – 12.7[B]
	2	U.S. EPA 1999	2004-2007	0.15-0.3	5.4-5.6[C]
	3	U.S. EPA 2007	2009-2014	0.08-0.3	3.5-5.6[C]
	4[A]	U.S. EPA 2007	2017	0.03	1.3
2	1	IMO 1997 U.S EPA 2003	2000 2004	N/A	7.3 – 12.7[B]
	2	U.S. EPA 1999	2007	0.2	5.8[C]
	3	U.S. EPA 2007	2013	0.1	4.6[C]
	4[A]	U.S. EPA 2007	2016-2017	0.03	1.3

(40 CFR Part 94) (40 CFR Part 1042)

[A] Applies only to engines with maximum horsepower rating of 800 hp (600 kW) or more.

[B] Standard is a function of engine speed, revolutions per minute (rpm). Standard=12.7 for engines with engine speed ≥ 2000 rpm. Standard=7.3 for engines with engine speed ≤130 rpm. For engines between 130 and 2000 rpm, standard = $33.57 \times rpm^{-0.2}$.

[C] NOx is NOx + total HC.

B. Background Information on Emission Standards for Off-Road Engines

Generally, barge and dredge vessels utilize off-road engines to power pumps, winches, and cranes. Since the mid-1980's, new engine standards adopted by U.S. EPA and ARB have required new off-road engines to become progressively cleaner. In developing the new engine standards, ARB staff worked closely with U.S. EPA to develop a harmonized federal and State program to more effectively control emissions from off-road equipment. The emission standards are divided into four increasingly stringent levels (Tiers); the allowed emission level and effective dates vary with horsepower. Until the mid-1990's, off-road diesel engines were not subject to any emission standards (commonly referred to as Tier 0 or "uncontrolled engines"). In 1996 through 2000, the Tier 1 standards took effect. By 2006, all engine sizes were subject to Tier 2 standards. Between 2006 and 2008, Tier 3 standards took effect for some horsepower groups. Tier 4 standards are divided into two stages: interim Tier 4, which begins between 2008 and 2012 for most engines, and final Tier 4, which is effective for all off-road engines by 2015. The final Tier 4 standards will require the use of advanced exhaust after-treatment technologies to control both PM and NO_x, and will result in diesel engines that will be over 90 percent cleaner than Tier 0 engines. Table 15 illustrates how these standards change over time for one horsepower group, 300 to

600 horsepower engines. The numerical standards vary by horsepower group, but the downward trend in emissions is the same for all horsepower groups.

Table 15: ARB and U.S. EPA Diesel PM and NOx Emission Standards for New Off-Road Engines (300 – 600 hp)

	Off-Road Engines (600 hp)			Marine Engines (Category 1 600 hp)		
Engine Tier	PM Standard*	NOx+HC Standard*	Effective Date	PM Standard*	NOx+HC Standard*	Effective Date
Tier 0	NA	NA		NA	NA	
Tier 1	0.40	7.90	1996	NA	7.3	2004
Tier 2	0.15	4.80	2004	0.15	5.4	2007
Tier 3	0.15	3.00	2006	0.08	4.2	2013
Tier 4 interim	0.01	1.64	2011	NA	NA	NA
Tier 4 final	0.01	0.44	2014	0.03	1.3	2016-2017

*Emission rates expressed in grams per brake horsepower-hour (g/bhp-hr)

C. In-Use Requirements for Crew and Supply Vessels, Barge, and Dredge Vessels

The proposed amendments would primarily establish in-use emission limits for diesel-fueled engines on crew and supply, barge, and dredge vessels that are consistent with the U.S. EPA marine or off-road engine standards, similar to that already required for excursion vessels, ferries, tugboats, and towboats. Two compliance schedules are being proposed; one for crew and supply vessel engines and another for barge and dredge vessel engines. Separate compliance schedules were developed in consideration of the profile of the engine fleets and to provide a transition period for barge and dredge operators from planned compliance with the Portable Engine ATCM to the CHC regulation.

1. Crew and Supply, Barge, and Dredge Vessel Engine Compliance Options

Staff is proposing that in-use Tier 0 (pre-Tier 1) and Tier 1 engines on crew and supply, barge, dredge vessel engines meet emission limits equal to or cleaner than current U.S. EPA marine engine standards. In auxiliary applications, staff is proposing that in-use Tier 0 (pre-Tier 1) and Tier 1 engines meet emission limits equal to or cleaner than engines meeting Tier 2 or Tier 3 marine or off-road engine standards. Engine compliance options vary depending upon the proposed compliance schedule, horsepower, and liters/cylinder. The proposed amendments do not require compliance with Tier 4 (after-treatment based) U.S. EPA standards for in-use engines due to issues with the additional engine weight and space requirements associated with applying after-treatment technologies to existing vessels.

While the primary method for compliance with the proposed in-use engine requirements will likely be the replacement of in-use engines with new certified engines, the proposed amendments include other options for compliance. These options include:

- demonstrating that the existing engine meets the applicable U.S. EPA marine or off-road engine standards;
- demonstrating that the existing crew and supply vessel engine has not and will not operate 300 hours or more per calendar year; or
- demonstrating that the existing barge and dredge vessel engine has not and will not operate 80 hours or more per calendar year.

If the propulsion engine is replaced with a Tier 2 or 3 marine standard engine, or if an auxiliary engine is replaced with a Tier 2 or 3 off-road auxiliary engine, or can be shown to meet the applicable standards, all compliance requirements for that engine will have been met.

2. Crew and Supply Vessel and Barge and Dredge Engine Compliance Schedules

The proposed compliance schedules are shown in Table 16 and Table 17 for crew and supply and barge and dredge engines, respectively. Compliance dates are based on the model year of the engine and the annual hours of operation. Table 18 shows the distribution of engines by compliance year that would need to comply with the proposed amendments.

The engine model year would be determined by one of three methods. In most cases, the engine's actual model year of manufacture would be used to determine the required compliance date. However, the regulation provides two additional options using an "effective model year" different from the actual engine model year. The first of those options is to implement an emission control strategy that achieves at least a 25 percent reduction in either PM or NO_x; this would extend the engine model year by five years. This is referred to as the "Engine's Model Year + 5" method. The date by which the engine must meet the U.S. EPA marine engine standards would be based on the actual engine model year plus five years. The second option is to demonstrate that the engine has been rebuilt to Tier 1 standards or cleaner prior to January 1, 2008; this would allow the date of rebuild to be used as the engine's model year for determining when the engine must meet the U.S. EPA marine engine standards. This is referred to as the "Engine's Tier 1 Rebuild Model Year."

Table 16: Compliance Dates for Crew and Supply Vessel Engines Statewide

Engine Model Year	Total Annual Hours of Operation	Compliance Date
1985 and earlier	>1500	12/31/2011
1985 and earlier	> 300 – 1500	12/31/2012
1986 - 1995	>1500	12/31/2013
1986 - 1995	> 300 – 1500	12/31/2014
1996 - 2000	>1500	12/31/2015
1996 - 2000	> 300 – 1500	12/31/2016
2001 - 2002	>300	12/31/2017
2003	>300	12/31/2018
2004	>300	12/31/2019
2005	>300	12/31/2020
2006	>300	12/31/2021
2007	>300	12/31/2022

Table 17: Compliance Dates for Barge and Dredge Vessel Engines Statewide

Engine Model Year	Total Annual Hours of Operation	Compliance Date
1975 and earlier	>80	12/31/2011
1976 - 1980	>80	12/31/2012
1981 - 1985	>80	12/31/2013
1986 - 1990	>80	12/31/2014
1991 - 1995	>80	12/31/2015
1996 - 1999	>80	12/31/2016
2000 - 2001	>80	12/31/2017
2002	>80	12/31/2018
2003	>80	12/31/2019
2004	>80	12/31/2020
2005	>80	12/31/2021
2006	>80	12/31/2022

Table 18: Estimated Population of In-Use Crew and Supply and Barge and Dredge Vessel Engines Subject to Amendments to CHC Regulation Emission Limits

Year	Crew and Supply Engines	Barge and Dredge Engines	Total
2011	33	5	38
2012	6	3	9
2013	3	7	10
2014	3	6	9
2015	10	5	15
2016	3	43	46
2017	14	45	59
2018	12	6	18
2019	14	4	18
2020	19	3	22
2021	8	1	9
2022	25	2	27
Total	**150**	**130**	**280**

D. Other Proposed Amendments

Additional clarifying amendments are also being proposed. The most substantive proposals are listed below that clarify requirements and to address issues that have arisen during the implementation of the 2007 regulation including additional definitions. All amendments are included in the proposed language shown in Appendix A.

1. Deleting Exemption for Vessels in PERP or Under District Permit Prior to January 1, 2009

Staff is proposing to remove the exemption (17 CCR section 93118.5 (c)(7)(C)) that excluded vessels registered in PERP or permitted by the districts before January 1, 2009 from the CHC regulation. This amendment will provide consistency to CHC vessels. Marine vessel auxiliary engines that were registered in PERP were subject to the Portable Engine ATCM. During 2009, it became clear that having some barge and dredges subject to the Portable Engine ATCM and others subject to the CHC regulation was creating compliance and enforcement issues. In January 2010, PERP was amended to make engines used on marine vessels that were registered in that program subject to the requirements of the CHC regulation.[4] The goal of the amendments to PERP and the proposed amendments to the CHC regulation is to allow harbor craft vessels to be subject to a single regulation, regardless if they are registered in PERP or not.

[4] Final PERP amendments pending completion of rulemaking process.

ARB staff also became aware that some districts did not permit barge and dredge vessels, leaving some in-use engines on these vessels uncontrolled. Since the current CHC regulation has no in-use requirements for barge and dredge vessel engines, staff proposes to amend this regulation for consistency, and to require all barge and dredge vessel engines, including those currently registered in PERP or under district permits, to be subject to the CHC regulation.

2. Allowing Certified Off-Road or Nonroad Engines to be Used as Auxiliary Engines

The current CHC regulation requires vessel owner/operators' in-use engines to meet Tier 2 and Tier 3 marine engine standards. The proposed amendments will allow vessel owner/operators more flexibility to comply with the current CHC regulation by allowing them to use currently available Tier 2 or higher certified off-road engines to meet the in-use requirements for auxiliary engines. Owner/operators can install a Tier 2 or Tier 3 (marine or off-road) engine on a vessel as a replacement auxiliary engine even after Tier 4 marine, or interim Tier 4 and final Tier 4 off-road standards are in effect. Tier 4 standards will require integration of exhaust aftertreatment into the engine design. Generally, these design changes make these engines larger and heavier. These larger and heavier Tier 4 engines may not be practical for some CHC engine replacements due to space limitations in the engine compartments of those vessels. In addition, there may be situations where the harsh marine environment may have adverse affects on off-road engines. Vessel owner/operators must assess these factors when deciding to use an off-road engine.

3. Adding a Definition of "Swing Engine" and Requirements for Their Inclusion in Recordkeeping

Swing engines are defined and requirements for their inclusion in reporting and recordkeeping are included in the proposed amendments. One standard maintenance practice of CHC fleet owner/operators includes the use of swing engines. These engines match the engines currently on a vessel or fleet of vessels. The engines are standing by, ready to be installed on a vessel when the existing engine is not functioning properly, or during the normal maintenance cycle, thereby preventing excessive vessel downtime. All swing engines used on a regulated vessel categories would be considered in-use engines and must meet the applicable in-use engine compliance requirements.

4. Delete Multipurpose Harbor Craft Definition and Low Use Exemption

Staff is proposing to delete the "multipurpose harbor craft" term and the low use exemption in title 17, CCR section 93118.5(c)(12) from the CHC regulation which was often confusing and overly burdensome to some vessel owners. This change will allow vessel owner/operators more flexibility to operate vessel engines for up to 300 hours

per year in any one of the regulated vessel categories without having to comply with the in-use engine requirements. This allows vessel owner/operators to be exempt from the in-use engine compliance requirements as long as the total engine hours of operation stays below 300 hours when operating as a regulated in-use vessel type. For example, an owner of a fishing vessel engines may operate unlimited annual hours because fishing vessels are an unregulated in-use vessel type. The fishing vessel could also offer whale watching excursions on his vessel which is a regulated in-use vessel type. The fishing vessel engines would not be required to comply with the in-use compliance schedule unless the vessel engines are used for whale watching excursions for more than 300 hours per year.

Barge and dredge vessels are limited to operating less than 80 hours to be exempt from the in-use engine compliance requirements. This 80 hour limitation is necessary for barge and dredge vessels to remain consistent with Portable Engine ATCM requirements that many have been subject to by their registration in PERP.

5. Special Circumstances to Use Non-CARB Diesel Fuel

The current CHC regulation requires the use of CARB diesel fuel or specific alternative diesel fuel. The proposed amendments will allow vessel engines to operate using U.S. EPA on-road fuel or U.S. EPA nonroad diesel fuel, in the event a vessel operator cannot obtain CARB diesel fuel prior to operating in Regulated California Waters. Table 19 compares ARB and U.S. EPA on-road and nonroad diesel fuel standards.

Table 19: ARB and U.S. EPA Diesel Fuel Standards

Fuel Type	Implementation Date	Maximum Sulfur Level (ppmv)	Aromatics Maximum (% by volume)	Cetane Index (Minimum)
CARB	2006	15	10	40
U.S. EPA On-road	2006	15	35	40
U.S. EPA Nonroad	2010	15	35	40

6. Deadline for Alternative Control of Emission Plans

The current CHC regulation does not state a date by which a vessel owner/operator that utilizes an Alternative Control of Emission (ACE) Plan must submit that plan. The proposed amendments would require the ACE plan to be submitted prior to or before February 28 of the year the vessel engine compliance is required.

7. In-Use Out-of-State Vessels Operating in California

The current CHC regulation requires all harbor craft, including those from out-of state, to be subject to the in-use engine requirements and to provide an initial report and a compliance plan when operating in Regulated California Waters. There has been some confusion among out-of-state CHC vessels operators about the need to comply with the

reporting requirements. The proposed amendments would clarify that out-of-state CHC vessels are required to complete an initial report within 30 days of a vessel being brought into California to operate in Regulated California Waters and to submit a Compliance Plan within 90 days of being subject to an in-use engine requirement.

8. Replacement Engine Exemption

The current CHC regulation requires that if an engine is replaced, the replacement engine must meet the current U.S. EPA model year marine engine standards. There may be compliance situations when a vessel's engines are already complying with the CHC regulation with Tier 2 engines. A situation may arise when a vessel with multiple propulsion or auxiliary engines experiences a catastrophic failure of one of the engines. If Tier 3 engines are currently available, a Tier 3 engine may not be compatible with the other existing Tier 2 engines. The proposed amendment provides vessel owner/operators an exemption in specific cases allowing a non-compliant engine to be installed on a vessel if there are no suitable engine replacements available, or if the new engine does not synchronize with the existing engines. The proposed amendments include specific requirements that must be met in order to use a noncompliant engine. The proposed amendments allow replacement of an engine not meeting current standards if the vessel owner/operator can demonstrate that a compliant engine, or one meeting required physical or performance characteristics, is not available. To demonstrate this, the vessel owner/operator must evaluate the current engine tier and each previous engine tier. Approval must be obtained from the ARB Executive Officer.

9. Allowing the Use of an Available Engine to Replace an Older Engine Subject to In-use Requirements

The proposed regulation would, in certain situations, allow an engine that does not meet the Tier 2 or Tier 3 requirements to be used on a temporary basis. The engine must be within the same fleet, and the original compliance date of the older, replaced engine must be kept.

10. Clarification of Requirements Applicable to Newly Acquired Vessels and Ferry Vessels

The proposed amendments have been reworded to clarify existing requirements that owners/operators of new ferries having the capacity to transport 75 or more passengers are required to equip diesel propulsion engines that meet either Tier 2 or Tier 3 marine standards with Best Available Control Technology (BACT). BACT is not required for diesel propulsion engines that are certified to Tier 4 marine standards.

11. Compliance Extensions

The proposed amendments would expand the availability of the current compliance extension of title 17, CCR section (e)(6)(E)4 to allow an owner to also request a compliance extension in situations where that owner has multiple vessels that are

subject to compliance dates of 2011 or 2012 for crew and supply, barge, and dredge vessels, similar to the current compliance extension allowed for ferries, excursion vessels, tugboats, towboats, and push boats.

12. Definitions Added

The proposed amendments revise section (d) of the existing regulation by adding several definitions and deleting one to clarify the proposed amended language. Definitions that were added include, "certified nonroad engine", "dredge", "family emission limit", "permanently affixed to a harbor craft", "regulated in-use vessel", "swing engine", "tier 2 off-road or nonroad emission standards", "tier 3 off-road or nonroad emission standards", "tier 4 final off-road or nonroad emission standards", "tier 4 interim off-road or nonroad emission standards", deleting the definition of "multipurpose harbor craft", clarifying "temporary emergency rescue/recovery vessel" definition.

13. Update Low Sulfur Fuel Regulation

Staff is also proposing minor amendments to the Low Sulfur Fuel Regulation (section 2299.5, title 13, CCR) to align definition numbers with section 93118.5, title 17, CCR.

5. ENVIRONMENTAL AND HEALTH IMPACTS OF PROPOSED AMENDMENTS

A. Emissions Reductions Statewide

ARB staff has estimated the emissions reductions of the proposed amendments for crew and supply, barge, and dredge vessel engines. As stated earlier, statewide emissions from these specific vessel categories are a small portion of the total harbor craft emissions. However, these emission reductions are important in achieving the Board's goals in the Diesel Risk Reduction Plan and Emission Reduction Plan for Ports and Goods, as well as attaining and maintaining ambient air quality standards. Additionally, these emissions represent a significant portion of the total CHC emissions in Santa Barbara County and Ventura County districts. The emissions reductions for these two districts are presented in Section B of this chapter.

1. Crew and Supply Boat Emission Reductions Statewide

The projected statewide annual emissions for crew and supply vessels are presented in Figure 2. Statewide, the baseline uncontrolled diesel PM emissions from crew and supply vessels are estimated to be about 33 tpy in 2008, dropping to about 22 tpy in 2025. The reduction in uncontrolled emission over this period is due to the anticipated or planned replacement of older engines. With the proposed amendments in place accelerating engine turnover, diesel PM emissions would be reduced in 2025 from 22 tpy to less than 10 tpy. The proposed amendments affect about 150 of the 236 crew and supply vessel engines, as some engines are exempt due to size or annual hours of operation or are already at Tier 2 or Tier 3. The total estimated diesel PM emission reductions from crew and supply vessels from 2011 to 2015 would be about 187 tons.

Figure 2: Projected Statewide Diesel PM Emissions for Crew and Supply Vessel Diesel-Fueled Engines

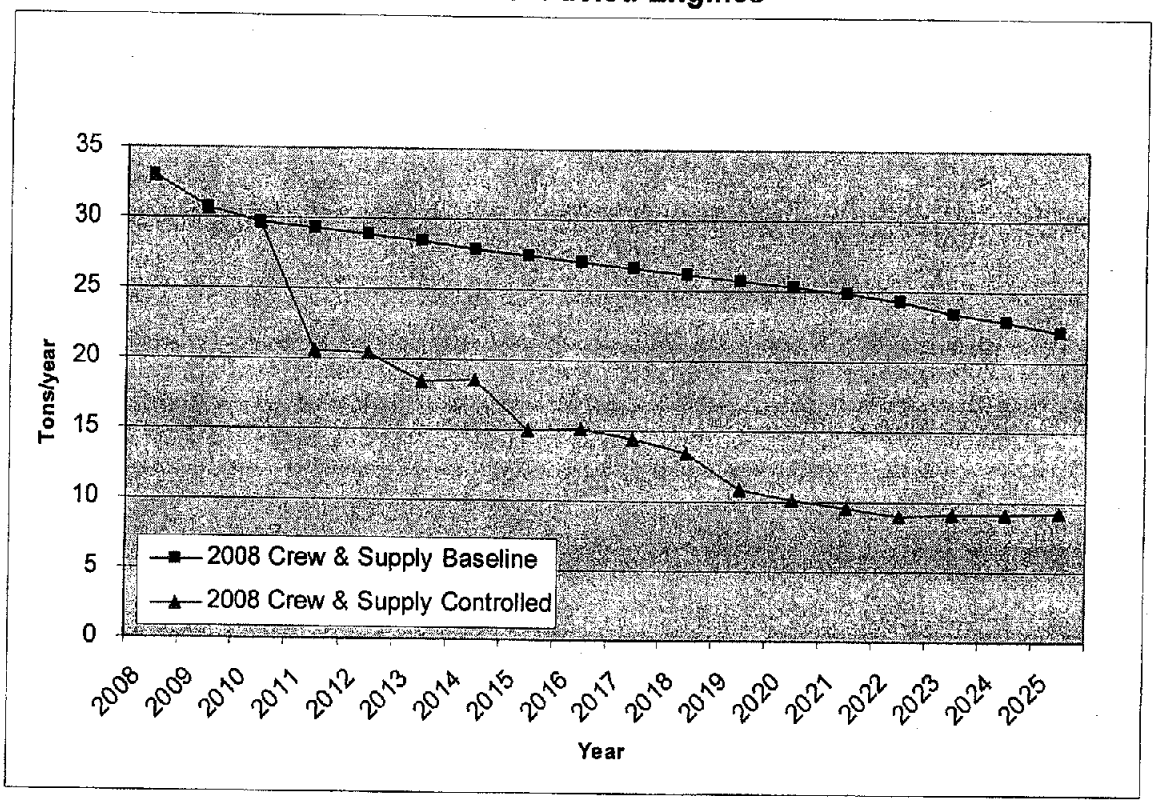
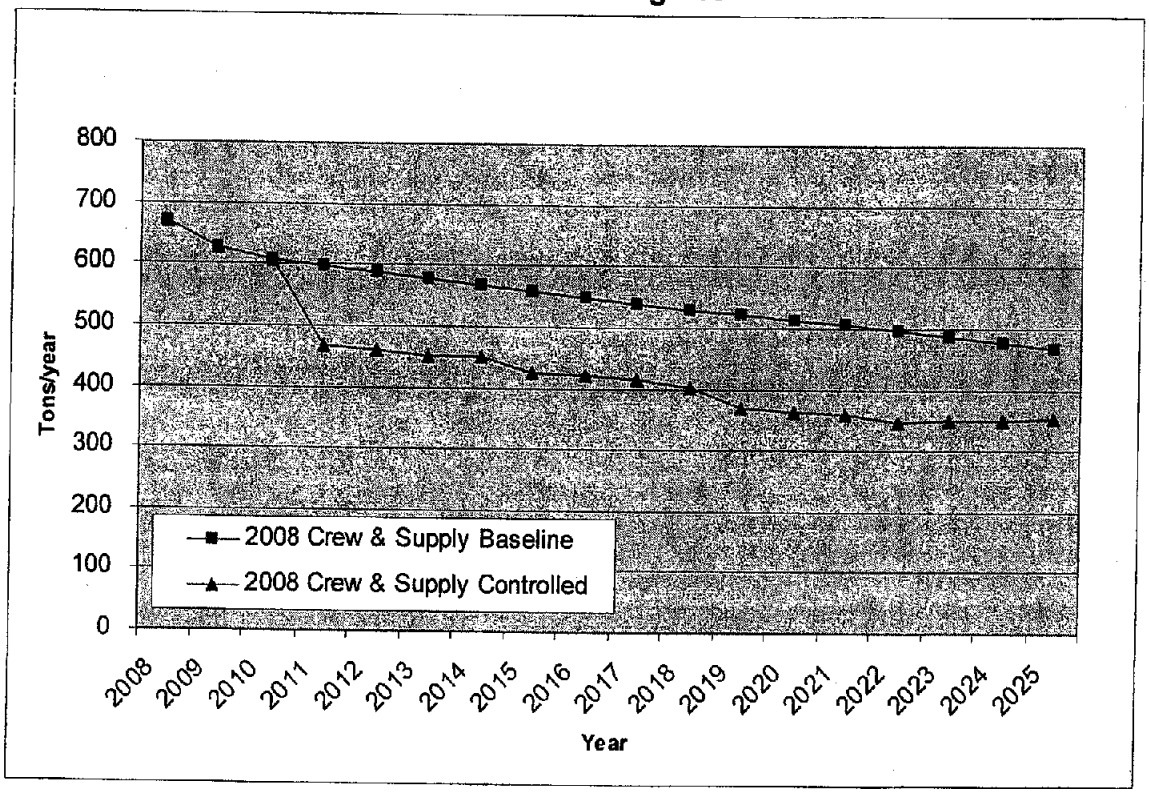


Figure 3 shows that the projected statewide NO_x emissions from and supply vessels are estimated to be about 670 tpy in 2008, dropping to about 466 tpy in 2025 without the proposed amendments. With the proposed amendments in place, the NO_x emissions would be further reduced from 466 tpy to about 350 tpy in 2025. The total estimated NO_x emission reductions from crew and supply vessels from 2011 to 2025 would be about 2,000 tons.

Figure 3: Projected Statewide NOx Emissions for Crew and Supply Vessel Diesel-Fueled Engines



2. Barge and Dredge Vessel Emission Reductions Statewide

Figure 4 illustrates the statewide barge and dredge vessel engine diesel PM emissions with and without the proposed amendments. Statewide, the baseline uncontrolled diesel PM emissions from barges and dredges are estimated to be about 33 tpy in 2008, dropping to about 12 tpy in 2025. The reduction in uncontrolled emissions over this period is due to the anticipated or planned replacement of older engines. With the proposed amendments in place accelerating engine turnover, diesel PM emissions would be reduced in 2025 from 12 tpy to less than 7 tpy. The proposed amendments affect 129 of the 400 barge and dredge vessel engines statewide, as some engines are exempt due to size or annual hours of operation or are already at Tier 2 or Tier 3. The total estimated diesel PM emission reductions from barges and dredges from 2011 to 2025 would be about 90 tons.

Figure 4: Projected Statewide Diesel PM Emissions for Barge and Dredge Vessel Diesel-Fueled Engines

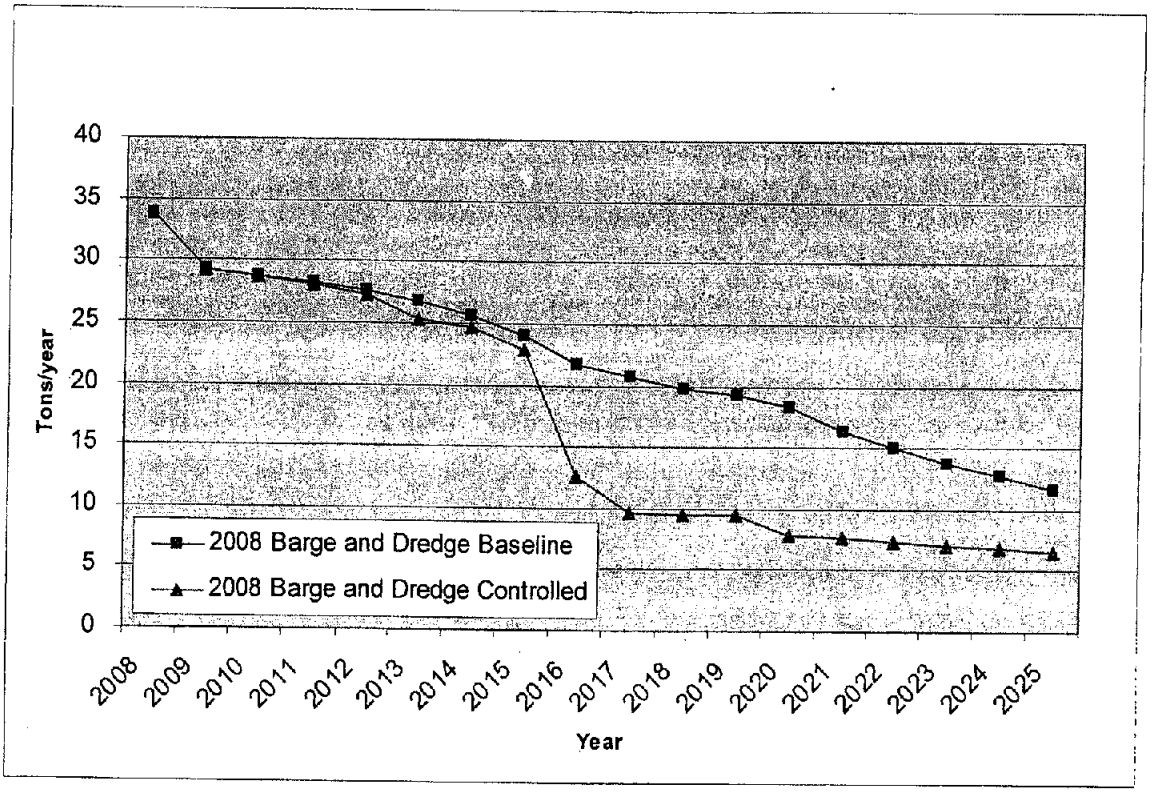
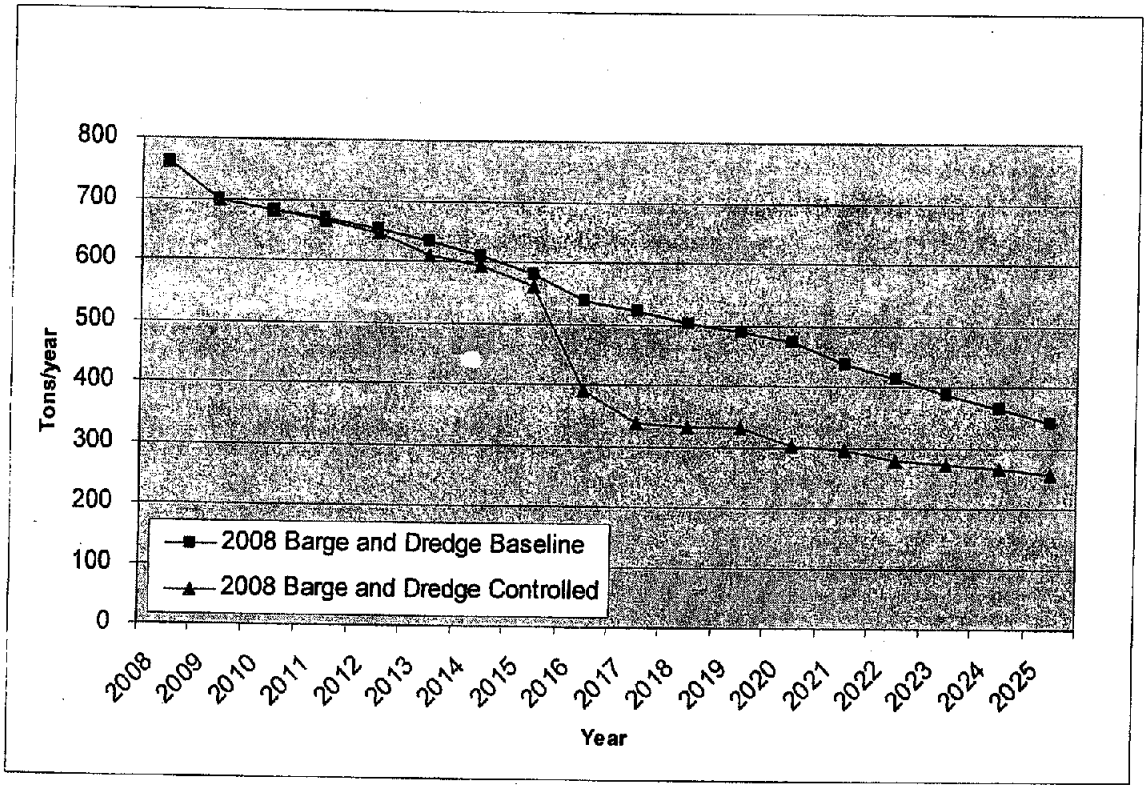


Figure 5 shows that the projected statewide NO_x emissions from barge and dredge vessels are estimated to be about 760 tpy in 2008, dropping to about 340 tpy in 2025 without the proposed amendments. With the proposed amendments in place, the NO_x emissions would be further reduced from 340 tpy to about 255 tpy in 2025. The total estimated NO_x emission reductions from barges and dredges from 2011 to 2025 would be about 1,475 tons.

Figure 5: Projected Statewide NOx Emissions for Barge and Dredge Vessel Diesel-Fueled Engines



Total Statewide Combined Emission Reductions for Diesel PM and NOx from Crew and Supply Vessels and Barge and Dredge Vessels

Table 20 below shows the total statewide diesel PM and NO_x emission reductions from crew and supply vessels and barge and dredge vessels associated with the proposed CHC regulatory amendments. These reductions are the cumulative reductions from 2011 to 2025. The total statewide emissions reductions of diesel PM from crew and supply vessels and barge and dredge vessels would be 277 tons. The total statewide emission reductions of NO_x from crew and supply vessels and barges and dredge vessels would be 3,475 tons.

Table 20: Total Statewide Diesel PM and NOx Emission Reductions Associated with the Proposed Regulatory Amendments

	Diesel PM Reductions (2011 – 2025) (tons)	NOx Reductions (2011 – 2025) (tons)
Crew and Supply Vessels	187	2,000
Barge and Dredge Vessels	90	1,475
Statewide Total	277	3,475

B. Santa Barbara County APCD and Ventura County APCD Crew and Supply Vessel Engine Emission Reductions

Crew and supply vessels are a small segment (less then 2 percent) of the California CHC fleets, but their engines contribute a significant portion of the CHC emissions in Santa Barbara County and Ventura County districts. Figures 6 and 7 present estimated annual diesel PM and NO_x emissions from crew and supply vessels in Santa Barbara County and Ventura County districts. In 2025, after full implementation of the proposed amendments to the regulation, diesel PM emissions from crew and supply vessels in the Santa Barbara County and Ventura County district would be reduced from the 2008 baseline of 17 tpy to about 5 tpy and NO_x emissions would be reduced from about 280 tpy to about 170 tpy.

Over the period 2011 through 2025, 95 tons of diesel PM and 600 tons of NO_x would be reduced as a result of the proposed amendments. These reductions are in addition to the reductions obtained from the 2007 CHC regulation and are of greater significance to Santa Barbara County and Ventura County districts. In Santa Barbara and Ventura County districts crew and supply vessel emissions make up about 20 percent of all CHC emissions. The proposed amended regulation will also reduce emissions from barge and dredge vessel engines in these districts, even though barge and dredge engine emissions do not make up a significant portion of the CHC emissions in the Santa Barbara and Ventura area.

Many of the owner/operators of crew and supply vessel engines servicing oil platforms were required by the Santa Barbara County APCD to utilize NO_x emission reduction engine modifications, including turbo charging, enhanced inter-cooling, and retarding the engine timing by 4 degrees. These engine modifications result in NO_x emission reductions, but may result in an increase in diesel PM emissions. The proposed amended regulation will require the vessel engines to meet performance standards for both PM and NO_x emissions.

Figure 6: Projected Santa Barbara County and Ventura County APCD Diesel PM Emissions for Crew and Supply Vessel Diesel-Fueled Engines

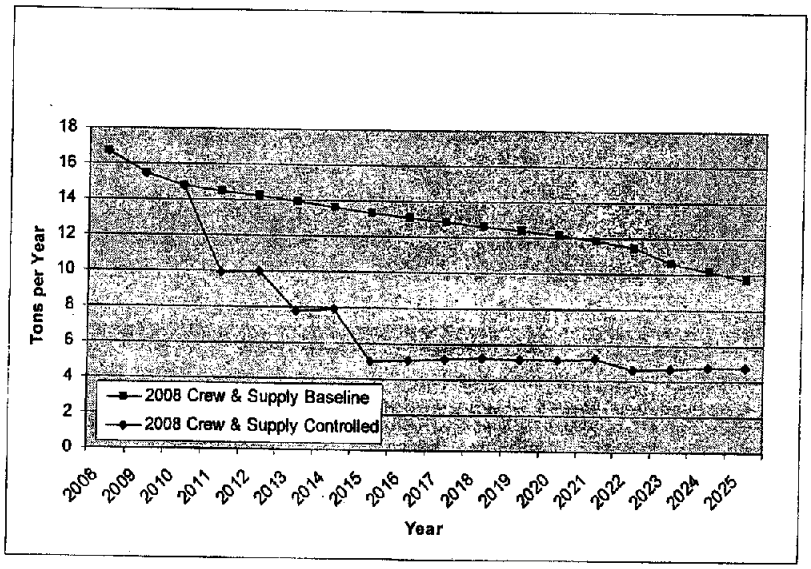
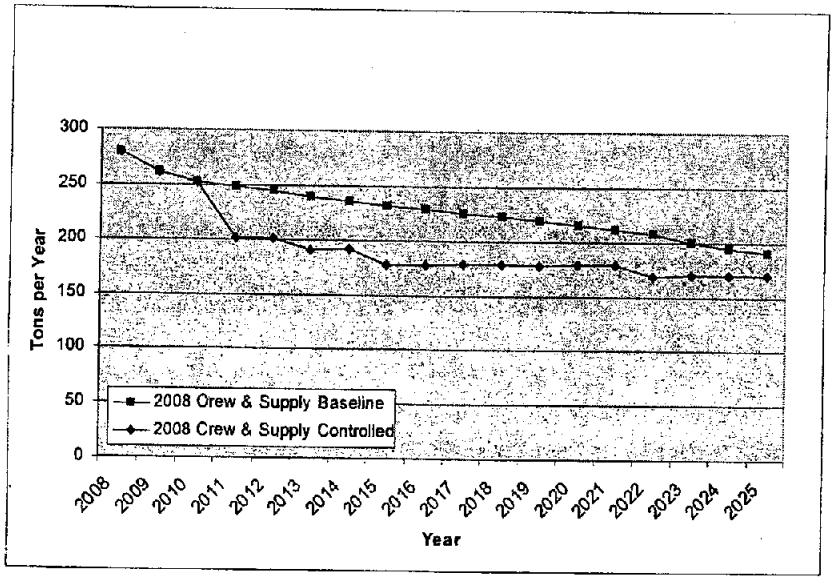


Figure 7: Projected Santa Barbara County and Ventura County APCD NOx Emissions for Crew and Supply Vessel Diesel-Fueled Engines



C. Health Impacts

The emission reductions associated with the proposed amendments would result in lower ambient PM levels and reductions in exposure to diesel PM and NO_x. These reductions would result in a corresponding reduction in potential cancer risk and premature deaths.

Estimating the impact of the diesel PM reductions on potential cancer risk are highly dependent on the specific location of the emission reduction. The diesel PM emission reductions due to the proposed amendments, about 275 tons between 2011 and 2025, are about 10 percent of the 2,400 tons diesel PM reductions estimated under the 2007 rule. While it is not possible to identify the impact of this 10 percent reduction on the number of persons exposed to various risk levels as staff did in the September 2007 Staff Report without extensive computer modeling, it is reasonable to assume that there will be a small – up to 10 percent – reduction in risk levels due to the proposed amendments. A similar reduction in premature deaths would also be expected.

D. Environmental Impact

The ARB staff anticipates that, in most cases, engine replacement will be the option chosen by vessel owner/operators to meet the proposed emission standards for vessel engines and that the accelerated phase-in of these newer engines will provide diesel PM and NO_x emissions reductions. In addition, the newer engines are typically more energy efficient and have emission reduction technologies, thereby reducing criteria, toxic, and greenhouse gas (GHG) emissions. No significant adverse environmental impacts are expected to occur from the adoption of, and compliance with, the proposed amendments for crew and supply, barge, and dredge vessel engines.

E. Impact on Global Warming

The accelerated replacement of older technology engines required by the proposed amendments should reduce GHG emissions. However, some actions required by the proposed amendments could result in slightly increased carbon dioxide (CO_2) for some applications. For example, an increase in CO_2 could occur if crew and supply vessel or barge and dredge vessel owner/operators choose to comply with the regulation by using exhaust treatment technologies that use vessel power (e.g., scrubbers, selective catalytic reduction), increase the weight of the vessel, or require a larger engine to be installed on the vessel. While this potentially could occur, staff does not believe many crew and supply, barge, or dredge vessel operators are likely to select these as compliance options and will elect instead to install new engines. Newer marine engines are expected to have slightly improved fuel economy compared to unregulated engines, thereby reducing some GHG emissions.

The proposed amendments would reduce emissions of PM and NO_x. The following section provides an overview of the current understanding of the potential climate impacts of these pollutants.

Particulate Matter (PM): PM from marine diesel engine exhaust is composed of combustion particles consisting of elemental and organic carbon and sulfate, all of which can form aerosols. Atmospheric aerosols play an important role in the climate system through modifications of the global energy budget: directly, by the scattering and absorption of radiation; indirectly, by the modification of cloud properties. Black carbon typically emitted as a fraction of PM from combustion processes, is the main light-absorbing component of aerosols and thereby causes global warming. In recent years, there has been increased attention to black carbon for its global warming potential through direct and semi-direct effects. Due to the relatively short atmospheric residence time of black carbon, reductions in black carbon emissions represent a potential near term opportunity to postpone the effects of rising GHG levels on the global climate. The heightened interest in black carbon also builds on the long-known association of these emissions with localized air pollution and associated negative health impacts. Therefore, reducing black carbon emissions promises significant co-benefits by improving the health of local people while contributing to the global climate change effort.

Overall, the climate impact assessment of PM emitted by shipping is rather complex: radiative forcing of black carbon is positive (climate warming impact), while radiative forcing of sulfate particles is negative (cooling impact). The particles emitted from marine diesel engines represent a variety of compositions and sizes. The magnitude of the overall direct climate impact of black carbon emitted from marine engines and information on emissions of ship-exhaust particles, such as detailed characterization of chemical composition, microphysical characteristics and the fate of the particles in the marine environment are not well known. (ARB, 2008). A better characterization of marine diesel engine emissions are needed to improve the understanding of the climate change benefits from emission reduction strategies

Nitrogen oxides (NO_x): Through the production of tropospheric ozone, emissions of NO_x have a climate warming impact. However, by affecting the concentration of hydroxyl radical (OH) they reduce the levels of methane, providing a cooling effect. The net climate impact of changes in NO_x emissions will depend on whether ozone or methane production dominates. At this time, there is no consensus on which action is likely to dominate or on the overall magnitude of the impact due to changes in NO_x emissions resulting from the regulation. (ARB, 2008)

In summary, efforts to reduce marine diesel emissions will reduce both positive and negative climate forcing substances. Thus, staff expects the proposed regulation amendments to have an overall negligible effect on global warming, with some slight GHG reductions due to newer, more fuel efficient engines.

6. ECONOMIC IMPACTS

This chapter discusses the estimated costs and economic impacts associated with implementation of the proposed amendments to the CHC regulation. The expected capital and recurring costs for potential compliance options, the cost and associated economic impacts on businesses, as well as an analysis of the cost-effectiveness of proposed amendments to the regulation are presented. Estimates in this section are based on the costs incurred and emissions reduced during the compliance years of 2011 to 2022. However, the proposed amendments will continue to have additional emission reductions after 2022, and the emission reductions through 2025 are examined in the previous section of this report. Generally, costs contained in this section are presented in 2009 dollars. The costs, adjusted for net present value (NPV), are included with an explanation of the methodology used in Appendix D.

A. Regulatory and New Equipment Costs

In assessing the costs associated with the proposed amendments to the CHC regulation, ARB staff developed two different estimates, one for regulatory costs and another for new equipment costs. Regulatory costs are the estimated costs resulting from the proposed amendments taking into consideration the residual value of the in-use engine being replaced, the residual value of the most recent engine rebuild work, recordkeeping and reporting costs, and the time value of money associated with the early engine replacement. Staff estimates the lifetime regulatory cost for compliance with the proposed amendments to the regulation to be approximately $15 million (2009 dollars or $10 million adjusted to NPV) from 2011 through 2022.

New equipment costs are the estimated total out-of-pocket costs for purchasing and installing a new engine (engine replacement cost) in crew and supply, barge, and dredge vessels. New equipment costs are estimated to be approximately $46 million (2009 dollars) over the compliance years of the proposed amendments (2011 to 2022). New equipment costs are the total costs of complying with the regulation, not taking into consideration the remaining useful life of the engine being replaced. The cost of purchasing and installing a new engine are costs that the vessel owner/operator would eventually incur, but the proposed amendments to the CHC regulation requires this expenditure earlier than normal.

B. Return on Owner's Equity

Staff evaluated the economic impacts of the proposed amended regulation by estimating the effect of the regulatory cost on typical businesses' "return on owner's equity" (ROE). The ROE is a measure of a businesses' profitability and is expressed as a percentage. As shown in Table 21, the average ROE of the businesses in the categories listed declined by about 0.95 percent. The decline in profitability was 1.44 percent for crew and supply vessels, and 0.45 percent for barge and dredge vessels. Generally, ARB considers a 10 percent change in ROE to be the threshold at which businesses experience a significant adverse impact.

Table 21: Affected Businesses with Change in ROE

Category	ROE % Change
Crew and Supply	-1.44%
Barge and Dredge	-0.45%
Average	-0.95%

These businesses, however, are unlikely to have to absorb the entire cost of the proposed amended regulation. To the extent that they are able to pass on the cost of the proposed amended regulation, the impact on their profitability should be less than estimated here. Thus, ARB staff expects most affected businesses to be able to absorb the cost of the proposed amended regulation with no significant adverse impact on their profitability. About 55 percent of the total number of businesses impacted are considered small businesses; with about 60 percent of the crew and supply vessel businesses and about 50 percent of the barge and dredge businesses being considered small businesses.

These businesses may be able to reduce the impact of the proposed amended regulation on their businesses by taking advantage of available incentive or grant funding. The cost impacts presented here do not take into consideration the impact of incentive or grant funding. Carl Moyer Program funding is a potential funding source for companies that comply early or achieve emission reductions beyond the amendments. California has one of the largest clean air incentive programs in the nation – the Carl Moyer Program – with up to $140 million available each year through State and local funds. In 2009, almost $3 million went to repowering marine vessels. Proposition 1B funds will also be available to eligible commercial harbor craft operators for repowering engines, retrofitting vessels with hybrid systems, and replacing vessels with cleaner models. At the Board meeting held on March 25, 2010, the *Proposed Update to the Proposition 1B Program Guidelines* were approved, which included project options that would fund up to 80% of the cost for non-regulated vessels and up to 50% for the early compliance of regulated vessels. The Board will award the next Proposition 1B funding allocations to local agencies in June 2010 with additional funding to be made available as bond monies are received by ARB. (ARB, 2008a)

C. Cost to Local, State, and Federal Agencies

One state agency would be impacted by the proposed amendments to the regulation. The California Department of Parks and Recreation operates two crew and supply vessels used to service Angel Island in the San Francisco Bay Area and would be impacted by the in-use engine requirements. The regulatory cost to this state agency is estimated to be about $60,000. Barge and dredge vessels are owned and operated by two local agencies in Santa Cruz and Monterey and by the federal agency, the United States Army Corps of Engineers. The estimated regulatory costs range from $1,900 to

$46,000 over the life of the regulation for these agencies that operate barge and dredge vessels.

The proposed amendments to the regulation should not add significant costs above those already required to implement and enforce the proposed amended regulation. One additional ARB enforcement staff may be needed, at a cost of $175,000 and $12,000 for yearly travel. The ARB's administrative costs for outreach, educational efforts, and technical assistance would be absorbed within existing budgets and resources.

D. Cost-Effectiveness

Cost-effectiveness is expressed in terms of costs in dollars per unit of emissions reduced (pounds or tons). The cost-effectiveness for the proposed amendments is determined by dividing the regulatory costs (cost specifically due to compliance with the proposed amended regulation) by the total pounds of diesel PM and tons of NO_x reduced during the years 2011 to 2022. The cost-effectiveness of the proposed amendments is estimated, based on the regulatory costs, to be about $35 per pound of diesel PM reduced if all the cost is attributed to diesel PM reductions (2009 dollars or $23 per pound adjusted to NPV). If the costs are split evenly between diesel PM and NO_x, the cost effectiveness is estimated at about $17 per pound for diesel PM and $2,700 per ton of NO_x. If the costs are attributed to the combined total of diesel PM and NO_x reductions, cost- effectiveness would be about $2.50 per pound. The net present value (NPV) estimates "today's dollars" of future net cash are presented in Appendix D.

Table 22 shows the cost-effectiveness estimate for the proposed amended regulation expressed three ways. First, all costs assigned to PM, second, cost divided equally between PM and NO_x, and third, PM and NO_x emissions are combined.

Table 22: Summary of Cost-Effectiveness of the Proposed Amendments for the Period 2011-2022 (2009 dollars)

Emissions	Total Regulatory Cost 2011 – 2022	Total Emissions Reduced 2011 – 2022	Total Cost-Effectiveness
All Costs Assigned to PM			
PM	$15,000,000	435,000 lbs	$35/lb
Divide Costs Equally Between PM and NOx			
PM	$7,500,000	435,000 lbs	$17/lb
NOx	$7,500,000	2,800 tons	$2,700/ton
Combine PM and NOx Emissions			
PM + NOx	$15,000,000	6,000,000 lbs	$2.50/lb

All values rounded

The cost-effectiveness values of the amended CHC regulation are within the range of cost-effectiveness for other diesel-fueled engine regulations adopted by the Board, as shown in Table 23.

Table 23: Diesel PM Cost-Effectiveness of the Proposal and Other Regulations/Measures (All Costs Attributed to Diesel PM Reduction)

Regulation or Airborne Toxic Control Measure	Diesel PM Cost-Effectiveness
	Dollars/ Pound PM
Stationary Diesel Engine ATCM	$4 - $26
Transport Refrigeration Unit ATCM	$10 - $20
Solid Waste Collection Vehicle Rule	$28
Commercial Harbor Craft (2007)	$29
Commercial Harbor Craft (2010 amendments)	**$35**
Cargo Handling Equipment	$41

E. Alternatives Considered

The ARB staff considered two alternatives to the proposed amended CHC regulation. Alternative 1 accelerates the barge and dredge vessel engine compliance timeline and retains the proposed crew and supply compliance timeline. Alternative 2 slows down both the crew and supply vessel engine compliance timeline and the barge and dredge vessel compliance timeline and allows more time to replace the older, dirtier engines.

Alternative 1: Accelerate the Statewide Barge and Dredge Vessel Engine Compliance Timeline

For Alternative 1, barges and dredge vessels throughout the State would be subject to a 2011 to 2020 compliance schedule as shown in Table 24. This alternative would speed up the engine replacements in the first five years and keep barge and dredge vessels more in sync with the Portable Engine ATCM 2020 fleet average. Crew and supply vessels would still be subject to the 2011 to 2022 compliance schedule. Table 25 presents the engine distribution by compliance year. More engines would be required to comply with the regulation under this Alternative due to the age and useful life of the engines in the fleets. The regulatory cost would be $19 million or about $4 million more than the proposed amendments. The estimated new equipment cost of this alternative would be $52 million which is about $6 million higher than the proposed amendments' new equipment compliance cost. The total PM emissions reduced with this alternative would be higher than with the proposed schedule by about 40 tons of diesel PM and 600 tons of NO_x during the compliance schedule from 2011 to 2022. The resulting cost-effectiveness for this alternative would be slightly higher than the proposed amended regulation, $38 per pound of diesel PM reduced, as opposed to the $35 per pound of diesel PM for the proposed amendments. The resulting cost-effectiveness, dividing the cost equally between diesel PM and NO_x, would be $19 per pound of diesel PM reduced and $2,850 per ton of NO_x reduced.

Table 24: Alternative 1: Alternative Compliance Table to Accelerate Barge and Dredge Vessel Engine Compliance

Barge and Dredge

Engine Model Year	Total Annual Hours of Operation	Compliance Date
1995 and earlier	>80	12/31/2011
1996 – 1997	>80	12/31/2012
1998 – 1999	>80	12/31/2013
2000	>80	12/31/2014
2001	>80	12/31/2015
2002	>80	12/31/2016
2003	>80	12/31/2017
2004	>80	12/31/2018
2005	>80	12/31/2019
2006	>80	12/31/2020

Table 25: Alternative 1: Statewide Annual In-Use Engine Replacements

Year	Engines
2011	69
2012	15
2013	65
2014	15
2015	45
2016	9
2017	19
2018	14
2019	15
2020	21
2021	8
2022	25
Total	**320**

Alternative 1 was not chosen because it is less cost-effective than the proposed emissions reduction strategy. Accelerating the compliance dates for barge and dredge vessels would keep their compliance timeframe more in sync with the 2020 fleet average requirements of the Portable Engine ATCM. However, implementing such a strategy would put barge and dredge vessel owner/operators at an unfair economic disadvantage when compared with other CHC vessel categories. Owners and operators of barge and dredge vessels need time to switch between the Portable Engine ATCM and the CHC regulation. In addition, some incentive funding opportunities, such as Carl Moyer funding, are not allowed if the marine vessel is not self-propelled.

Alternative 2: Decelerate the Statewide Compliance Timeline for Crew and Supply Vessels and Barge and Dredge Vessels

For Alternative 2, compliance requirements for both the crew and supply vessel engines and the barge and dredge vessel engines would be decelerated. This would result in many engines being replaced later than the proposed amended regulation, but would allow more time for businesses to obtain funding and transition between the Portable Engine ATCM and the CHC regulation. For Alternative 2, crew and supply vessels and barge and dredge vessels throughout the State would still be subject to a 2011 to 2022 compliance schedule as shown in Table 26. Table 27 presents the engine distribution by compliance year. Fewer engines would be required to comply with the regulation under this Alternative due to the age and useful life of the engines in the fleets. However, this alternative would slow down the engine replacements for the older, dirtier

engines. The regulatory cost would be $14 million, or about $1 million less than the proposed amendments. The estimated new equipment cost of this alternative would be $44 million which is about $2 million lower than the proposed amendments' new equipment compliance cost. The total diesel PM emissions reduced with this alternative would be 53 tons less than with the proposed schedule. As a result, the cost-effectiveness for this alternative would be higher than the proposed amended regulation at $43 per pound of diesel PM reduced. The total NO_x reduction for this same time period would be 2,100 tons, which is about 670 tons less than the proposed amendments. The resulting cost-effectiveness, dividing the cost equally between diesel PM and NO_x, would be about $21 per pound of diesel PM reduced and $3,320 per ton of NO_x reduced.

Table 26: Alternative 2: Alternative Compliance Tables to Decelerate Compliance for Crew and Supply Vessels and Barge and Dredge Vessels

Crew and Supply Vessels

Engine Model Year	Total Annual Hours of Operation	Compliance Date
1975 and earlier	>1500	12/31/2011
1975 and earlier	>300 -- <1500	12/31/2012
1976 - 1985	>1500	12/31/2013
1976 - 1985	>300 -- <1500	12/31/2014
1986 - 1995	>1500	12/31/2015
1986 - 1995	>300 -- <1500	12/31/2016
1996 - 1999	>1500	12/31/2017
1996 - 1999	>300 -- <1500	12/31/2018
2000 - 2001	>300	12/31/2019
2002 - 2003	>300	12/31/2020
2004 - 2005	>300	12/31/2021
2006 - 2007	>300	12/31/2022

Barge and Dredge

Engine Model Year	Total Annual Hours of Operation	Compliance Date
1975 and earlier	>1500	12/31/2011
1975 and earlier	>80 -- <1500	12/31/2012
1976 -1985	>1500	12/31/2013
1976 - 1985	>80 -- <1500	12/31/2014
1986 - 1995	>1500	12/31/2015
1986 - 1995	>80 -- <1500	12/31/2016
1996 - 1999	>1500	12/31/2017
1996 - 1999	>80 -- <1500	12/31/2018
2000 - 2001	>80	12/31/2019
2002 - 2003	>80	12/31/2020
2004 - 2005	>80	12/31/2021
2006	>80	12/31/2022

Table 27: Alternative 2: Statewide Annual In-Use Engine Replacements

Year	Engines
2011	12
2012	7
2013	18
2014	9
2015	3
2016	9
2017	10
2018	37
2019	47
2020	32
2021	36
2022	35
Total	**255**

The primary reason that Alternative 2 was not chosen was because it is less cost-effective than the emissions reduction strategy in the proposed amendments and would delay the health benefits associated with the reduction of emissions of diesel PM and NO_x from crew and supply, barge, and dredge vessels. Staff has determined that the reduced cost-effectiveness and the delay in achieving emissions reductions associated with this alternative outweigh the reduced fiscal impacts on companies that own/operate crew and supply, barge, and dredge vessels.

Presented below in Table 28 is a comparison of the cost effectiveness of the proposed amendments with Alternatives 1 and 2 (2009 dollars).

Table 28: Summary of Average Cost-Effectiveness of Proposed Amendments and Both Alternatives for the Period 2011- 2022

Emissions	Proposed Amendment (2009 dollars)	Alternative 1	Alternative 2
All costs assigned to PM			
PM ($/lb)	$35	+ 9%	+ 23%
Divide Costs Equally Between PM and NOx			
PM ($/lb)	$17	+ 12%	+ 24%
NOx ($/ton)	$2,690	+ 6%	+ 23%
Combined PM and NOx Emissions			
PM + NOx ($/lb)	$2.50	No Change	+ 20%

7. PUBLIC OUTREACH AND COMMENTS

A. Public Outreach

Staff has provided opportunities for participation in the rulemaking process. Staff's public outreach efforts included three public workshops at which draft regulatory concepts, language and cost estimates were provided. Staff's public outreach efforts included meetings and teleconferences with stakeholders, owner/operators of crew and supply vessels, districts, and other interested parties. Staff also created a website and maintained an email address list to automatically update interested parties about rulemaking developments. The website can be accessed at http://www.arb.ca.gov/ports/marinevess/harborcraft.htm.

B. Environmental Justice

The proposed amendments will reduce diesel PM and NO_x emissions in all coastal areas and near ports where crew and supply, barge and dredge vessels operate. Communities near ports are often more heavily impacted by the goods movement emission sources operating at these locations. On December 13, 2001, the Board approved "Policies and Actions for Environmental Justice," which formally established a framework for integration of environmental justice into ARB's programs, consistent with the directive of California state law. These policies apply to all communities in California; however, environmental justice issues have been raised specifically in the context of low-income areas and ethnically diverse communities. The proposed amendments are consistent with our environmental justice policy to reduce health risk in all communities, including those with low-income and ethnically diverse populations.

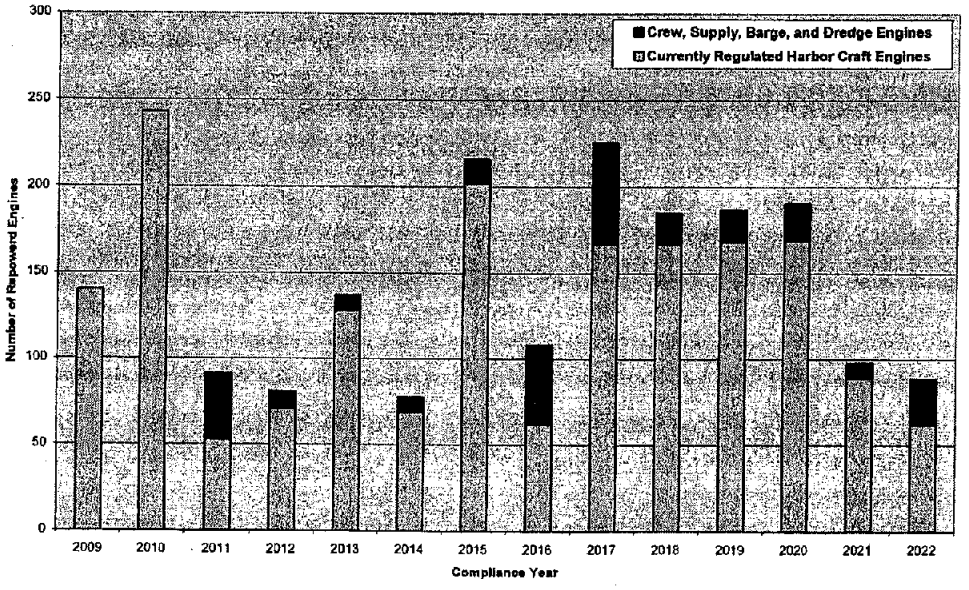
C. Public Comments

1. Engine Repower Capacity

The ARB staff believes that engine replacement would be the primary compliance option chosen to meet the proposed in-use engine requirements. During the development of the 2007 CHC regulation, the capacity of the State's boat yard/repair facilities to handle the number of engine replacements was raised as a concern. Staff has determined that the number of engine replacements that likely would occur due to the proposed amendments' compliance schedule would be achievable with the State's current capacity for engine replacements, but may place some strain on this capacity. Staff estimates that, under the proposed compliance schedule, an average of about 23 crew and supply, barge, and dredge engine replacements of both auxiliary and propulsion engines per year will occur over the compliance period. Because auxiliary engine replacements are less involved and do not necessarily require a dry dock facility, staff assume dry docking for the propulsion engine replacements would be the limiting factor for the State's capacity.

Staff conducted a phone survey in 2007 contacting owner/operators of boat yards, boat building facilities, and boat repair facilities in California to determine the annual statewide capacity for CHC engine replacements. Based on the survey, staff estimates that there is sufficient capacity even at the maximum repower rate to still allow current facilities to conduct other repowering and non-repowering activities. Additional facilities and capacity that may be built in response to this proposed amended regulation would further ensure that the State will have sufficient capacity to conduct the expected number of repowers, though some years may be strained. Figure 8 illustrates the repowers assumed per year and the additional crew and supply, barge, and dredge vessel engine repowers that will be needed to comply with the proposed amended regulation. ARB staff believes that California's boat yards, boat builders, and boat repairers currently have the capacity to absorb the numbers of engine replacements that would result from the implementation of the proposed amended regulation.

Figure 8: Estimated Numbers of Commercial Harbor Craft Engines Replaced Annually Due to Implementation of the Current Commercial Harbor Craft Regulation and the Proposed Amended Regulation



2. District Authority to Require Additional Reductions

Comments have been made by barge and dredge owners regarding the implementation of the proposed amendments in relation to the PERP program. Pursuant to the PERP regulation, districts can establish additional requirements beyond the statewide regulation for auxiliary engines on marine vessels that operate within three nautical

miles of shore. The authority for districts to establish additional requirements is provided by the PERP regulation in order to allow the districts to mitigate any potential local emissions impacts. Barge and dredge vessel owner/operators have stated they the districts requirements are overly burdensome and can vary greatly by district. Staff has begun discussions with some of the affected districts to identify ways to achieve greater consistency and develop an effective solution. Staff is committed to continue to meet with affected stakeholders to discuss options.

8. RECOMMENDATION

In developing the proposed amendments, ARB staff worked closely with stakeholders including vessel owner/operators, marine engine industry representatives, and districts. ARB staff recommends the Board approve the proposed amendments to the regulations, as presented in Appendix A, for the following reasons:

- the early turnover of in-use, pre-Tier 1 and Tier-1 diesel-fueled engines on crew and supply, barge, and dredge vessels to lower emitting Tier 2 and Tier 3 engines would reduce diesel PM, NO_x, and other air pollutant emissions, exposure, and potential health risk across California, particularly along the shoreline and California ports;
- the proposed amendments are technologically feasible, cost-effective, and necessary to carry out the Board's responsibilities;
- the proposed amendments will help the ARB achieve the goal of the Diesel Risk Reduction Plan to reduce diesel PM emissions from all sources by 85 percent by 2020;
- the proposed amendments will help achieve the emission reduction goals of the Emissions Reduction Plan for Ports and Goods Movement approved by the Board in April 2006; and
- the emission reductions from the proposed amendments are necessary to help attain and maintain ambient air quality standards for fine particulate matter (PM2.5) and ozone.

REFERENCES:

(ARB, 2006) California Air Resources Board, *Emission Reduction Plan for Ports and Goods Movement in California*; March 2006.

(ARB, 2007a) Air Resources Board, *Staff Report: Initial Statement of Reasons for Regulations to Reduce Emissions from Diesel Engines on Commercial Harbor Craft Operated Within California Waters and 24 Nautical Miles of the California Baseline.* September 2007.

(ARB, 2007b) Air Resources Board, *Technical Support Document: Initial Statement of Reasons for Regulations to Reduce Emissions from Diesel Engines on Commercial Harbor Craft Operated Within California Waters and 24 Nautical Miles of the California Baseline.* September 2007.

(ARB, 2007c) Title 17, California Code of Regulations section 93118.5, *Airborne Toxic Control Measure for Diesel Engines on Commercial Harbor Craft Operated Within California Waters and 24 Nautical Miles of the California Baseline.* 2007.

(ARB, 2007d) Title 17, California Code of Regulations, section 93116.1-93116.3, *Airborne Toxic Control Measure for Diesel Engine Particulate Matter from Portable Engines Rated at 50 horsepower and Greater.* 2007.

(ARB, 2008) Air Resources Board, *Initial Statement of Reasons for Proposed Rulemaking: Fuel Sulfur and Other Operational Requirements for Ocean-Going Vessels Within California Waters and 24 Nautical Miles of the California Baseline.* June 2008.

(ARB, 2008a) Air Resources Board, *The Carl Moyer Program Guidelines*, April 22, 2008.

(ARB, 2009) Air Resources Board, *Staff Report: Initial Statement of Reasons for the Proposed Amendments to the Regulations Applicable to Portable Diesel Engines and Diesel Engines Used in Off-Road and On-Road Vehicles.* December 10, 2009.

(40 CFR Part 94) U.S. Environmental Protection Agency, *Control of Emissions from Marine Compression – Ignition Engines.*

(40 CFR Part 1042) U.S. Environmental Protection Agency, *Control of Emissions from from New and In-Use Marine Compression Ignition Engines and Vessels*

Appendix A

Proposed Regulation Orders

Title 13, CCR section 2299.5

and

Title 17, CCR section 93118.5

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APPENDIX A

PROPOSED REGULATION ORDER
THE EMISSION LIMITS AND REQUIREMENTS FOR DIESEL ENGINES ON COMMERCIAL HARBOR CRAFT OPERATED WITHIN CALIFORNIA WATERS AND 24 NAUTICAL MILES OF THE CALIFORNIA BASELINE

Amend section 2299.5, title 13, chapter 5.1, California Code of Regulations (CCR). Proposed amendments are shown in underline to indicate additions and ~~strikeout~~ to indicate deletions.

Section 2299.5. Low Sulfur Fuel Requirement, Emission Limits and Other Requirements for Commercial Harbor Craft.

Any person who sells, supplies, offers for sale, purchases, owns, operates, leases, charters, or rents any new or in-use diesel fueled Harbor Craft, as defined in section 93118.5(d)(3~~6~~9), title 17, California Code of Regulations (CCR), must comply with the low sulfur fuel use requirement in section 93118.5(e)(1) and other requirements in section 93118.5, title 17, CCR when operating the craft within Regulated California Waters, as defined in section 93118.5(d)(6~~5~~8), title 17, CCR, except as in sections 93118.5(b), ~~and~~ (c), and (e)(1)(F), title 17, CCR. Notwithstanding the definition of Harborcraft in section 2299(b)(4), title 13, CCR, and in section 93117(b)(4), title 17, CCR, the low sulfur fuel requirement in section 93118.5(e)(1), title 17, CCR applies to an ocean-going tugboat or towboat that has a "registry" (foreign trade) endorsement on its United States Coast Guard certificate of documentation or that is registered under the flag of a country other than the United States, except when on voyages comprised of "continuous and expeditious navigation" through Regulated California Waters, as provided in section 93118.5(c)(1), title 17, CCR. This section shall not be construed as expanding or limiting either the application or requirements of section 93118.5, title 17, CCR, but is intended to alert affected persons of the Harbor Craft fuel use requirement and other provisions in that section.

NOTE: Authority cited: Sections 39600, 39601, 41511, 43013, and 43018, Health and Safety Code. Reference: Sections 39000, 39001, 39515, 39516, 41510, 41511, 43013, 43016, and 43018, Health and Safety Code; and *Western Oil and Gas Ass'n v. Orange County Air Pollution Control District*, 14 Cal.3rd 411, 121 Cal.Rptr. 249 (1975).

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PROPOSED REGULATION ORDER
AIRBORNE TOXIC CONTROL MEASURE
FOR DIESEL ENGINES ON COMMERCIAL HARBOR CRAFT OPERATED WITHIN CALIFORNIA WATERS AND 24 NAUTICAL MILES OF THE CALIFORNIA BASELINE

Amend section 93118.5, title 17, chapter 1, subchapter 7.5, California Code of Regulations (CCR). Proposed amendments are shown in underline to indicate additions and ~~strikeout~~ to indicate deletions.

Section 93118.5. Airborne Toxic Control Measure for Commercial Harbor Craft.

(a) *Purpose.*

The purpose of this section is to reduce diesel particulate matter (PM), oxides of sulfur (SO_x), and oxides of nitrogen (NO_x) from diesel propulsion and auxiliary engines on harbor craft that operate in any of the waters subject to this section ("Regulated California Waters"). This section implements provisions of the Goods Movement Emission Reduction Plan, adopted by the California Air Resources Board (ARB or CARB) in April 2006, to reduce emissions and health risk from ports and the movement of goods in California.

(b) *Applicability.*

(1) Except as provided in subsections (b) and (c), this section applies to any person who sells, supplies, offers for sale, purchases, owns, operates, leases, charters, or rents any new or in-use diesel fueled harbor craft that is operated in any of the Regulated California Waters.

(2) *Engine Subject to Multiple ARB Regulations.* ~~The requirements of this section shall control i~~In the event an engine that is permanently affixed to ~~on~~ a harbor craft is subject to the requirements of this section, and either:

~~(A) of this section, and either~~
(A)~~(B)~~ the regulation for portable compression ignition (CI) engines and equipment (sections 93116-93116.5, title 17, California Code of Regulations (CCR)), or
(B~~C~~) the regulation for in-use off-road ~~CI~~ diesel vehicles ~~engines and equipment~~ (sections 2420-2427, title 13, CCR)~~,~~

the requirements of this section shall supersede the requirements of either of the regulations cited in 93118.5(b)(2)(A) or 93118.5(b)(2)(B) above. ~~This provision shall apply only to each engine on the vessel that meets the above requirements and is permanently affixed to the vessel (i.e., the engine, its fueling system, or its exhaust system is welded or otherwise physically connected to the vessel or~~

~~other vessel system in such a way that the engine cannot be easily removed for use in a land-based application without modifications).~~

(3) This section applies to towboats and tugboats engaged in or intending to engage in the service of pulling, pushing, or hauling alongside tank vessels or tank barges.

(4) Notwithstanding the provisions of title 13, CCR, section 2299.1 and title 17, CCR, section 93118, this section shall apply to any ocean-going tugboats and towboats and shall supersede the requirements of 13 CCR 2299.1 and 17 CCR 93118 in their entirety for ocean-going tugboats and towboats. For purposes of this paragraph, "ocean-going tugboats and towboats" shall mean tugboats and towboats with a "registry" (foreign trade) endorsement on its United States (U.S.) Coast Guard certificate of documentation, or tugboats and towboats that are registered under the flag of a country other than the United States.

(5) Nothing in this section shall be construed to amend, repeal, modify, or change in any way any other applicable State, U.S. Coast Guard, or other federal requirements. Any person subject to this section shall be responsible for ensuring compliance with both U.S. Coast Guard regulations and the requirements of this section and any other applicable State and federal requirements, including but not limited to, obtaining any necessary approvals, exemptions, or orders from the U.S. Coast Guard.

(6) This section shall not apply to any engine and equipment that fall within the scope of the preemption of Section 209(e)(1)(A) of the Federal Clean Air Act (42 United States Code (U.S.C.) 7543(e)(1)(A)) and as defined by regulation of the U.S. Environmental Protection Agency (U.S. EPA).

(c) *Exemptions.*

All or portions of this section do not apply to the following, as provided below, but vessels that are partly or wholly exempt from this section may be subject to other State or federal regulations and requirements. A person subject to such other State or federal regulations and requirements is solely responsible for ensuring the vessel complies with those regulations and requirements. All other portions of this section shall apply unless otherwise specified:

(1) The requirements of this section do not apply to harbor craft voyages that are comprised of continuous and expeditious navigation through any of the Regulated California Waters for the purpose of traversing such bodies of water without entering California internal or estuarine waters or calling at a port, roadstead, or terminal facility. "Continuous and expeditious navigation" includes stopping and anchoring only to the extent such stopping and anchoring are required by the U.S. Coast Guard; rendered necessary by force majeure or distress; or made for the purpose of rendering assistance to persons, ships, or aircraft in danger or distress. This exemption does not apply to the passage of a

harbor craft that engages in any of the prejudicial activities specified in United Nations Convention on the Law of the Seas (UNCLOS) 1982, Article 19, subpart 2. Further, notwithstanding any U.S. Coast Guard mandated stops or stops due to force majeure or the rendering of assistance, this exemption does not apply to a vessel that was otherwise scheduled or intended to enter California internal or estuarine waters or call at a port, roadstead or terminal facility;

(2) Except as provided in Paragraph (3) below, a temporary replacement vessel is exempt only from the requirements set forth in subsection (e)(6) and only upon written approval by the ARB's Executive Officer (E.O.). All other provisions in this section shall apply to a temporary replacement vessel subject to this paragraph. An owner or operator, who has or will have a vessel taken out of service, may apply in writing to the E.O. to operate a temporary replacement vessel pursuant to the following:

(A) The E.O. shall approve or disapprove such a request within 15 days of receipt. The E.O. shall not unreasonably withhold approval of the request to operate the temporary replacement vessel;
(B) If the approval is granted, the temporary replacement vessel's operating time will be specified in the approval by the E.O., along with any other terms, conditions, or requirements the E.O. deems necessary, but in no case shall the approved operating time in Regulated California Waters for a specific temporary replacement vessel exceed one year total for any single vessel that is temporarily replaced; and
(C) No temporary replacement vessel exemptions shall be approved for a vessel that is taken out of service more than 12 months in any 24-month period or if the E.O. cannot determine the length of time a vessel has been taken out of service within any 24-month period;

(3) A temporary replacement vessel used to replace a vessel that has its homeport in the South Coast Air Quality Management District (SCAQMD) is exempt only from the compliance dates set forth in Table 8 of subsection (e)(6) and only upon written approval from the E.O. All other provisions in this section, including but not limited to, the compliance dates specified in Table 7, Table 9, and Table 10 of subsection (e)(6), shall apply to a temporary replacement vessel subject to this paragraph. An owner or operator, who has or will have a vessel taken out of service, may apply in writing to the E.O. to operate a temporary replacement vessel pursuant to the following:

(A) The E.O. shall approve or disapprove such a request within 15 days of receipt. The E.O. shall not unreasonably withhold approval of the request to operate the temporary replacement vessel;
(B) If the approval is granted, the temporary replacement vessel's operating time will be specified in the approval by the E.O., along with any other terms, conditions, or requirements the E.O. deems necessary, but in no case shall the approved operating time in Regulated California Waters for a

specific temporary replacement vessel exceed one year total for any single vessel that is temporarily replaced; and

(C) No temporary replacement vessel exemptions shall be approved for a vessel that is taken out of service more than 12 months in any 24-month period or if the E.O. cannot determine the length of time a vessel has been taken out of service within any 24-month period;

(4) A temporary emergency rescue/recovery vessel is exempt from this section in its entirety;

(5) A recreational vessel is exempt from this section in its entirety;

(6) An ocean-going vessel, except for ocean-going tugboats and towboats as provided in subsection (b)(4), is exempt from this section in its entirety;

~~(7) The following engines are exempt from this section in its entirety:~~

~~(A) Notwithstanding section (b)(2), a vessel engine, including an engine on a barge, which is registered with ARB's Portable Engine~~ Equipment ~~Registration Program (PERP) (sections 2450 through 2465, title 13, CCR) before January 1, 2009;~~

~~(B) A vessel engine that is registered with PERP on or after January 1, 2009, and is not permanently affixed to the vessel (i.e., the engine, its fueling system, and its exhaust system are not welded or otherwise physically connected to the vessel or other vessel system, which permits the engine to be easily removed for use in a land-based application without modifications); and~~

~~(C) A vessel engine that is registered and permitted under local air district regulations before January 1, 2009;~~

(~~8~~7) A registered historic vessel is exempt only from subsection (e)(6);

(~~9~~8) A U.S. Coast Guard vessel is exempt from this section in its entirety;

(~~10~~9) A military tactical support vessel is exempt from this section in its entirety;

(~~11~~10) An engine rated less than 50 horsepower (hp) is exempt only from subsection (e)(6);

~~(12) An engine or vessel that is operated less than 300 hours per calendar year is exempt only from the requirements of subsection (e)(6); and~~

(13~~1~~) *Near-Retirement Vessels.* A harbor craft is exempt from the requirements of subsection (e)(6)(C) and (e)(6)(D) if all of the following criteria have been met:

(A) the vessel is scheduled to be taken out of service and retired permanently;
(B) the vessel is actually taken out of service and retired on or before the retirement date scheduled under (A) above; and
(C) the vessel has an engine with a compliance date, as set forth in subsection (e)(6)(D), that is within one year of the vessel's scheduled retirement date under (A) above.

Operation of a vessel subject to this provision after the scheduled retirement date or the engine's compliance date, whichever occurs later, is a separate violation of this section for each and every engine and each and every day of operation during which an engine on the vessel does not meet the requirements of subsection (e)(6)(C) or other parts of this section.

(d) *Definitions.*

For purposes of this section, the definitions of Health and Safety Code (H&S) sections 39010 through 39060 shall apply except as otherwise specified in this section:

(1) "Air District" means one of the local air pollution control districts (APCDs) or air quality management districts (AQMDs) established under H&S section 40000 et seq.

(2) "Alternative Diesel Fuel" means any fuel used in a diesel engine that is not commonly or commercially known, sold, or represented by the supplier as diesel fuel No. 1-D or No. 2-D, pursuant to the specifications in American Society for Testing and Materials (ASTM) D975-81, "Standard Specification for Diesel Fuel Oils," as modified in May 1982, which is incorporated herein by reference, and does not require engine or fuel system modifications for the engine to operate, although minor modifications (e.g., recalibration of the engine fuel control) may enhance performance. Examples of alternative diesel fuels include, but are not limited to, biodiesel and biodiesel blends not meeting the definition of CARB diesel fuel; Fischer-Tropsch fuels; emulsions of water in diesel fuel; and fuels with a fuel additive, unless:

(A) the additive is supplied to the engine fuel by an on-board dosing mechanism, or
(B) the additive is directly mixed into the base fuel inside the fuel tank of the engine, or
(C) the additive and base fuel are not mixed until engine fueling commences, and no more additive plus base fuel combination is mixed than required for a single fueling of a single engine.

(3) "Alternative Fuel" means natural gas, propane, ethanol, methanol, gasoline, hydrogen, electricity, or other technologies that do not meet the definition of CARB diesel or alternative diesel fuel. "Alternative fuel" also means any mixture that only contains these fuels.

(4) "Annual Hours of Operation" means the total number of hours, rounded to the nearest whole hour, a vessel engine is used for all commercial purposes in Regulated California Waters in the calendar year (January 1 to December 31) immediately prior to the engine's applicable compliance date set forth in subsection (e)(6)(D). For example, if a vessel is used for commercial fishing and commercial non-fishing purposes, the total number of hours combined for both uses shall be the total annual hours of operation for that vessel.

(5) "Auxiliary Engine" means an engine designed primarily to provide power for uses other than propulsion.

(6) "Averaging" means an exchange of excess reduced regulated emissions among engines on vessels in the same owner's or operator's fleet.

(7) "Baseline" means the emissions level of a diesel engine using CARB diesel fuel as configured upon initial marine installation.

(8) "Barge" means a vessel having a flat-bottomed rectangular hull with sloping ends and built with or without a propulsion engine.

(9) "California Air Resources Board (CARB) Diesel Fuel" means any diesel fuel that meets the specifications of vehicular diesel fuel, as defined in title 13 CCR, sections 2281, 2282, 2284, 2299, and title 17 CCR section 93116.

(10) "California Baseline" means the mean lower low water line along the California coast, as shown on the following National Oceanic and Atmospheric Administration (NOAA) Nautical Charts as authored by the NOAA Office of Coast Survey, which are incorporated herein by reference:

(A) Chart 18600, Trinidad Head to Cape Blanco (January 2002);
(B) Chart 18620, Point Arena to Trinidad Head (June 2002);
(C) Chart 18640, San Francisco to Point Arena (August 2005);
(D) Chart 18680, Point Sur to San Francisco (June 2005);
(E) Chart 18700, Point Conception to Point Sur (July 2003);
(F) Chart 18720, Point Dume to Purisima Point (January 2005); and
(G) Chart 18740, San Diego to Santa Rosa Island (~~April 2005~~March 2007).

(11) "CARB" means the California Air Resources Board. CARB may also be referred to as "ARB."

(12) "Carbon Monoxide (CO)" is a colorless, odorless gas resulting from the incomplete combustion of hydrocarbon fuels.

(13) "Category 1 engine" means any marine engine with a displacement of less than 5.0 liters per cylinder and with a maximum horsepower (hp) rating of 50 hp or greater.

(14) "Category 2 engine" means any marine engine with a displacement of 5.0 to less than 30 liters per cylinder.

(15) "Category 3 engine" means any marine engine with a displacement of greater than 30 liters per cylinder.

(16) "Certified marine engine" means an engine that is certified by U.S. EPA as meeting the requirements of title 40, Code of Federal Regulations (CFR), Part 94 or Part 1042.

(17) "Certified nonroad engine" means an engine that is certified by U.S. EPA as meeting the requirements of title 40, Code of Federal Regulations (CFR), Part 89.

(178) "Coast Guard Vessel" means any vessel or boat owned or operated by the U.S. Coast Guard, including, but not limited to, U.S. Coast Guard cutters and patrol boats that are used for law enforcement, defense operations, marine science, search and rescue missions, training missions, coastal surveillance, servicing aids to navigation, and marine environmental response.

(189) "Compliance Date" means the date by which time a vessel engine must meet the requirements set forth in subsection (e)(6)(C). The "compliance date" for a vessel engine is set forth in ~~either~~ Table 7~~or~~, Table 8, Table 9, or Table 10 in subsection (e)(6)(D), whichever is applicable.

(1920) "Crew and Supply Vessel" means a self-propelled vessel used for carrying personnel and/or supplies to and from off-shore and in-harbor locations (including, but not limited to, off-shore work platforms, construction sites, and other vessels).

(201) "Date of Acquisition" means, for a vessel or engine subject to this regulation, the date of purchase as defined by the date shown on the front of the cashed check, the date of the financial transaction, or the date on the vessel or engine purchasing agreement, whichever is earliest of the three dates.

(212) "Diesel Engine" means an internal combustion, compression-ignition (CI) engine, or pilot ignition engine with operating characteristics significantly similar to the theoretical diesel combustion cycle. The regulation of power by controlling fuel supply in lieu of a throttle is indicative of a compression ignition engine.

(223) "Diesel Fuel" means any fuel that is commonly or commercially known, sold, or represented by the supplier as diesel fuel, including any mixture of primarily liquid

hydrocarbons (HC) - organic compounds consisting exclusively of the elements carbon and hydrogen - that is sold or represented by the supplier as suitable for use in an internal combustion, compression-ignition engine.

(234)"Diesel-Fueled" means a diesel engine fueled in whole or part by diesel fuel.

(245) "Diesel Oxidation Catalyst (DOC)" means an emission control technology that employs a catalyst to promote oxidation processes in diesel exhaust gases, usually designed to reduce emissions of the organic fraction of diesel particulates, gas-phase HC, and CO.

(256) "Diesel Particulate Filter (DPF)" means an emission control technology that reduces diesel PM emissions in engine exhaust gases by trapping the particles in a flow filter substrate and periodically removes the collected particles by either physical action or by oxidizing (burning off) the particles in a process called regeneration.

(267) "Diesel Particulate Matter (Diesel PM)" means the particles found in the exhaust of diesel engines, which may agglomerate and adsorb other species to form structures of complex physical and chemical properties.

(278) "Direct Control" means owning, operating, having a contract, lease, or other arrangement to operate a harbor craft.

(29) "Dredge" means a vessel designed to remove earth from the bottom of waterways, by means of including, but not limited to, a scoop, a series of buckets, or a suction pipe. Dredges include, but are not limited to, hopper dredges, clamshell dredges, or pipeline dredges.

(2830)"Emission Control Strategy" means any device, system, or strategy employed to reduce emissions from an engine, including, but not limited to, diesel oxidation catalysts, selective catalytic reduction systems, diesel particulate filters, alternative diesel fuels, water emulsified fuels, and any combination of the above.

(2931)"Estuarine Waters" means an arm of the sea or ocean that extends inland to meet the mouth of a river.

(302) "Excursion Vessel" means a self-propelled vessel that transports passengers for purposes including, but not limited to, dinner cruises; harbor, lake, or river tours; scuba diving expeditions; and whale watching tours. "Excursion Vessel" does not include crew and supply vessels, ferries, and recreational vessels.

(313) "Executive Officer" means the Executive Officer (E.O.) of the California Air Resources Board or his/her designee.

(34) "Family Emission Limit (FEL)" means an emission level that is declared by the manufacturer to serve in lieu of an emission standard for certification purposes and for the averaging, banking, and trading program, as defined in title 13, California Code of Regulations, section 2423 or 40 CFR Part 89.112(d), or 40 CFR Part 1039.101, as they existed on April 27, 2010.

(~~32~~5) "Ferry" means a harbor craft having provisions only for deck passengers or vehicles, operating on a short run, on a frequent schedule between two points over the most direct water route, and offering a public service of a type normally attributed to a bridge or tunnel.

(~~33~~6) "Fishing Vessel" means a self-propelled vessel that is either:

(A) a commercial vessel dedicated to the search for, and collection of, fish for the purpose of sale at market or directly to a purchaser(s), or
(B) a charter vessel used for hire by the general public and dedicated to the search for and collection of, fish for the purpose of general consumption.

(~~34~~7) "Fleet" means the total number of harbor craft owned, rented, or leased by an owner or operator in an air district or distinct locale within Regulated California Waters or the statewide population of a specific vessel type.

(~~35~~8) "Fuel Additive" means any substance designed to be added to fuel or fuel systems or other engine-related engine systems such that it is present in-cylinder during combustion.

(~~36~~9) "Harbor Craft" (also called "Commercial Harbor Craft") means any private, commercial, government, or military marine vessel including, but not limited to, passenger ferries, excursion vessels, tugboats, ocean-going tugboats, towboats, push-boats, crew and supply vessels, work boats, pilot vessels, supply boats, fishing vessels, research vessels, U.S. Coast Guard vessels, hovercraft, emergency response harbor craft, and barge vessels that do not otherwise meet the definition of ocean-going vessels or recreational vessels.

(~~37~~40) "Homeport" means the port in which a vessel is registered or permanently based.

(~~38~~41) "In-Use Harbor Craft" means a harbor craft that is not a new harbor craft.

(~~39~~42) "In-Use Marine Engine" means a marine engine that is not a new marine engine.

(~~40~~3) "Lease" means a contract by which the owner (lessor) of a property, such as a vessel or engine, grants the right to use or occupy the property to another person (lessee) for a specified term and for a specified rent.

(~~41~~4) "Level" means, unless the context requires otherwise, one of three categories of ARB-verified diesel emission control strategies as set forth in title 13, CCR,

section 2700 et seq.: Level 1 means the strategy reduces engine diesel PM emissions by between 25 and 49 percent; Level 2 means the strategy reduces engine diesel PM emissions by between 50 and 84 percent; and Level 3 means the strategy reduces engine diesel PM emissions by 85 percent or greater, or reduces engine diesel PM emissions to less than or equal to 0.01 grams per brake horsepower-hour (g/bhp-hr).

(425) "Low-Use" means the operation of any compression-ignition engine associated with a harbor craft vessel for less than ~~300~~the total annual hours of operation in Regulated California Waters, based on the immediately preceding calendar year, that deems it subject to the in-use engine requirements.

(436) "Military Tactical Support" means a vessel that meets military specifications, is owned by the U.S. Department of Defense, the U.S. Coast Guard, the U.S. Military services or its allies, and is used in combat, combat support, combat services support, tactical or relief operations or training for such operations.

(447) "Model Year" means the diesel engine manufacturer's annual production period, which includes January 1st of a calendar year, or if the manufacturer has no annual production period, the calendar year.

~~(45) "Multipurpose Harbor Craft" means a harbor craft that serves as a ferry, excursion vessel, tugboat, or towboat but is also used as a work, crew and supply, pilot, fishing, supply, or other vessel.~~

(468) "New Harbor Craft" means a harbor craft for which both of the following criteria are true:

(A) it is built, or its keel is laid, on or after January 1, 2009, and
(B) the equitable or legal title to the harbor craft has never been transferred to an ultimate purchaser.

Where the equitable or legal title to the harbor craft is not transferred to an ultimate purchaser prior to the harbor craft being placed into service, the harbor craft ceases to be new when it is placed into service. A harbor craft is placed into service when it is used for its functional purposes.

(479) "New Marine Engine" means a marine engine for which both of the following criteria are true:

(A) it is manufactured or imported on or after January 1, 2009, and
(B) the equitable or legal title to the engine has never been transferred to an ultimate purchaser.

Where the equitable or legal title to the engine is not transferred to an ultimate purchaser prior to the engine being placed into service, the engine ceases to be

new when it is placed into service. An engine is placed into service when it is used for its functional purposes.

(4850) "Nitrogen Oxides or Oxides of Nitrogen (NO_x)" means compounds of nitric oxide (NO), nitrogen dioxide (NO_2), and other oxides of nitrogen, which are typically created during combustion processes and are major contributors to smog formation and acid deposition.

(4951) "Non-Methane Hydrocarbons (NMHC)" means the sum of all hydrocarbon (HC) air pollutants except methane.

(502) "Ocean-going Vessel" means a commercial, government, or military vessel meeting any one of the following criteria:

(A) a vessel greater than or equal to 400 feet in length overall (LOA) as defined in 50 CFR § 679.2, as adopted June 19, 1996;

(B) a vessel greater than or equal to 10,000 gross tons (GT ITC) per the convention measurement (international system) as defined in 46 CFR 69.51-.61, as adopted September 12, 1989; or

(C) a vessel propelled by a marine compression-ignition engine with a per-cylinder displacement of greater than or equal to 30 liters.

(513) "Operate" means steering or otherwise running the vessel or its functions while the vessel is underway, moored, anchored, or at dock.

(524) "Own" means having all the incidents of ownership, including the legal title, whether or not that person lends, rents, or pledges the vessel; having or being entitled to the possession of a vessel as the purchaser under a conditional sale contract; or being the mortgagor of a vessel.

(535) "Particulate Matter (PM)" means any airborne finely divided material, except uncombined water, which exists as a liquid or solid at standard conditions (e.g., dust, smoke, mist fumes, or smog).

(56) "Permanently affixed to a harbor craft" means the engine, its fueling system, or its exhaust system is welded or otherwise physically connected to the vessel or other vessel system in such a way that the engine cannot be easily removed for use in a land-based application without modifications.

(547) "Person" includes all of the following:

(A) any person, firm, association, organization, partnership, business trust, corporation, limited liability company, or company;

(B) any state or local governmental agency or public district, or any officer or employee thereof; and

(C) the United States or its agencies, to the extent permitted by federal law.

(58) "Pilot Vessel" means a vessel designed for, but not limited to, the transfer and transport of maritime pilots to and from ocean-going vessels while such vessels are underway.

(569) "Port" means any facility used for water-borne commerce. "Port" includes, but is not limited to, facilities also known as "marine terminals" and "roadsteads."

(5760) "Portable CI Engine" means a compression-ignition (CI) engine designed and capable of being carried or moved from one location to another. Indicators of portability include, but are not limited to, wheels, skids, carrying handles, dolly, trailer, or platform. Portable engines are not self-propelled.

(5861) "Portable ~~Engine~~ Equipment Registration Program (PERP)" means the statewide program designed to promote the use of clean portable engines in California, as provided for in title 13, CCR, sections 2450 through 2465. Once registered in the program, engines and equipment units can operate throughout the State without being required to obtain individual permits from each air pollution control or air quality management district in which they operate.

(5962) "Pre-Tier 1 Engine" means an engine that was built before the effective date of U.S. EPA's Tier 1 marine engine emission standards (Tier 1 marine standards), as set forth in 40 CFR 94.

(603) "Propulsion Engine" means an engine that provides power to move a vessel through the water or directs the movement of a vessel.

(614) "Purchase Date" means the date shown on the front of the cashed check; the date of the financial transaction; or the date on the engine or harbor craft purchase, rental, or lease agreement, whichever is earliest.

(625) "Push Boat" means any self-propelled vessel engaged in or intending to engage in the service of pulling, pushing, or hauling along side barges or other vessels, or any combination of pulling, pushing, or hauling along side barges or other vessels. "Push boats" is interchangeable with "towboats."

(636) "Recreational Vessel" means a vessel that is intended by the vessel manufacturer to be operated primarily for pleasure or leased, rented, or chartered to another for the latter's pleasure, excluding the following vessels: (1) vessels of less than 100 gross tons that carry more than 6 passengers, (2) vessels of 100 gross tons or more that carry one or more passengers, and (3) vessels used solely for competition.

(647) "Registered Historic Vessel" means a vessel listed in the National Register of Historic Places pursuant to the National Historic Preservation Act of 1966 (16 U.S.C. 470).

(658) "Regulated California Waters" means all of the following:

(A) all California internal waters;
(B) all California estuarine waters;
(C) all California ports, roadsteads, and terminal facilities (collectively "ports");
(D) all waters within 3 nautical miles of the California baseline, starting at the California-Oregon border and ending at the California-Mexico border at the Pacific Ocean, inclusive;
(E) all waters within 12 nautical miles of the California baseline, starting at the California-Oregon border and ending at the California-Mexico border at the Pacific Ocean, inclusive;
(F) all waters within 24 nautical miles of the California baseline, starting at the California-Oregon border to 34.43 degrees North, 121.12 degrees West; inclusive; and
(G) all waters within the area, not including any islands, between the California baseline and a line starting at 34.43 degrees North, 121.12 degrees West; thence to 33.50 degrees North, 118.58 degrees West; thence to 32.65 degrees North, 117.81 degrees West; and ending at the California-Mexico border at the Pacific Ocean, inclusive.

(69) "Regulated In-Use Vessel" means a vessel that operates as one of the vessel categories subject to in-use engine standards in subsection (e)(6).

(6670) "Rent" means payment for the use of harbor craft or diesel engine for a specified term.

(6771) "Retirement" means the act of taking an engine or harbor craft out of service (i.e., to "retire") so that it subsequently never again operates in any of the Regulated California Waters. "Retirement" does not include an engine or harbor craft that is sold for use outside California then subsequently operated in any of the Regulated California Waters.

(6872) "SCAQMD" means the South Coast Air Quality Management District, as defined in Health and Safety Code section 40410 et seq. and described in section 60104, title 17, California Code of Regulations, and shall include all waters subject to the jurisdiction of the SCAQMD.

(6973) "Supply Vessel" means a self-propelled vessel used for carrying supplies to and from off-shore and in-harbor locations including, but not limited to, off-shore work platforms, construction sites, and other vessels.

(74) "Swing Engine" means an engine maintained at a dockside location for use in a vessel or fleet of vessels which can be installed as a replacement for an engine that has been removed from a vessel for repair or routine maintenance. The removed engine may then become the swing engine once repair or maintenance has been completed.

(~~70~~5) "Take Out of Service" means the act of dry-docking, mooring, anchoring, or otherwise tying up a harbor craft at dock to conduct maintenance, repairs, replacements, or upgrades such that the vessel cannot be operated in Regulated California Waters while such acts are conducted on the vessel.

(~~71~~6) "Tank Barge" means a non-self-propelled vessel constructed or adapted primarily to carry, or that carries, oil or hazardous material in bulk as cargo or cargo residue.

(~~72~~7) "Tank Vessel" or "Tanker" means a self-propelled vessel constructed or adapted primarily to carry, or that carries, oil or hazardous material in bulk as cargo or cargo residue.

(~~73~~8) "Temporary emergency rescue/recovery vessel" means a self-propelled vessel that performs duties including, but not limited to, policing harbor areas, fire fighting, rescue operations, oil spill prevention, and on-water oil removal whose homeport is not within California and is brought into California for the immediate use of emergency rescue or recovery and returns to its homeport outside of California at the conclusion of its emergency rescue/recovery mission.

(~~74~~9) "Temporary replacement vessel" means a self-propelled vessel that is brought into service to temporarily replace a California vessel that has been temporarily taken out of service. For purposes of this section, "temporary replacement vessel" includes only the following:

(A) vessels that are used in the SCAQMD but have a homeport in California outside of the SCAQMD; and
(B) vessels that are used anywhere in California, including the SCAQMD, but have a homeport outside of California.

(~~75~~80) "Tier 1 Marine Engine Emission Standards (Tier 1 marine standards)" means the U.S. EPA marine engine Tier 1 emission standards, as promulgated by U.S. EPA and set forth in "Control of Emissions of Air Pollution from New Marine Compression-Ignition Engines at or Above 37 kW" (64 Federal Register (FR) 73299-73373, December 29, 1999)(40 CFR Part 94), both of which are incorporated herein by reference. The standards from 40 CFR Part 94 are summarized in Table 1. In the event of a conflict between a Tier 1 marine standard in this section and its corresponding standard in 40 CFR Part 94, the standard in 40 CFR Part 94 controls.

Table 1: U.S. EPA Tier 1 Marine Engine Emission Standards

Category	Power (kilowatt (kW)) & Displacement (liters/cylinder (l/cyl))	Engine Speed (Revolutions per minute (rpm))	Tier 1 Model Year	PM (g/bhp-hr)	NO_x+HC (g/bhp-hr)*	CO (g/bhp-hr)
1, 2, 3, including Recreational	≥ 37 kW & ≥ 2.5 l/cyl	rpm ≥ 2000	2004	-	7.3	-
		130 ≤ rpm <2000	2004	-	33.57 x rpm $^{-0.2}$	-
		rpm <130	2004	-	12.7	-

(40 CFR Part 94)
*converted emission standards from 40 CFR 94, which are expressed in grams per kilowatt–hour (g/kW-hr) to g/hp-hr by the following: g/kW-hr * (0.746) = g/hp-hr.

(~~76~~81) "Tier 2 Marine Engine Emission Standards (Tier 2 marine standards)" means the U.S. EPA marine engine Tier 2 emission standards, as promulgated by U.S. EPA and set forth in "Control of Emissions of Air Pollution from New Marine Compression-Ignition Engines at or Above 37 kW" (64 FR 73299-73373, December 29, 1999)(40 CFR Part 94), both of which are incorporated herein by reference. In the event of a conflict between a Tier 2 marine standard in this section and its corresponding standard in 40 CFR Part 94, the standard in 40 CFR Part 94 controls.

Table 2: U.S. EPA Tier 2 Marine Engine Emission Standards for NO_x + HC, PM, and CO

Category	Displacement (Disp.) (liters/cylinder)	Date	NO_x+HC (g/bhp-hr)*	PM (g/bhp-hr)*	CO (g/bhp-hr)*
1	Disp.< 0.9 and power ≥50 hp*	2005	5.6	0.30	3.7
	0.9 ≤ Disp. < 1.2	2004	5.4	0.22	3.7
	1.2 ≤ Disp. < 2.5	2004	5.4	0.15	3.7
	2.5 ≤ Disp. < 5.0	2007	5.4	0.15	3.7
2	5.0 ≤ Disp. < 15	2007	5.8	0.20	3.7
	15 ≤ Disp. < 20 (power < 4424 hp*)	2007	6.5	0.37	3.7
	15 ≤ Disp. < 20 (power ≥ 4424 hp*)	2007	7.3	0.37	3.7
	20 ≤ Disp. < 25	2007	7.3	0.37	3.7
	25 ≤ Disp. < 30	2007	8.2	0.37	3.7

(40 CFR Part 94)
*converted emission standards and maximum power rating from 40 CFR 94, which are expressed in g/kW-hr and kW to g/hp-hr and hp, respectively, by the following: g/kW-hr (0.746) = g/hp-hr or kW (1.34) = hp

(~~77~~82) "Tier 3 Marine Engine Emission Standards (Tier 3 marine standards)" means the U.S. EPA marine engine Tier 3 emission standards, as promulgated by U.S. EPA and set forth in "Final Rule: Control of Emissions of Air Pollution from Locomotive and Marine Compression-Ignition Engines Less Than 30 Liters Per Cylinder" (73 FR 25245 et seq., May 6, 2008) (40 CFR Part 1042), both of which are incorporated herein by reference. The standards from 40 CFR Part 1042 are summarized in Table 3, Table 4, and Table 5. In the event of a conflict between

a Tier 3 marine standard in this section and its corresponding standard in 40 CFR Part 1042, the standard in 40 CFR Part 1042 controls. [Note: No Tier 3 marine standards apply for commercial Category 1 engines at or above 3700 kW. See "Tier 4 Marine Engine Emission Standards" for the standards that apply to these engines.]

Table 3: U.S. EPA Tier 3 Marine Standards for Marine Diesel Category 1 Commercial Standard Power Density Engines below 3700 kW

Rated kW	L/Cylinder	PM g/bhp-hr[e]	NOx + HC[d] g/bhp- hr[e]	Model Year
19 to < 75 kW	<0.9[a]	0.22	5.6	2009
		0.22 [b]	3.5 [b]	2014
75 to <3700 kW	<0.9	0.10	4.0	2012
	0.9 - <1.2	0.09	4.0	2013
	1.2 - <2.5	0.08 [c]	4.2	2014
	2.5 - <3.5	0.08 [c]	4.2	2013
	3.5 - <7.0	0.08 [c]	4.3	2012

(a) <75 kW engines at or above 0.9 L/cylinder are subject to the corresponding 75-3700 kW standards.
(b) Option: 0.15 g/bhp-hr PM / 4.3 g/bhp-hr NOx+HC in 2014.
(c) This standard level drops to 0.07 g/bhp-hr in 2018 for <600 kW engines.
(d) Tier 3 NOx+HC standards do not apply to 2000-3700 kW engines.
(e) Converted emission standards from 40 CFR part 1042, which are expressed in g/kW-hr to g/hp-hr by the following: g/kW-hr (0.746) = g/hp-hr.

Table 4: U.S. EPA Tier 3 Marine Standards for Marine Diesel Category 1 Recreational and Commercial High Power Density Engines below 3700 kW

Rated kW	L/Cylinder	PM g/bhp- hr[c]	NOx + HC g/bhp- hr[c]	Model Year
19 to <75 kW	<0.9 [a]	0.22	5.6	2009
		0.22 [b]	3.5 [b]	2014
75 to <3700 kW	<0.9	0.11	4.3	2012
	0.9 - <1.2	0.10	4.3	2013
	1.2 - <2.5	0.09	4.3	2014
	2.5 - <3.5	0.09	4.3	2013
	3.5 - <7.0	0.08	4.3	2012

(a) <75 kW engines at or above 0.9 L/cylinder are subject to the corresponding 75-3700 kW standards.
(b) Option: 0.15 g/bhp-hr PM / 4.3 g/bhp-hr NOx+HC in 2014.
(c) Converted emission standards from 40 CFR part 1042, which are expressed in g/kW-hr to g/bhp-hr by the following: g/kW-hr (0.746) = g/bhp-hr.

Table 5: U.S. EPA Tier 3 Marine Standards for

Marine Diesel Category 2 Engines below 3700 kW[a,b]

L/Cylinder	Rated kW	PM g/bhp- hr[c]	NOx+HC g/bhp- hr[c]	Model Year
7 - <15	<2000	0.10	4.6	2013
	≥2000	0.10	5.8	2013
15 - <20[a]	<2000	0.25	5.2	2014
20 - <25[a]	<2000	0.20	7.3	2014
25 - <30[a]	<2000	0.20	8.2	2014

(a) No Tier 3 marine standards apply for Category 2 engines with per-cylinder displacement above 15.0 liters if maximum engine power is at or above 2000 kW. See "Tier 4 Marine Engine Emission Standards" for the standards that apply for these engines.

(b) For Category 2 engines at or above 1400 kW, optional Tier 3 and Tier 4 standards are available with some manufacturer restrictions, PM / NOx+HC at 0.10 / 5.8 g/bhp-hr in 2012, with Tier 4 standards in 2015.

(c) Converted emission standards from 40 CFR part 1042, which are expressed in g/kW-hr to g/bhp-hr by the following: g/kW-hr * (0.746) = g/bhp-hr.

(~~78~~83) "Tier 4 Marine Engine Emission Standards (Tier 4 marine standards)" means the U.S. EPA marine engine Tier 4 emission standards, as promulgated by U.S. EPA and set forth in "Final Rule: Control of Emissions of Air Pollution from Locomotive and Marine Compression-Ignition Engines Less Than 30 Liters Per Cylinder" (73 FR 25245 et seq., May 6, 2008) (40 CFR Part 1042), both of which are incorporated herein by reference. Table 6 summarizes the Tier 4 marine standards from 40 CFR Part 1042. In the event of a conflict between a Tier 4 marine standard in this section and its corresponding standard in 40 CFR Part 1042, the marine standard in 40 CFR Part 1042 controls.

Table 6: U.S. EPA Tier 4 Marine Standards for Marine Diesel Category 1 and Category 2 Engines above 600 kW

Rated kW	L/Cylinder	PM g/bhp- hr[a]	NOx g/bhp- hr[a]	HC g/bhp- hr[a]	Model Year
At or above 3700 kW	<15.0	0.09	1.3	0.14	2014 [b]
	15.0 to <30.0	0.19	1.3	0.14	2014 [b]
	all	0.04	1.3	0.14	2016 [b]
2000 to <3700 kW	all	0.03 [d]	1.3	0.14	20164 [b,c,d]
1400 to <2000 kW	all	0.03	1.3	0.14	2016 [b,c]
600 to <1400 kW	all	0.03	1.3	0.14	2017

(a) Converted emission standards from 40 CFR part 1042, which are expressed in g/kW-hr to g/bhp-hr by the following: g/KW-hr (0.746) = g/bhp-hr

(b) Optional compliance start dates may be used within these model years; see 40 CFR part 1042.

(c) For Category 2 engines at or above 1400 kW, optional Tier 3 and Tier 4 marine standards are available with some manufacturer restrictions, PM / NOx+HC at 0.10 / 5.8 g/bhp-hr in 2012, with Tier 4 marine standards in 2015.

(d) The Tier 3 PM standards continue to apply for Category 1 and Category 2 engines with per-cylinder displacements below 15.0 liters in model years 2014 and 2015 only. For Category 2 engines with per-cylinder displacement at or above 15.0 liters, the PM standard is 0.25 g/bhp-hr for engines at or above 2000 kW and below 3300 kW, and 0.20 g/bhp-hr for engines at or above 3300 kW and below 3700 kW, in model years 2014 and 2015 only.

(84) "Tier 2 Off-Road or Nonroad Emission Standards (Tier 2 off-road standards)" means an engine subject to the Tier 2 new engine emission standards in title 13, CCR, Section 2423(b)(1)(A) or Title 40, CFR, Part 89.112(a) as they existed on April 27, 2010, both of which are incorporated herein by reference. This also includes engines certified under the averaging, banking, and trading program with respect to the Tier 2 FEL listed in Title 13, CCR, 2423(b)(2)(A) or Title 40, CFR, Part 89.112(d), as they existed on April 27, 2010, both of which are incorporated herein by reference.

(85) "Tier 3 Off-Road or Nonroad Emission Standards (Tier 3 off-road standards)" means an engine subject to the Tier 3 new engine emission standards in title 13, CCR, Section 2423(b)(1)(A) or Title 40, CFR, Part 89.112(a), as they existed on April 27, 2010, both of which are incorporated herein by reference. This also includes engines certified under the averaging, banking, and trading program with respect to the Tier 3 FEL listed in Title 13, CCR, 2423(b)(2)(A) or Title 40, CFR, Part 89.112(d), as they existed on April 27, 2010, both of which are incorporated herein by reference.

(86) "Tier 4 Off-Road or Nonroad Emission Standards (final Tier 4 off-road standards)" means an engine subject to the final after-treatment-based Tier 4 emission standards in title 13, CCR, Section 2423(b)(1)(B) or Title 40, CFR, Part 1039.101, as they existed on April 27, 2010, both of which are incorporated herein by reference. This also includes engines certified under the averaging, banking, and trading program with respect to the Tier 4 FEL listed in Title 13, CCR, 2423(b)(2)(B) or Title 40, CFR, Part 1039.101, as they existed on April 27, 2010, both of which are incorporated herein by reference.

(87) "Tier 4 Off-Road or Nonroad Emission Standards (interim Tier 4 off-road standards)" means an engine subject to the interim Tier 4 emission standards (also known as transitional) in title 13, CCR, Section 2423(b)(1)(B) and/or Title 40, CFR, Part 1039.101, as they existed on April 27, 2010, both of which are incorporated herein by reference. This also includes engines certified under the averaging, banking, and trading program with respect to the Tier 4 FEL listed in Title 13, CCR, 2423(b)(2)(B) or Title 40, CFR, Part 1039.101, as they existed on April 27, 2010, both of which are incorporated herein by reference.

(~~79~~88) "Total Hydrocarbons (THC)" or "Hydrocarbons (HC)" means the total mass of open chain and cyclic hydrocarbon molecules.

(809) "Towboat" means any self-propelled vessel engaged in or intending to engage in the service of pulling, pushing, or hauling along side barges or other vessels, or any combination of pulling, pushing, or hauling along side barges or other vessels.

(~~81~~90) "Tugboat" means any self-propelled vessel engaged in, or intending to engage in, the service of pulling, pushing, maneuvering, berthing, or hauling along side other vessels, or any combination of pulling, pushing, maneuvering, berthing or hauling along side such vessels in harbors, over the open seas, or through rivers and canals. Tugboats generally can be divided into three groups: harbor or short-haul tugboats, ocean-going or long-haul tugboats, and barge tugboats. "Tugboat" is interchangeable with "towboat" and "push boat" when the vessel is used in conjunction with barges.

(~~82~~91) "Verification Procedure, Warranty and In-Use Compliance Requirements for In-Use Strategies to Control Emissions from Diesel Engines (Verification Procedure)" means the ARB regulatory procedure codified in title 13, CCR, commencing with section 2700, which is incorporated herein by reference, that engine manufacturers, sellers, owners, or operators may use to verify the reductions of diesel PM or NO_x from in-use diesel engines through the use of a particular diesel emission control strategy.

(~~83~~92) "Verified Diesel Emission Control Strategy (VDECS)" means an emission control strategy, designed primarily for the reduction of diesel PM emissions, which has been verified pursuant to the "Verification Procedure for In-Use Strategies to

Control Emissions from Diesel Engines" in title 13, CCR, commencing with section 2700. VDECS can be verified to achieve Level 1 diesel PM reductions (25-49 percent), Level 2 diesel PM reductions (50-84 percent), or Level 3 diesel PM reductions (85 percent or greater). VDECS may also be verified to achieve NOx reductions.

(~~84~~93) "Vessel" or "Marine Vessel" means any tugboat, tanker, freighter, passenger ship, barge, or other boat, ship, or watercraft, except those used primarily for recreation.

(~~85~~94) "Work Boat" means a self-propelled vessel that is used to perform duties such as fire/rescue, law enforcement, hydrographic surveys, spill/response, research, training, and construction (including drilling).

e) ***Fuel Use and Engine Emission Requirements.***

[Note: The plain English narrative in this overview is intended as a convenient guide for the reader and in no way adds, deletes, modifies, or otherwise affects the legal requirements and substantive provisions specified in subsection (e) or any other part of this section. Subsection (e) sets forth the various fuel and emission requirements for harbor craft subject to this regulation, and can be broken down as follows:

- Subsection (e)(1) specifies low sulfur fuel use requirements that apply to all harbor craft, new and in-use.
- Subsection (e)(2) specifies the requirement for installing hour-meters on all harbor craft, new and in-use.
- Subsection (e)(3) establishes requirements that apply to transactions involving new engines to be installed on in-use vessels, including a limited 6-month "sell-through" provision for non-complying engines, and engine replacement in cases where a compliant engine meeting the required physical or performance characteristics is not available.
- Subsection (e)(4) sets forth requirements that apply to newly acquired new harbor craft, including ferries.
- Subsection (e)(5) sets forth requirements that apply only to newly acquired new ferries, above and beyond those established in subsection (e)(4). These provisions include requirements for applying Best Available Control Technology (BACT) to new ferries and their engines.
- Subsection (e)(6) is the key provision of this regulation, as it achieves emission reductions by requiring the eventual replacement or cleanup of engines in the fleet of in-use ferries, excursion vessels, tugboats, towboats, push boats, crew and supply vessels, and ~~multipurpose harbor craft~~, barge and dredge vessels. This subsection requires that owners and operators eventually replace or otherwise bring into compliance with the specified engine standards all of their pre-Tier 1 and Tier 1-certified engines in their in-use vessels by the dates shown in the specified

compliance schedules. The compliance dates are designed to clean up the fleet's oldest and dirtiest engines first, while giving more time for relatively newer, Tier 1 engines to be upgraded or replaced. Vessels (ferries, excursion vessels, tugboats, and towboats) with their homeport in the SCAQMD have an accelerated compliance schedule to reflect that district's greater need for expedited emission reductions. The compliance schedules are grouped by vessel type, location of the vessel's homeport, the engine's model year, and the engine's annual hours of operation.

- Subsection (e)(6)(E) provides for a limited set of circumstances under which the E.O. may grant short extensions to the compliance dates if warranted.]

(1) All Harbor Craft – Low Sulfur Fuel Use Requirement.

Beginning January 1, 2009, a person subject to this section may only fuel a diesel engine on a harbor craft with one of the following:

(A) CARB diesel fuel; or
(B) an alternative diesel fuel as defined in subsection (d)(2); or
(C) any alternative diesel fuel that does not meet subsection (e)(1)(B) above but is certified by CARB as meeting the requirements of the Verification Procedure; or
(D) CARB diesel fuel used with fuel additives that meet the requirements of the Verification Procedure; or
(E) any combination of subsection (e)(1)(A) through (D) above; or
(F) if a harbor craft subject to this section is traveling from a port located outside of California, and that port does not have any fuels listed in subsections (e)(1)(A) through (E), that vessel's diesel engines can be fueled with either: U.S. EPA on-road diesel fuel meeting the specifications contained in 40 CFR §§ 80.500 et seq. or U.S. EPA nonroad diesel fuel (commencing June 1, 2010) meeting the specifications contained in 40 CFR 80.29 and 66 FR 5002 (January 18, 2001). The vessel owner or operator must retain records documenting the fuel purchase, the location and the name of the non-California port, and its lack of availability of fuels listed in subsections (e)(1)(A) through (E) on-board the vessel for a minimum of one year after the purchase of the fuel, and must make such records available upon the request of the Executive Officer.

(2) All Harbor Craft – Installation and Use of Non-Resettable Hour Meters.

Beginning January 1, 2009, a person subject to this section may not operate a harbor craft without an installed and properly operating, non-resettable hour meter, which accurately measures the number of hours an engine operates. The hour meter must be installed on each diesel engine on the vessel in a manner that allows reasonable personnel access to the hour meter without impediment.

(3) *All In-Use Harbor Craft – Requirements for Newly Acquired Engines.*

Beginning January 1, 2009, a person subject to this section may not sell, purchase, offer for sale, lease, rent, import, or otherwise acquire a new or in-use diesel engine for an in-use harbor craft, which is intended to operate or actually operates in any of the Regulated California Waters, unless that engine on the date of acquisition:

(A) is certified to meet the Tier 2 or Tier 3 marine standards in effect on that date for a new engine of the same power rating and displacement. The newly acquired engine is not required to meet the Tier 4 marine standards unless it is replacing an engine on the in-use vessel that was certified as meeting Tier 4 marine standards. Engines certified to meet the Tier 2, Tier 3, or interim Tier 4 off-road standards in effect on the date of acquisition for a new engine of the same power rating and displacement may only be acquired for use as an auxiliary engine on harbor craft if the engine or vessel manufacturer has complied with 40 CFR § 1042.605 *(Marinized land-based engines already certified to other standards for nonroad or heavy-duty highway engines for marine use)*, as it existed on April 27, 2010; or

(B) is newly acquired within the allowable 6 month "sell-through" period, as set forth in this paragraph. For purposes of this paragraph only, the allowable sell-through period runs through 6 months after the date the Tier 2, Tier 3, or Tier 4 marine standards or Tier 3, interim Tier 4, or final Tier 4 off-road standards have come into effect for a new engine of the same power rating and displacement as the engine being replaced on the in-use vessel. Engines that are subsequently sold, supplied, offered for sale, or otherwise newly acquired after the 6 month sell-through period are subject to the requirements specified in paragraph (A) of this subsection, even if the engine was previously newly acquired within the 6 month sell-through period.; or

(C) is replacing an engine that is non-functioning due to equipment failure, and the E.O. has determined, pursuant to the provisions of 40 CFR § 1042.615 engine replacement exemption, as it existed on April 27, 2010, that no engine certified to the current standards is produced by any manufacturer with the appropriate physical or performance characteristics to repower the vessel. In such event, an alternate engine may be acquired for the replacement. Pursuant to 40 CFR § 1042.615, a separate determination, addressing each tier of emission standards that is more stringent than the emission standards for the engine being replaced must be made. For example, if the engine being replaced was built before the Tier 2 standards applied, and engines of that size are currently subject to Tier 3 standards, a person must consider whether any Tier 2 or Tier 3 engines have the appropriate physical and performance characteristics for replacing the old

engine. If a Tier 2 engine is determined to have the appropriate physical and performance characteristics, it may be selected as the replacement engine. Documentation of these determinations must be supplied to the E.O. and the E.O.'s determination must be obtained before an engine replacement is made pursuant to this provision.

(4) All New Harbor Craft (Including All New Ferries) – Requirements for Newly Acquired Vessels.

Beginning January 1, 2009, a person subject to this section may not sell, purchase, offer for sale, lease, rent, import, or otherwise acquire a new harbor craft for use in any of the Regulated California Waters unless each of the diesel propulsion engines on the vessel meets the applicable Tier 2, Tier 3, or Tier 4 marine standards in effect on the date of vessel acquisition. Auxiliary engines meeting the applicable Tier 2, Tier 3, interim Tier 4, or Final Tier 4 off-road standards in effect on the date of vessel acquisition may be sold, purchased, offered for sale, leased, rented, imported, or otherwise acquired for use if the engine or vessel manufacturer has complied with 40 CFR 1042.605 (*Marinized land-based engines already certified to other standards for nonroad or heavy-duty highway engines for marine use*), as it existed on April 27, 2010. Diesel propulsion engines in new ferries with a capacity to transport more than 75 passengers in Regulated California Waters must also meet the requirements specified in subsection (e)(5) below. ~~The person must also meet the additional requirements set forth in subsection (e)(5) below for diesel propulsion engines in newly acquired new ferries.~~

(5) Selected New Ferries Only – Additional Requirements for All Newly Acquired Propulsion Engines.

(A) Beginning January 1, 2009, any person ~~subject to this section may not sell, purchase, offer for sale, import, or otherwise acquire a new ferry with the capacity to transport 75 or more passengers for use in any of the Regulated California Waters unless each propulsion diesel engine on the vessel:~~ who owns or operates a new ferry with the capacity to transport 75 or more passengers and that is used in any of the Regulated California Waters must demonstrate that each diesel propulsion engine that is certified to either the Tier 2 or Tier 3 marine standards will be operated in conjunction with the use of Best Available Control Technology (BACT) as determined and pre-approved by the E.O. pursuant to this provision.

~~1. meets either the Tier 2 or Tier 3 standards that are in effect on the date of vessel acquisition; and~~

~~2. will be operated only in conjunction with the use of Best Available Control Technology (BACT), as determined and pre-approved by the E.O. pursuant to this provision.~~

~~(B) In lieu of installing or using BACT pursuant to paragraph (A)2 above, the person may comply with paragraph (A)2 by installing on the new ferry a propulsion engine(s) that is certified to the Tier 4 standards if a Tier 4 certified engine is available at the time that the new ferry is delivered. If no Tier 4 certified engines are available at the time of ferry delivery, the person must meet the provisions of paragraphs (A)1 and (A)2.~~

~~(C)~~(B)For purposes of this section, "BACT" is the diesel emission control strategy (DECS), whether verified or unverified pursuant to 13 CCR section 2700 et seq., that is determined by the E.O. as meeting all of the following criteria:

1. it provides or is expected to continuously provide the greatest reduction feasible of NOx or diesel PM when used with the ferry's propulsion diesel engine;

2. the use of BACT does not result in an increase of 10 percent or more of any air pollutant, including NOx and diesel PM, relative to the engine's emissions of that air pollutant without the use of BACT; and

3. either the DECS manufacturer or an authorized dealer of the DECS determines or otherwise agrees with the E.O. that use of the DECS on or with the new ferry's propulsion engine(s) would not invalidate or otherwise adversely affect the propulsion engine's original warranty.

For purposes of this section, DECS may include, but is not be limited to, exhaust treatment controls and the use of alternative fuels or fuel additives.

~~(D)~~ (C) The E.O. shall determine the appropriate level of BACT and specify such BACT in an Executive Order granting such approval. Applications to comply with the requirements of paragraph (A)2 by using BACT must follow the application and review procedure set forth below:

1. Application Process.

   For all new ferries for which the keel is laid on or after January 1, 2009, the application for BACT approval must be submitted in writing to the E.O. for evaluation before the keel is laid. The BACT application must contain, at a minimum, the following information:

   a. the applicant company's name, address, and contact information;

   b. information specific to the harbor craft and engine(s) on which BACT will be used, including the vessel name and identification number(s); engine make, model, and serial numbers; and all other information that uniquely identify the engine;

c. certification documentation, engineering calculations, emissions test data, or other information that establishes the diesel PM and NO_x emissions of the engine in combination with the proposed BACT. Emissions and emission reduction estimates must include both diesel PM and NO_x emissions and be expressed in grams per brake horsepower-hour (g/bhp-hr) unless otherwise specified by the E.O. Information submitted pursuant to this provision will be used as follows:

   i. The E.O. shall use the information to compare the emissions resulting from the proposed use of BACT with the emissions quantified in BACT determinations previously approved by the E.O.;
   ii. If there are no previous BACT determinations available for comparison, the E.O. shall use ARB staff's best engineering judgment to determine if the proposed BACT provides the greatest feasible reduction of diesel PM or NOx; and
   iii. Th e E.O. may require the applicant to submit additional emissions data for other air pollutants if the E.O. believes that the proposed use of BACT may increase any air pollutant by 10 percent or more relative to the engine emissions without the proposed BACT; and

d. the proposed recordkeeping, reporting, monitoring, and testing procedures that the applicant plans to use to demonstrate continued effectiveness of the BACT.

2. E.O. Review and Final Decision-Making Process.

   a. Within 15 days after receiving a BACT application, the E.O. shall notify the applicant whether the application is deemed sufficiently complete to proceed with further evaluation. If the application is deemed incomplete, the notification must identify the application's deficiencies. The E.O. shall have an additional 15-day period for reviewing each set of documents or information submitted in response to an incomplete determination. Nothing in this subsection prohibits the E.O. from requesting additional information from the applicant, during any part of the BACT application process, which the E.O. determines is necessary to evaluate the application.

   b. Within 30 days of deeming an application complete, the E.O. shall take final action to either approve or deny a BACT application, and the E.O. shall notify the applicant accordingly. If the application is denied or modified, the E.O. shall state the reasons for the denial or modification in the notification. The E.O. shall specify all terms, conditions, and requirements the E.O. believes are necessary for the

ferry engine and BACT to operate properly and reduce emissions of air pollutants consistent with this section. The reporting and recordkeeping requirements specific to the use of BACT must include, at a minimum:

i. hours of operation for the engine and BACT and fuel usage;
ii. usage of any alternative fuels, additives, agents, flow rates, and emission test results;
iii. mai ntenance procedures for the engine(s) and its BACT; and
iv. any other measurements or recordings specified by the E.O.

The E.O. shall make the approval/disapproval notification to the applicant and identification of the approved/disapproved BACT available to the public on ARB's internet site.

3. Post-Approval Vessel, Engine, and BACT Operation.

A person ~~subject to this provision~~ who owns or operates a new ferry with the capacity to transport 75 or more passengers and that is used in Regulated California Waters must maintain operating records and other information in the manner and form specified by the E.O. in the BACT approval~~. The person~~ and must submit to ARB upon request all records and reports created pursuant to this provision, which must be maintained and retained for ARB inspection a minimum of three years after the records or reports were created.

(6) *In-Use Engines and Vessels – Schedules for Meeting Tier 2 or Tier 3 Standards.*

(A) *For Pre-Tier 1 and Tier-1 Certified Engines on Ferries, Excursion Vessels, Tugboats, Towboats, Push Boats, and ~~Multipurpose Harbor Craft~~ Crew and Supply Vessels, Barge and Dredge Vessels Only.*

1. *Applicability.*

This subsection (e)(6) applies to any person who owns, operates, sells, purchases, offers for sale, leases, rents, imports, or otherwise acquires an in-use ferry, excursion vessel, tugboat, towboat, push boat, ~~or multipurpose harbor craft~~crew and supply vessel, or barge and dredge vessel (in-use regulated category vessel) with a pre-Tier 1 or Tier-1 certified marine or off-road engine ~~for use~~ operating in any one of the above regulated in-use vessel categories for:

a. a total of 300 hours per calendar year or more if operating in either ferry, excursion vessel, tugboat, towboat, pushboat, or crew and supply vessel categories, or
b. a total of 80 hours per calendar year if operating in either barge or dredge vessel categories

in ~~any of the~~ Regulated California Waters. This subsection applies to all such engines on all such vessels.

2. *General Requirement.*

a. After January 1, 2009, a person ~~subject to this provision~~ who owns, operates, sells, purchases, offers for sale, leases, rents, imports, or otherwise acquires an in-use ferry, excursion vessel, tugboat, towboat, or push boat with a pre-Tier 1 or Tier-1 certified engine and that operates in any of the above regulated in-use vessel categories may not own, operate, sell, purchase, offer for sale, lease, rent, import, or otherwise acquire an in-use engine, or a vessel with an in-use engine, unless that engine complies with at least one of the compliance methods set forth in subsection (e)(6)(C) by the applicable compliance date. The compliance methods set forth in subsection (e)(6)(C) involve either replacement of the in-use engine with a cleaner engine or demonstrating that the in-use engine already meets specified standards, as set forth below.

b. After July 1, 2011, a person who owns, operates, sells, purchases, offers for sale, leases, rents, imports, or otherwise acquires an in-use crew and supply vessel, or barge and dredge vessel with a pre-Tier 1 or Tier-1 certified engine and that operates in any of the above regulated in-use vessel categories may not own, operate, sell, purchase, offer for sale, lease, rent, import, or otherwise acquire an in-use engine, or a vessel with an in-use engine, unless that engine complies with at least one of the compliance methods set forth in subsection (e)(6)(C) by the applicable compliance date. The compliance methods set forth in subsection (e)(6)(C) involve either replacement of the in-use engine with a cleaner engine or demonstrating that the in-use engine already meets specified standards, as set forth below.

For purposes of this subsection, "applicable compliance date" is either the compliance date, as set forth in subsection (e)(6)(D) for the in-use engine, or the compliance date from subsection (e)(6)(D) for the in-use engine, as extended pursuant to subsection (e)(6)(E), whichever applies and occurs later.

(B) [Reserved for Future Use]

(C) *Compliance Methods.*

1. *Method C1 – Replacement of the in-use engine with a U.S. EPA certified Tier 2 engine or one with a higher certification level (e.g., Tier 3-certified).*

   A person may comply under this method by replacing the in-use engine with an engine certified to Tier 2- or Tier 3-~~certified~~ marine engine standards as set forth in this paragraph. The replacement engine must meet the U.S. EPA Tier 2 or Tier 3 marine standards that would apply to a new engine, of the same size and configuration as the in-use engine, at the time of the applicable compliance date set forth in subsection (e)(6)(D). If the in-use engine is an auxiliary engine, the replacement engine must meet the provisions of sections 93118.5(e)(3) and (e)(4).

   [Note: For example, if the applicable compliance date is January 1, 2010, and the Tier 2 marine standards would be in effect at that time for a new engine of the same size and configuration as the in-use engine, the replacement would need to meet Tier 2 marine standards. However, if the applicable compliance date is instead January 1, 2013, and the Tier 3 marine standards would be in effect for a new engine of the same size and configuration as the in-use engine, the replacement engine would need to meet Tier 3 marine standards.]

   Once the in-use engine has been replaced with an engine that is U.S. EPA-certified to meet Tier 2 or Tier 3 marine or off-road standards, as set forth above, the engine is deemed to be in compliance with this subsection (e)(6) and no further replacements of this engine are required under this subsection. Tier 3-certified marine or off-road engines may be used as the replacement engine to comply with this paragraph, even if Tier 4-certified marine or off-road emission engines become available by the applicable compliance date;

2. *Method C2 – Demonstrate to the E.O.'s written satisfaction that the in-use engine already meets the Tier 2 marine standards or Tier 2 off-road standards for auxiliary engines greater than 50 hp or less than 75 hp, or greater than 750 hp that apply or would apply to new engines on the date the Tier 2 marine or off-road standards became effective.*

   a. A person may comply under this method by demonstrating to the E.O.'s written satisfaction that:

      i. the in-use engine already meets the Tier 2 marine standards or Tier 2 off-road standards on greater than 50 hp or less than 75 hp, or greater than 750 hp auxiliary engines,

ii. which apply to new engines of the same power rating and displacement as the in-use engine.

b. This compliance method is available only if the person makes the required demonstration before the date Tier 3 marine standards become effective for new engines of the same size and configuration as the in-use engine. The person may rebuild the in-use engine to a cleaner standard or implement a diesel emission control strategy to aid in meeting these standards. [Note: For example, if the Tier 3 marine standards would have become effective on January 1, 2015 for a new engine of the same size and configuration as the in-use engine, the person would need to provide the Tier 2-compliance demonstration to the E.O.'s written satisfaction by January 1, 2015.]

c. For purposes of the demonstration, the person may, upon approval by the E.O., rely on any source of reliable and credible information, including but not limited to, any of the following:

i. the results from using the test method specified in section (j) or an alternative method approved by the E.O.;
ii. the in-use engine manufacturer's certification test data or other emissions test data for that in-use engine;
iii. emissions test data derived from another in-use engine that is configured and used in a substantially similar way to the in-use engine;
iv. emissions test data used to meet the regulatory requirements of ARB's Verification Procedure for the non-verified emission control strategy implemented; or
v. emissions test data used to meet the requirements for U.S. EPA certification for systems providing remanufacture to a cleaner standard.

The E.O. may, in his/her sole discretion and based on good engineering judgment, exclude any information he/she determines is not reliable or credible.

3. *Method C3 – Demonstrate to the E.O.'s written satisfaction that the in-use engine already meets the Tier 2 or Tier 3 marine standards or Tier 2 or Tier 3 off-road standards for auxiliary engines in effect or would be in effect for new engines at the time of the applicable compliance date.*

a. A person may comply under this method by demonstrating to the E.O.'s written satisfaction that:

i. the in-use engine already meets the Tier 2 or Tier 3 marine standards or Tier 2 or Tier 3 off-road standards on auxiliary engines,
ii. which apply to new engines of the same power rating and displacement as the in-use engine,
iii. at th e time of the applicable compliance date for the in-use engine.

b. To comply with this method, the person may demonstrate that the in-use engine meets the Tier 3 marine or off-road standards, even if Tier 4 marine or off-road standards come into effect by the applicable compliance date. The person may rebuild the in-use engine to a cleaner standard or implement a diesel emission control strategy to aid in meeting these standards.

c. For purposes of the demonstration, the person may, upon E.O. approval, rely on any source of reliable and credible information, including but not limited to, any of the following:

i. the results from using the test method specified in section (j) or an alternative method approved by the E.O.;
ii. the in-use engine manufacturer's certification test data or other emissions test data for that in-use engine;
iii. emissions test data derived from another in-use engine that is configured and used in a substantially similar way to the in-use engine;
iv. emissions test data used to meet the regulatory requirements of ARB's Verification Procedure for the non-verified emission control strategy implemented; or
v. emissions test data used to meet the requirements for U.S. EPA certification for systems providing remanufacture to a cleaner standard.

The E.O. may, in his/her sole discretion and based on good engineering judgment, exclude any information he/she determines is not reliable or credible.

4. *Method C4 – Demonstrate to the E.O's written satisfaction that the in-use engine has not and will not operate 300 or more hours per calendar year in any of the regulated in-use vessel categories or 80 or more hours per calendar year in the barge or dredge vessel categories.*

A person may comply under this method by demonstrating to the E.O.'s written satisfaction that the engine is a low-use engine. This compliance method requires the person to provide records to the E.O. of the engine's total annual hours of operation while operating in any of the

regulated in-use vessel categories for the calendar year immediately preceding the demonstration. The person must also provide documentation sufficient for the E.O. to project future annual hours of operation for the engine. The person will be deemed in compliance with this method only if such records and documentation demonstrate to the E.O.'s written satisfaction that the in-use engine has not and will not operate 300 or more hours per calendar year operating in any of the regulated in-use vessel categories with the exception of the dredge or barge categories, or 80 or more hours per calendar year in either the dredge or barge categories.

(D) *Compliance Dates.*

Table 7, ~~and~~ Table 8, Table 9, and Table 10 below set forth the compliance dates by which a person must meet the requirements of subsection (e)(6)(A). Table 7 applies only to ~~vessels~~ engines on ferries, excursion vessels, tugboats, towboats, and push boats with a homeport outside of the SCAQMD; Table 8 applies only to ~~vessels~~ engines on ferries, excursion vessels, tugboats, towboats, and push boats with a homeport within the SCAQMD.; Table 9 applies only to engines on crew and supply vessels, and Table 10 applies to engines on barge and dredge vessels. The compliance dates are set forth by engine model year and total annual hours of operation (for ~~all~~ uses in any regulated in-use vessel category) of the vessel in Regulated California Waters. For Table 7, Table 9, and Table 10, Method D1, D2, or D3 below may be used for determining the actual or effective engine model year. For Table 8, only Method D1 or D3 may be used for determining the actual or effective engine model year.

1. *Method D1 – the engine's actual model year of manufacture.*

   A person may determine an engine's compliance date under this method by using the engine's actual model year of manufacture, as documented by the sales contract, invoice, purchase order, or other legitimate proof of purchase for the engine. The actual model year of manufacture may also be shown on a label permanently affixed to the engine by the manufacturer. In the event of a conflict between the proof of purchase and the permanent label, the date of manufacture shown on the permanent label controls.

2. *Method D2 – the engine's effective model year based on the "Engine's Model Year + 5" method.*

   A person may determine an engine's compliance date under this method by calculating the engine's effective model year as the actual model year, using Method D1 above, and adding to that number 5 more years.

To use this method, the person must use a diesel emissions control strategy (DECS) with the engine, as set forth below:

a. Relative to the emissions without the use of the DECS, the engine with the DECS must be demonstrated to the E.O.'s written satisfaction as emitting at least 25 percent less diesel PM or NOx, and neither of those pollutants are increased by more than 10 percent. This requirement is met automatically if the DECS is a verified DECS (VDECS);

b. If the DECS is not a VDECS, the person must demonstrate compliance with this paragraph by submitting to the E.O. emissions data that demonstrate the non-verified emission control technology achieves a diesel PM or NOx emission reduction of 25 percent or better, using the test methods specified in subsection (j). Upon approval of the E.O., the person may submit data derived from the use of other test methods to demonstrate to the E.O.'s written satisfaction the required 25 percent minimum emission reductions, such as:

   i. marine engine certification test data for the harbor craft propulsion or auxiliary engine, or engine manufacturer emissions test data;
   ii. emissions test data derived from another engine that is configured and used in a substantially similar way to the in-use engine on which the emission control strategy is to be used; or
   iii. emissions test data used to meet the regulatory requirements of the ARB Verification Procedure for the non-verified emission control strategy implemented.

   The E.O. may, in his/her sole discretion and based on good engineering judgment, exclude any data derived from the test methods under paragraph b above that he/she determines are not reliable or credible.

   A person's use of a DECS or VDECS, which meets the requirements of this provision, extends the engine's compliance date to the compliance date for a similar engine that is five model years newer (i.e., the actual model year for the engine with the emissions control strategy + 5).

   [Note: For example, the owner of a 1995 model year engine on a tugboat, which has a homeport outside of SCAQMD and operates in Regulated California Waters for 750 hours in 2013, would normally be required to meet a December 31, 2014 compliance date, as set forth in Table 7. However, if a DECS that meets the requirements of this provision is implemented with this engine prior to the 2014

nominal compliance date, the engine's actual compliance date would be extended to the compliance date for a 2000 model year engine (i.e., the effective model year = the 1995 model year + 5). Accordingly, in that scenario, the engine's effective model year would extend the compliance date to December 31, 2016];

3. *Method D3 – the engine's effective model year based on the "Engine's Tier 1 Rebuild Model Year" method.*

   A person may determine an engine's compliance date by demonstrating, to the E.O.'s written satisfaction, that the engine is an existing pre-2004 model year engine that was rebuilt to conform with U.S. EPA Tier 1 marine standards prior to January 1, 2008. If the E.O. is thus satisfied, the effective model year of the Tier 1 rebuilt engine, for purposes of determining the compliance date in Table 7 ~~or~~, Table 8, Table 9, or Table 10, is the actual year in which the Tier 1 rebuild occurred.

Table 7: Compliance Dates for Engines on Ferries, Excursion Vessels, Tugboats, Towboats, and Push Boats ~~Vessels~~ with Homeports Outside SCAQMD

Engine Model Year	Total Annual Hours of Operation	Compliance Date
1975 and earlier	≥ 1500	12/31/2009
1975 and earlier	≥300 and < 1500	12/31/2010
1976 - 1985	≥1500	12/31/2011
1976 - 1985	≥ 300 and < 1500	12/31/2012
1986 - 1995	≥ 1500	12/31/2013
1986 - 1995	≥ 300 and < 1500	12/31/2014
Ferries Only 1996 - 1999	≥ 300	12/31/2014
Vessels Other Than Ferries 1996 - 1999	≥ 1500	12/31/2015
Vessels Other Than Ferries 1996 - 1999	≥ 300 and < 1500	12/31/2016
2000	≥ 1500	12/31/2015
2000	≥ 300 and < 1500	12/31/2016
2001 - 2002	≥ 300	12/31/2017
2003	≥ 300	12/31/2018
2004	≥ 300	12/31/2019
2005	≥ 300	12/31/2020
2006	≥ 300	12/31/2021
2007	≥ 300	12/31/2022

[Note: For example, if a 1982-model year diesel engine on a tugboat operating in Regulated California Waters is used for 750 hours in 2011, the owner or operator must bring the engine into compliance with the requirements of subsection (e)(6)(C) by December 31, 2012.].

Table 8: Compliance Dates for Engines on Ferries, Excursion Vessels, Tugboats, Towboats, and Push Boats ~~Vessels~~ with Homeports in SCAQMD

Engine Model Year	Total Annual Hours of Operation	Compliance Date
1979 and earlier	> 300	12/31/2009
1980 – 1985	> 300	12/31/2010
1986 – 1990	> 300	12/31/2011
1991 – 1995	> 300	12/31/2012
1996 – 2000	> 300	12/31/2013
2001	> 300	~~13~~12/31/2014
2002	> 300	12/31/2015
2003	> 300	12/31/2016
2004	> 300	12/31/2017
2005	> 300	12/31/2018
2006	> 300	12/31/2019
2007	> 300	12/31/2020

[Note: For example, if a 1982-model year diesel engine on a tugboat operating in Regulated California Waters is used for 300 or more hours in 2009, the owner or operator must bring the engine into compliance with the requirements of subsection (e)(6)(C) by December 31, 2010.].

Table 9: Compliance Dates for Engines on Crew and Supply Vessels Statewide

Engine Model Year	Total Annual Hours of Operation	Compliance Date
1985 and earlier	> 1500	12/31/2011
1985 and earlier	> 300 and < 1500	12/31/2012
1986 – 1995	> 1500	12/31/2013
1986 – 1995	> 300 and < 1500	12/31/2014
1996 – 2000	> 1500	12/31/2015
1996 – 2000	> 300 and < 1500	12/31/2016
2001 – 2002	> 300	12/31/2017
2003	> 300	12/31/2018
2004	> 300	12/31/2019
2005	> 300	12/31/2020
2006	> 300	12/31/2021
2007	> 300	12/31/2022

Table 10: Compliance Dates for pre-Tier 1 and Tier 1 Engines on Dredge and Barge Vessels Statewide

Engine Model Year	Total Annual Hours of Operation	Compliance Date
1975 and earlier	>80	12/31/2011
1976 -1980	>80	12/31/2012
1981 - 1985	>80	12/31/2013
1986-1990	>80	12/31/2014
1991-1995	>80	12/31/2015
1996-1999	>80	12/31/2016
2000 -2001	>80	12/31/2017
2002	>80	12/31/2018
2003	>80	12/31/2019
2004	>80	12/31/2020
2005	>80	12/31/2021
2006	>80	12/312022

(E) *Compliance Extensions.*

Pursuant to this subsection (e)(6)(E), a person subject to the requirements of subsection (e)(6)(C) may request in writing to the E.O. an extension to a compliance date set forth in subsection (e)(6)(D) (i.e., extension to the "nominal" compliance date). The E.O. may grant the person an extension to the nominal compliance date for any one of the reasons set forth below. A person granted such an extension is deemed to be in compliance with the requirements of subsection (e)(6)(C) during the extension period, but only upon written authorization from the E.O. made pursuant to this provision and only until the end of the extension period. During the extension, the person must meet all other requirements of this section. Immediately upon the end of the extension period, the person must meet all the applicable requirements of this section, including but not limited to, subsection (e)(6)(C).

Except as provided in paragraph (e)(6)(E)3 below, the E.O. may not combine compliance extensions granted pursuant to this provision with any other compliance date extensions, including those set forth in this provision and in subsection (e)(6)(D)2 and (D)3. And except as provided in paragraphs (e)(6)(E)2 and (e)(6)(E)3 below, under no circumstances may the E.O. grant more than one compliance extension for any individual engine, set of engines, or harbor craft.

1. *Change in Annual Hours of Operation.*

   The E.O. may grant a one-time, maximum one year extension to the nominal compliance date set forth in subsection (e)(6)(D), provided the

person demonstrates to the E.O.'s written satisfaction that the all of the following have occurred:

a. The person reasonably determined the vessel engine's nominal compliance date based on the engine's hours of operation two years before the nominal compliance date; and

b. In the year immediately prior to the nominal compliance date, the engine's annual hours of operation increased significantly from the prior year such that the engine's nominal compliance date would have been accelerated from one compliance date to an earlier compliance date.

[Note: For example, suppose an operator has a 1982-model year engine on a tugboat, which has a homeport outside of SCAQMD and operates for 750 hours in Regulated California Waters in 2010. If it is reasonable for the operator to assume the annual hours of operation in 2011 will be similar to 2010, the operator would project from Table 7 that the engine's compliance date is December 31, 2012, and would plan his operations accordingly. However, if the vessel engine's operation increased substantially to 1600 hours in 2011, the engine normally would then have its compliance date accelerated to December 31, 2011, according to Table 7. The one-year extension would, therefore, extend the engine's actual compliance date back to what it would have been without the change in hours of operation (i.e., back to December 31, 2012).].

2. *No Suitable Engine Replacement for Harbor Craft.*

The E.O. may grant to a person a one year extension, which can be renewed annually, only if the person demonstrates to the E.O.'s written satisfaction that there is no suitable Tier 2-~~certified~~ or Tier 3-marine certified replacement engine available anywhere that can be used in the person's specific vessel, and the person cannot otherwise meet the requirements of subsection (e)(6)(C).

The E.O., in his/her sole discretion, may use any information available to the E.O. to rebut the person's demonstration. For purposes of this paragraph, the E.O. may deem an engine as suitable to replace an existing engine if the replacement engine is similar in horsepower to the existing engine, the replacement engine can fit within the vessel's engine compartment, and installation of the replacement engine would not cause the vessel to violate U.S. Coast Guard or other applicable safety regulations. The E.O. may not consider the cost of the replacement engine, by itself or including installation and downtime costs, in determining its suitability as a replacement.

The application for and issuance of an initial extension and subsequent extensions pursuant to this paragraph are subject to the following requirements:

a. For an initial extension and all subsequent annual extensions to be granted pursuant to this paragraph, the E.O. shall follow the same procedures for applying, determining completeness, allowing public review and considering public comments, taking final action, and publishing E.O. decisions that are set forth in subsection (f) for Alternative Control of Emissions (ACE) applications;

b. The E.O. shall consider all information submitted by the public, including but not limited to, information related to the availability of replacement engines suitable for the person's vessel;

c. Except for the engine(s) for which the extension is sought, the person must demonstrate that all other engines subject to the person's direct control meet the requirements of subsection (e)(6);

d. The person must submit the application for an extension so that it is received by the E.O. no later than 6 months before the nominal compliance date of the engine for which the extension is requested;

e. The person must identify in the application each engine for which the extension is requested;

f. For each engine identified in paragraph 2 above, the person must provide in the application a detailed description of the reasons and factors that serve as the basis for the claim that no suitable replacement engine is available. This description must include, at a minimum, detailed engineering diagrams, calculations, and citations to applicable U.S. Coast Guard regulations that support the person's claim that there are no suitable replacement engines available.

g. After the initial extension, the E.O. may grant additional one year extensions, provided the following requirements are met:

   i. All procedures specified in paragraph (e)(6)(E)2.a and (e)(6)(E)2.b above are followed;
   ii. The application for an additional extension demonstrates the engines identified in paragraph (e)(6)(E)2.c remain in compliance with this section;
   iii. Th e application is received by the E.O. no sooner than 6 months but no later than 2 months before the expiration of the previous extension;

iv. The application identifies the engine(s) for which the additional extension is requested;
v. For each engine identified in paragraph (e)(6)(E)2.g.iv above, the person must provide in the application a detailed description of the reasons and factors that serve as the basis for the claim that suitable replacement engines remain unavailable. This description must include, at a minimum, detailed engineering diagrams, calculations, and citations to applicable U.S. Coast Guard regulations that support the person's claim that there are still no suitable replacement engines available.

3. *Equipment Manufacturer Delays or Installation Difficulties.*

Upon written request, the E.O. may grant to a person a 6-month extension to the nominal compliance date set forth in subsection (e)(6)(D), provided all the following criteria are met:

a. the person ordered the new replacement engine or other equipment necessary to comply with the requirements of subsection (e)(6)(C) prior to the nominal compliance date set forth in subsection (e)(6)(D);

b. the purchase order identified in paragraph a above was placed with the manufacturer no later than 6 months before the engine's nominal compliance date;

c. the new engine or equipment has not been received or installed since it was ordered due to manufacturing delays or excessive difficulties encountered by the engine or equipment installer; and

d. the applicant for the extension provides documentation to the E.O.'s satisfaction that demonstrates the criteria in subparts a. through c. above have been met. The E.O. may, in his/her sole discretion, use any information available to rebut any of the documentation submitted pursuant to subparts a through c above.

4. *Multiple Engines on Multiple Vessels Within Same Fleet and With Same Compliance Dates.*

This provision applies only to fleets of 2 or more vessels that are owned by the same person. Upon written request, the E.O. may grant to the person an extension to the nominal compliance date(s) for engines on vessels within such fleets, as set forth below;

a. For each set of engines on two or more vessels or for each single engine in three or more vessels with compliance dates of 2009 or

2010 for ferries, excursion vessels, tugboats, towboats, and push boats and 2011 or 2012 for crew and supply vessels and barge and dredge vessels (a "set" means 2 or more engines), the E.O. may grant a one-time extension of the compliance date to December 31, 2013 for ferries, excursion vessels, tugboats, towboats, and push boats and to December 31, 2015 for crew and supply boats and barge and dredge vessels, provided the E.O. receives and approves a compliance schedule from the person that meets the requirements set forth below:

i. The compliance schedule is received by the E.O. no later than December 31, 2009 for ferries, excursion vessels, tugboats, towboats, and push boats and prior to December 31, 2011 for crew, supply, barge, and dredge vessels;

ii. For each year, up to and including 2013 for ferries, excursion vessels, tugboats, towboats, and push boats and 2015 for crew and supply vessels and barge and dredge vessels, that the extension will be in effect, the compliance schedule must identify, at a minimum, the engines on specified vessels in the fleet that will meet the requirements of subsection (e)(6)(C) within any given year;

iii. The compliance schedule must show that all engines with compliance dates of 2009 or 2010 for ferries, excursion vessels, tugboats, towboats, and push boats and 2011 or 2012 for crew and supply vessels and barge and dredge vessels on the specified vessels in the fleet will be in compliance with subsection (e)(6)(C) by December 31, 2013 for ferries, excursion vessels, tugboats, towboats, and push boats and December 31, 2015 for crew and supply vessels and barge and dredge vessels. [Note: For example, an approvable plan may show that 25% of these engines on the specified vessels in a fleet will be in compliance in 2010, 50% in 2011, 75% in 2012, and 100% by December 31, 2013.]; and

iv. The compliance schedule must include all other information the E.O. deems necessary and appropriate for implementing this provision.

b. For each set of engines on two or more vessels or each single engine on three or more vessels with a compliance date of 2011 or later for ferries, excursion vessels, tugboats, towboats, and push boats and 2013 or later for crew and supply vessels and barge and dredge vessels (a "set" means 2 or more engines), the E.O. may grant to a person a one-time, maximum one-year

extension of the nominal compliance date. To receive an extension under this provision, the person must submit a written request to the E.O. that meets the following requirements:

i. The request must be received by the E.O. no later than December 31st of the year immediately preceding the nominal compliance date for the set of engines; and

ii. The request identifies the engines in each set of engines and the vessels in the person's fleet that are subject to the requested extension.

For all engines within a person's fleet that have not been granted an extension pursuant to paragraphs a or b above, the compliance dates for such engines remain as set forth in subsection (e)(6)(D).

(F) *Special Provisions Applicable to the Use of a Diesel Emission Control Strategy (DECS), including Verified Diesel Emission Control Strategies (VDECS).*

The following requirements apply to any person's use of a DECS pursuant to subsections (e)(5) or (e)(6) and are in addition to any other applicable requirements:

1. Once the DECS is installed or otherwise employed on a person's vessel, the person must continue to operate and maintain the DECS, in accordance with the manufacturer's directions, to achieve the original level of emission reductions that the DECS was designed and intended to achieve;

2. In the event a DECS fails, breaks down, or is otherwise damaged (collectively referred to hereinafter as "fail" or "failure"), the vessel owner or operator must, within 90 days of the DECS failure, do at least one of the following:

   a. repair the DECS to good working order;

   b. replace the failed DECS with another working DECS, if it cannot be repaired; or

   c. employ another method that meets the requirements of subsection (e)(6)(C) and other applicable provisions of this section, if the DECS cannot be repaired.

3. The determination in subpart 2.b and 2.c above of whether a DECS cannot be repaired may only be made by either the DECS manufacturer or an authorized dealer.

4. For each replacement DECS installed under subpart 2.b above, the person must provide to the E.O. the same documentation for the replacement DECS that was required for the DECS that failed, and the person must obtain the same E.O. approvals that were required with the failed DECS.

(f) ***Alternative Control of Emissions (ACE).***

(1) Requirements.

(A) The purpose of this subsection is to allow a person ("person" or "applicant") the option of complying with the requirements of this subsection in lieu of the requirements of subsection (e). As set forth in this subsection, a person may be deemed in compliance with subsection (e) by implementing an alternative emission control strategy(ies) (AECS) approved by the E.O. In no case may the E.O. approve an AECS that results in or has the potential to result in any increase of diesel PM and NOx emissions or any increase in emissions greater than 10 percent for any other pollutant, relative to the emissions of diesel PM, NOx, and other pollutants that would have occurred under compliance with subsection (e).

(B) An applicant wishing to participate in an ACE may include one or more harbor craft in the ACE, but the applicant may only include harbor craft that the person owns or operates under the person's direct control.

(C) No harbor craft may be included in more than one ACE plan.

(D) Harbor craft included in an ACE must continue to be included in and operated pursuant to the approved ACE for the duration of the ACE.

(E) AECS may include, but are not limited to, any combination of the following:

1. engine modifications;
2. exhaust treatment control;
3. engine repower;
4. use of alternative fuels or fuel additives;
5. shore-side power;
6. fleet averaging; and
7. any other measures that sufficiently reduce emissions.

(F) A person complying under this provision must obtain E.O. approval of an ACE application that demonstrates compliance with this subsection and contains, at a minimum, the following information:

1. the company name, address, and contact information;
2. the harbor craft and engine(s) subject to the ACE, including the vessel name and identification number(s), engine make, model, and serial numbers, and other information that uniquely identify the engine;
3. documentation, calculations, emissions test data, or other information that establishes the diesel PM and NO_x reductions, expressed in pounds, are equal to or greater than the emission reductions that would have been achieved upon compliance with subsection (e), including but not limited to the requirements specified in subsection (e)(6)(C) and (e)(6)(D); and
4. the proposed recordkeeping, reporting, monitoring, and testing procedures that the applicant will use to demonstrate continued compliance with the ACE.

(G) For each ACE, the emission reduction calculations demonstrating equivalence with the requirements of subsection (e) may include only those diesel PM and NO_x emissions from harbor craft with its homeport within a single specified California air district, or another defined geographic area approved by the E.O.

(H) A person subject to an approved ACE must maintain operating records in the manner and form as specified by the E.O as an element of any approved ACE. Required records must include, at a minimum:

1. all the reporting and recordkeeping requirements specified in subsections (g) and (h);
2. maintenance procedures; and
3. emissions test results.

A person subject to an approved ACE must retain records and reports on each vessel or at an office at the vessel's homeport for the lifetime of each engine and must submit these records and reports to the E.O. in the manner specified in the approved ACE or upon request by the E.O.

(I) Emission reductions included in an ACE may not include reductions that are otherwise required by any local, State, or federal rule, regulation, or statute, or that are achieved or estimated from equipment not located in the region to which the ACE applies.

(J) A person subject to an approved ACE may not operate any harbor craft under the ACE unless the person has first been notified in writing by the E.O. of the ACE's approval. Prior to such approval, the applicant must

comply with the provisions of this section, including the requirements in subsection (e)(6)(C) and (e)(6)(D).

(2) Application Process.

(A) Applications for an ACE must be submitted in writing to the Executive Officer for evaluation by February 28 of the first year that vessel engine compliance is required.

(B) The E.O. shall establish an internet site ("ACE internet site") in which all documents pertaining to an ACE application shall be made available for public review. The E.O. shall also provide a copy of all such documents to each person who has requested copies of the documents; these persons shall be treated as interested parties. The E.O. shall provide two separate public comment periods during the ACE application process, as specified in subsection (f)(2)(D) and (f)(2)(E).

(C) Completeness Determination.

Within 15 days after receiving an ACE application, the E.O. shall notify an applicant whether the application is deemed sufficiently complete to proceed with further evaluation. If the application is deemed incomplete, the notification shall identify the application's deficiencies. The E.O. shall have an additional 15-day period for reviewing each set of documents or information submitted in response to an incomplete determination. Nothing in this subsection prohibits the E.O. from requesting additional information from the applicant, during any part of the ACE application process, which the E.O. determines is necessary to evaluate the application.

(D) Notice of Completeness and 30-Day First Public Comment Period.

After an ACE application has been deemed complete, the E.O. shall provide a 30-day public comment period to receive comments on any element of the ACE application and whether the E.O. should approve or disapprove the ACE application based on the contents and merits of the application. The E.O. shall notify all interested parties of the following:

1. the applicant(s);
2. the start and end dates for the 30-day first comment period; and
3. the address of the ACE internet site where the application is posted.

The E.O. shall also make this notification available for public review on the ACE internet site.

(E) Proposed Action and 15-Day Second Public Comment Period.

Within 30 days after the first public comment period ends, the E.O. shall notify the applicant and all interested parties of ARB's proposed approval or disapproval. This notification shall propose to approve the application as submitted, disapprove the application, or approve the ACE application with modifications as deemed necessary by the E.O. The notification shall identify the start and end dates for the 15-day second public comment period.

During the second public comment period, any person may comment on the E.O.'s proposed approval or disapproval of the ACE application and any element of the application. The E.O. shall also make this notification available for public review on the ACE internet site.

(F) Final Action.

Within 15 days after the second public comment period ends, the E.O. shall take final action to either approve or deny an ACE application and shall notify the applicant accordingly. If the application is denied or modified, the E.O. shall state the reasons for the denial or modification in the notification. The notification to the applicant and approved ACE plan, if applicable, shall be made available to the public on the ACE internet site. In addition, the E.O. shall consider and address all comments received during the first and second public comment periods, and provide responses to each comment on the ACE internet site.

(G) Renewal of an Approved ACE.

An applicant may apply for renewal of an approved ACE by forwarding the E.O. updated information for all elements of the approved ACE for review and re-approval. The applicant must submit the renewal application so that the E.O. receives the application no later than 30 days prior to the end of the ACE compliance period.

(H) Notification to the E.O. of Changes to an Approved ACE.

A person with an approved ACE must notify the E.O. in writing within 30 days upon learning of any information that would alter the emissions estimates submitted during any part of the ACE application process. If the E.O. has reason to believe that an approved ACE has been granted to a person that no longer meets the criteria for an ACE, the E.O. may, pursuant to subsection (f)(3) below, modify or revoke the ACE as necessary to assure that the applicant and subject vessel(s) meet the emission reduction requirements in this section.

(3) Revocation or Modification of Approved ACEs.

With 30 days of notice of violation to the ACE holder, the E.O. may revoke or modify, as needed, an approved ACE if any of the following apply:

(A) there have been multiple violations of the ACE provisions or the requirements of the approved ACE plan;

(B) the E.O. has reason to believe that an approved ACE has been granted that no longer meets the criteria or requirements for an ACE; or

(C) the person can no longer comply with the requirements of the approved ACE in its current form.

Public notification of a revocation or modification of an approved ACE shall be made available on the ACE internet site.

(g) ***Recordkeeping Requirements.***

Beginning January 1, 2009, the owner or operator of a harbor craft must maintain the records specified in this subsection on the vessel or at the vessel's homeport for the life of each engine subject to this section, including fleet swing engines and marinized land-based engines. The owner or operator must provide such records for inspection to an agent or employee of ARB upon request for all harbor craft subject to this section. Records may be provided as a hard copy, electronic, or any alternative reporting strategy approved by the E.O. Records provided by the person under this provision must include, at a minimum, the following:

(1) Owner or Operator Contact Information:
- (A) Company name;
- (B) Contact name, phone and fax number, address, e-mail address;
- (C) Address where vessel is registered; and
- (D) Reporting year.

(2) Vessel information:
- (A) Harbor craft name;
- (B) Specify vessel use(s) (ferry, excursion vessel, tugboat, ocean-going tugboat, towboat, push boat, work boat, commercial fishing vessel, charter fishing vessel, crew and supply vessel, pilot vessel, or other if none of the preceding apply);
- (C) Vessel homeport;
- (D) Vessel build year;
- (E) U.S. Coast Guard documentation number;
- (F) California Fish and Game license number;
- (G) International Maritime Organization (IMO) number;
- (H) Call Sign number; and

(I) Maritime Mobile Service identity number.

(3) Engine Information (for each diesel engine on the vessel, including swing engines):
(A) Current hour meter reading;
(B) Make of engine;
(C) Model of engine;
(D) Engine family (if applicable);
(E) Engine serial number;
(F) Year of manufacture of engine (if unable to determine, provide its approximate age);
(G) Rated brake horsepower;
(H) Total engine displacement; and
(I) Number of cylinders.

(4) Operational Information:
(A) Describe the general use of engine (propulsion or auxiliary engine);
(B) Total annual hours of operation, based upon readings of the non-resettable hour meters for previous calendar year per engine (for engines without an hour meter before 2009, provide an estimate);
(C) Total hours of operation per calendar year in each of the regulated in-use vessel categories, based upon readings of the non-resettable hour meters for previous calendar year per engine;
(~~C~~D)Estimated annual fuel usage per engine; and
(~~D~~E)Estimated percent operating time as a function of distance from shore at the distances below:

1. 0-3 nautical miles; and
2. >3-24 nautical miles; and
3. >24 nautical miles from shore.

(5) Control Equipment (if applicable):
(A) Type of diesel emission control strategy;
(B) Manufacturer of installed diesel emission control strategy;
(C) Model of installed diesel emission control strategy;
(D) Level of control – air pollutants controlled and percent reductions;
(E) Emission control serial number; and
(F) Date control equipment installed.

(6) Maintenance records for each installed engine and diesel emission control strategy:
(A) Hour meter reading at last top end rebuild (i.e., less than full rebuild);
(B) Hour meter reading at last full engine rebuild; and
(C) Number of times full engine rebuild completed.

(7) The retirement date for each near-retirement vessel for which an owner or operator is claiming an exemption pursuant to subsection (c)(13).

(8) For each engine for which the model year is determined using the "Engine's Model Year + 5" method pursuant to subsection (e)(6)(D)2:

(A) the name and contact information (representative, address, and phone number) for the manufacturer of the emission control strategy;
(B) the name and type of emission control strategy;
(C) the installation date of the emission control strategy; and,
(D) if a VDECS is not being used for this purpose, the test plan, and the data demonstrating the emission reductions achieved due to the emission control strategy.

(9) For each engine for which an owner or operator is claiming an extension pursuant to subsection (e)(6)(E)3, the purchase order or signed contract between the owner or operator and seller of the new engine or equipment that has been purchased to comply with subsection (e)(6)(C) and (e)(6)(D).

(10) For each engine an owner or operator claims to have replaced, for purposes of compliance with the requirements of (e)6, written documentation that the engine has been: dismantled, ~~or~~ destroyed, or sold out of state. Alternately, the engine may be used to replace an older engine if:
(A) The older engine is subject to the in-use engine requirements, and
(B) the original compliance date of the older engine is retained for the newer engine.

(11) Records for each engine must be retained by the owner or operator for the entire engine life.

(12) All records specific to an E.O. approved ACE plan.

(13) All records specific to a BACT approved by the E.O. pursuant to subsection (e)(5).

(h) ***Initial and Compliance Plan Reporting Requirements.***

(1) Initial Reporting of California Harbor Craft Fleet. By February 28, 2009, a person subject to this section must submit the information specified in subsections (g)(1) through (g)(6) for all harbor craft vessels in his/her California fleet. For purposes of this paragraph, "California fleet" means the total population of harbor craft under the person's direct control as of January 1, 2009.

(2) Compliance Plan. By February 28 of the year vessel engine compliance is required, a person subject to the requirements of subsection (e)(6)(C) and (e)(6)(D) must submit a Compliance Plan to the E.O. that describes in detail the engine replacements, rebuilds, upgrades, use of DECS, and any other measures the person plans to use to meet the requirements of subsection (e)(6)(C) and

(e)(6)(D) for each of the person's engines and harbor craft. The person may revise the Compliance Plan, as needed, but the person must notify the E.O. within 10 business days of any changes to the Compliance Plan after the initial Compliance Plan is submitted. The Compliance Plan is for the E.O.'s informational and planning use only, and the substantive contents of the plan are not binding on either the E.O. or the person who submitted the Compliance Plan. The E.O.'s receipt and acceptance of a submitted Compliance Plan shall not constitute or be interpreted as evidence of compliance with the requirements of subsection (e)(6)(C) or (e)(6)(D).

(3) Demonstration of Compliance. By no later than the applicable compliance date specified in subsection (e)(6)(D), a person subject to the requirements of subsection (e) must provide the following information to the E.O.:

(A) All information specified in subsections (g)(1) through (g)(6), and

(B) The implementation date and the emission control strategy implemented for each engine in accordance with the requirements of subsection (e)(6)(D) and (e)(6)(C), respectively, for purposes of demonstrating compliance.

(4) Reporting for Change of Annual Hours of Operation, Vessel Category/Use, Transfers of Vessels, ~~or a~~ Change of Ownership of Vessel or Engine, or Vessel Operation in Regulated California Waters.

(A) A person subject to this section must submit to the E.O. the information specified in subsection (g)(1) through (g)(6) within 30 days of a significant change of annual hours of operation (i.e., enough to change the engine's compliance date), vessel category/use, purchase, lease, rental, or change of ownership of the vessel or engine. In the case of a purchase, lease, rental, or change in ownership, the party in control or possession of the engine or vessel after the transaction is responsible for meeting the requirements of this paragraph;

(B) A person subject to this section must submit to the E.O. the information specified in subsection (g)(1) through (g)(6) within 30 days of the initial operation of a vessel brought into Regulated California Waters;

(B~~C~~)Within 90 days of a significant change of annual hours of operation, vessel category/use, purchase, lease, rental, ~~or~~ change of ownership, or initial operation of a vessel brought Regulated California Waters, or by the earliest applicable compliance date specified in subsection (e)(6)(D), whichever is later, a person subject to subsection (e)(6) shall submit a new Compliance Plan with the updated information pursuant to the Compliance Plan requirements specified in paragraph 2 above.

(i) ***Violations.***

(1) A person who is subject to this section and commits a violation of any provision, standard, criteria, or requirement in this section is subject to the penalties, injunctive relief, and other remedies specified in H&S section 42400 et seq.; H&S section 42402 et seq.; other applicable sections in the Health and Safety Code; and other applicable provisions as provided under California law for each violation. Nothing in this section shall be construed to limit or otherwise affect any applicable penalties or other remedies available under federal law.

(2) Any failure to meet any provision, standard, criteria, or requirement in this section, including but not limited to the applicable emission limits; recordkeeping requirements; and ACE provision, including the requirements of any approved ACE plans, shall constitute a single, separate violation of this section for each hour that a person operates a vessel within the Regulated California Waters until such provision, standard, criteria, or requirement has been met.

(3) A person who is subject to this section is liable for meeting the requirements of this section, notwithstanding any contractual arrangement that person may have with any third-parties.

(j) ***Methods to Demonstrate Compliance with Engine and Fuel Standards.***

(1) Diesel PM, NO_x, NO, CO, HC, NMHC, and CO_2 testing must be done in accordance with the applicable method specified in the following procedures: International Organization for Standardization (ISO) 8178-2: 1996(E) ("ISO 8178 Part 2"); (2) ISO 8178-4: 1996(E) ("ISO 8178 Part 4"); and applicable methods and procedures specified in 40 CFR Part 94 (as amended in 2007), all of which are incorporated herein by reference, or 40 CFR Part 1042 for marine engines or in 40 CFR Part 89 or 40 CFR Part 1039 for nonroad (off-road) engines, as those Parts existed on April 27, 2010. Each of the procedures specified in this subsection is incorporated by reference herein.

(2) The E.O. may approve in writing any alternative test methods not specified in paragraph (1) above that the method's proponent has demonstrated to the E.O.'s satisfaction provides equivalent or better results to the methods in paragraph (1).

(k) ***Right of Entry.***

An agent or employee of the ARB has the right of entry to board any harbor craft for the purpose of inspecting propulsion and auxiliary engines, emission control strategies, fuel systems, and fuel storage; collecting fuel sample(s) not to exceed one liter per fuel tank; and acquiring and inspecting records required pursuant to this section.

(l) ***Severability.***

If any subsection, paragraph, subparagraph, sentence, clause, phrase, or portion of this regulation is, for any reason, held invalid, unconstitutional, or unenforceable by any court of competent jurisdiction, such portion shall be deemed as a separate, distinct, and independent provision, and such holding shall not affect the validity of the remaining portions of the regulation.

(m) ***Submittal of Documents.***

(1) All documents required under this regulation must be submitted to the Executive Officer as follows:

California Air Resources Board
Stationary Source Division
Emissions Assessment Branch
Control Strategies Section, Harbor Craft
P.O. Box 2815
Sacramento, California 95812-2815

(2) Electronic submittals of information associated with compliance with this section may be approved by the E.O. upon request, provided such electronic submittals use digital signatures that meet the requirements specified in Government Code section 16.5. The E.O. may request the submittal of a hard copy of any electronic submittal.

NOTE: Authority cited: Sections 39600, 39601, 39650, 39658, 39659, 39666, ~~and~~ 41511, 43013, and 43018, Health and Safety Code. Reference: Sections 39650, 39658, 39659, 39666, 41510, ~~and~~ 41511, 43013, and 43018, Health and Safety Code.

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Appendix B

Summary of Survey Results

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Appendix B

Statewide Barge and Dredge Vessel Survey Summary

I. Introduction and Background

In November 2007, the Air Resources Board (ARB or Board) approved the commercial harbor craft regulation (CHC regulation) to significantly reduce diesel PM (PM) and oxides of nitrogen (NO_x) from diesel-fueled engines on commercial harbor craft (CHC) vessels. The regulation is significantly reducing PM and NO_x emissions from CHC engines.

One of the basic requirements of the adopted CHC regulation is that in-use engines on ferries, tugboats, and towboats operating in regulated California waters must meet the most current U.S. Environmental Protection Agency (U.S. EPA) marine engine emissions standards through a compliance schedule based on the age and annual use of the engine.

Barge and dredge vessel engines were not included in the in-use engine requirements of the CHC regulation because information at the time indicated that barge and dredge vessel engines were regulated under the Portable Engine Airborne Toxic Control Measure (Portable Engine ATCM) by being registered in the Portable Equipment Registration Program (PERP) or by local air district permitting. The adopted CHC regulation requires those engines registered in PERP or permitted by a local district prior to January 1, 2009 to be exempt from the CHC regulation. In order to simplify regulatory obligations and provide consistency for barge and dredge vessel owner/operators to be subject to a single statewide regulation, the ARB staff began evaluating the barge and dredge vessel category and conducted a survey of those engines in 2009.

In January 2010, the PERP registration program was amended to make CHC registered in that program subject to the requirements of the CHC regulation. Since the CHC regulation currently has no in-use requirements for barges and dredge vessels, it is necessary to amend this regulation and to require all barge and dredge vessel engines, including those registered in PERP or under local district permits, to be subject to the CHC regulation. The primary reason for taking this action is to provide consistency for barge and dredge vessel owner/operators and bring these in-use engines under the requirements of a single regulation.

The barge and dredge vessel survey was conducted on a statewide basis and requested the submittal of the following vessel and engine information for (see attached survey):

- Company Name
- Vessel Name
- U.S. Coast Guard Documentation Number
- Vessel Use/Type
- Annual Fuel Usage
- Percent of Hours Operated Various Distances Off California Coast
- Auxiliary or Propulsion Engine
- Engine Make (manufacturer)
- Engine Model
- Model Year
- Engine Horsepower (Maximum Rated)
- Total Engine Displacement
- Number of Cylinders
- Annual Hours of Operation
- Home Port
- IMO (international Maritime Organization) Identification Number
- MSSI (Maritime Mobile Service Identities) Number
- Year Vessel Built
- Vessel Length
- Vessel Width
- Owner, or Operator, or Owner/Operator and Contact Information
- Barge or Dredge Type
- Engine Position
- PERP Registration Number
- Barge/Dredge Activity (increase, decrease, no change)
- Operation in port or county and percent operation time
- Engine Type (off-road or marine)
- Engine Use (generator, pump, etc.)
- Engine Family

The survey was distributed to every potential owner/operator the ARB could identify using internal and public sources. The majority of the contacts were located in California with a small percentage being out-of-state. Some information about potential barge and dredge owner/operators was obtained from the PERP records and on-line searches.

The barge and dredge vessel survey provided data for approximately 100 barge and dredge vessels and approximately 400 engines. In the following sections, the results for the survey is presented including the types of vessels in use, engine specifications (i.e., make, model, horsepower) and annual activity by vessel type.

II. Vessel Information Survey Results

The survey respondents were requested to provide information on the vessels that they owned or operated including the home port of each vessel, the primary use for the vessel, the annual fuel usage, locations their vessels operated, and the percent of time the vessel is operated at various distances off California's coast. An example the survey is located at the end of this Appendix.

Table 1 provides a summary of the vessels home ports reported in the survey. The home port is defined on the survey as the principal place normally used for the overnight berthing of the vessel and aggregated by local air pollution control district (district).

Information for approximately 100 vessels was collected in the barge and dredge vessel survey. Not all surveys had data for every data field. Blank data fields were not included in average or population numbers in the survey summaries.

In this section the vessel information described is summarized.

Table 1: Vessel Quantity and Associated Air District Home Port

Barge and Dredge Operating Locations*	Number of Vessels Reported**
Bay Area AQMD	37
South Coast AQMD	10
Other	6
San Diego County APCD	4
North Coast Unified AQMD	2
Imperial County APCD	1
Sacramento Metropolitan AQMD	1
San Joaquin Valley Unified APCD	1
Ventura County APCD	1
Yolo/Solano AQMD	1
Total	64

* - Includes overlap between districts of individual barge and dredge vessels operations during the year.

** - Information about the location of all barge and dredge vessel operations was not provided in the survey submittal

A. Vessel Use

The survey requested information on the primary use for each vessel. The following vessel types were specified on the survey:

Barge: A vessel having a flat-bottomed rectangular hull with sloping ends and built with or without a propulsion engine.

Dredge: A vessel designed to remove earth from the bottom of waterways, by means of including, but not limited to, a scoop, a series of buckets, or a suction pipe. Dredges include, but are not limited to, hopper dredges, clamshell dredges, or pipeline dredges

B. Annual Fuel Use

The barge and dredge vessel survey requested vessel owner/operators to report annual fuel use for 2008. Table 2 lists the annual fuel used (in gallons).

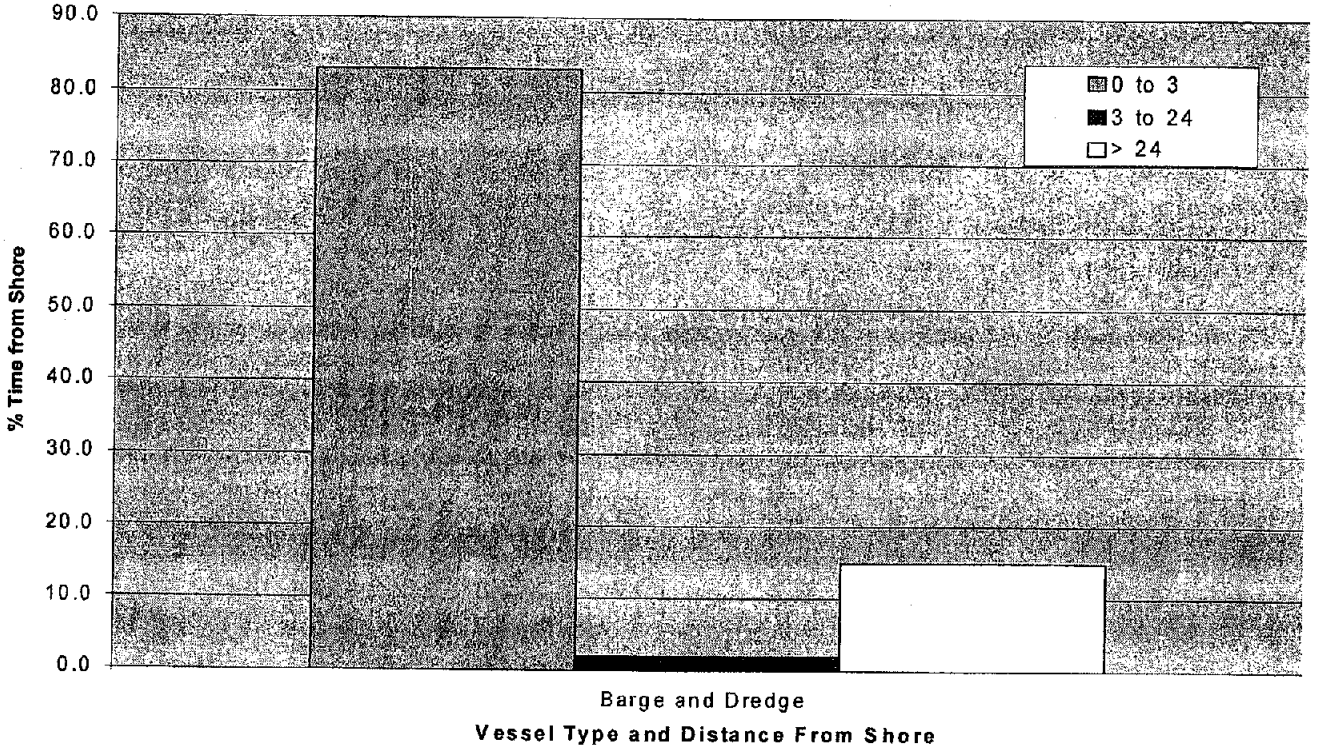
Table 2: Annual Fuel Usage (gallons/year)

Vessel Type	Auxiliary Engines	Propulsion Engines
Barges (2008)	2,021,788	No info
Dredges (2008)	505,629	No info
Total	2,527,417	

C. Percent of Hours Operated at Various Distances off the California Coast

The survey requested vessel owner/operators provide the percent of hours operated at various distances off the California coast. The options were 0-3 miles, 3-24 miles, and greater than 24 miles. The survey results are presented in Figure 1. Overall, most barge and dredge vessels operate within 3 miles of the California coast.

Figure 1: Percent of Barge and Dredge Engine Hours Operated at Varying Distances from Shore



III. Auxiliary/Propulsion Engine Survey Results

For each vessel, the survey requested information on the number, type, and annual activity of auxiliary and propulsion engines. Data for 350 auxiliary engines and 6 propulsion engines was submitted. This section summarizes the information received about vessel engines.

A. Auxiliary Engines

Auxiliary engines on barges and dredges are used to power a variety of on-board equipment such as pumps, and electrical lights. As shown in Table 3, the horsepower range for auxiliary engines ranged from 5 to 2,934 horsepower with an overall average of about 346 horsepower. 20 percent of barges and dredges have one auxiliary engine, 20 percent have two auxiliary engines, 20 percent have three auxiliary engines, and 40 percent have four or more auxiliary engines. Data provided on auxiliary engines include make and model, model year, horsepower data, annual hours of operation and annual fuel usage.

Table 3: Quantity of Auxiliary Engines and Average Horsepower

Vessel Category	# Auxiliary Engines	Horsepower	
		Range	Average
Barge	304	5 – 2,934	346
Dredge	81	99 – 2,600	800

B. Propulsion Engines

Few barge and dredge vessels have propulsion engines. Table 4 lists the reported propulsion engines horsepower ranges and averages.

Table 4: Quantity of Propulsion Engines and Average Horsepower

Vessel Category	# Propulsion Engines	Horsepower	
		Range	Average
Barge	2	NA	NA
Dredge	4	1,125 – 4,640	2,880

C. Horsepower and Model Year

Table 6 shows the barge and dredge vessel survey response population with model year and horsepower ranges for auxiliary engines. The barge and dredge vessel survey data shows that about 3 percent of the auxiliary engines were 1969 and older model year, 97 percent were model years 1970 and newer, and about 60 percent of the engines were 2000 or newer models.

Table 6: Barge and Dredge Vessel Auxiliary and Propulsion Model Years and Horsepower Ranges[5]

Auxiliary Engines

Model Year	Horsepower Range									
	No HP Data	< 50	51 - 75	76 - 100	101 - 175	176 - 250	251 - 500	501 - 750	> 751	Total
No Age Data		1	4	5	9	11				30
1905 - 1939										
1940 - 1949							1			1
1950 - 1959							2			2
1960 - 1969		1			1	4		1	1	8
1970 – 1979		1		6	8	11	4			30
1980 – 1989		1				7	15	4	3	30
1990 – 1999	2	2	3	3	8	15	12	5	6	56
2000 – 2007	2	6	11	10	17	22	88	16	20	192
Total	4	12	18	24	43	70	122	26	30	349

Propulsion Engines

Model Year	Horsepower Range									
	No HP Data	< 50	51 - 75	76 - 100	101 - 175	176 - 250	251 - 500	501 - 750	> 751	Total
No Age Data										
1905 – 1939										
1940 – 1949										
1950 – 1959										
1960 – 1969										
1970 – 1979									2	2
1980 – 1989										
1990 – 1999										
2000 – 2008									2	2
Total									4	4

[5]The totals in this table do not match the total number of engines reported in the survey since there were engines that did not have the age or horsepower reported.

D. Hours of Operation

Figure 2 provides information on the average number of hours of operation per year for auxiliary and propulsion engines by vessel type. Barge and dredge vessels averaged 550 and 1,510 hours, respectively, annually.

Figure 2: Average Engine Hours of Operation Per Year

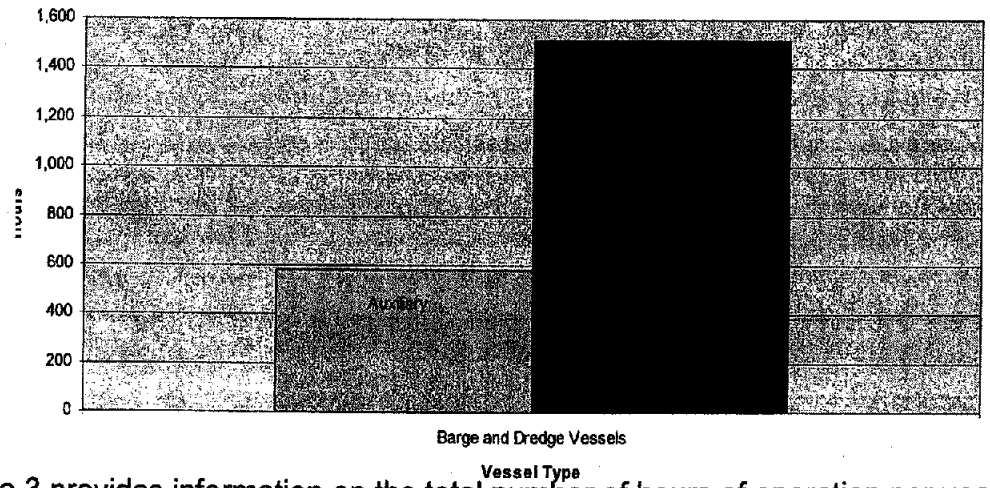
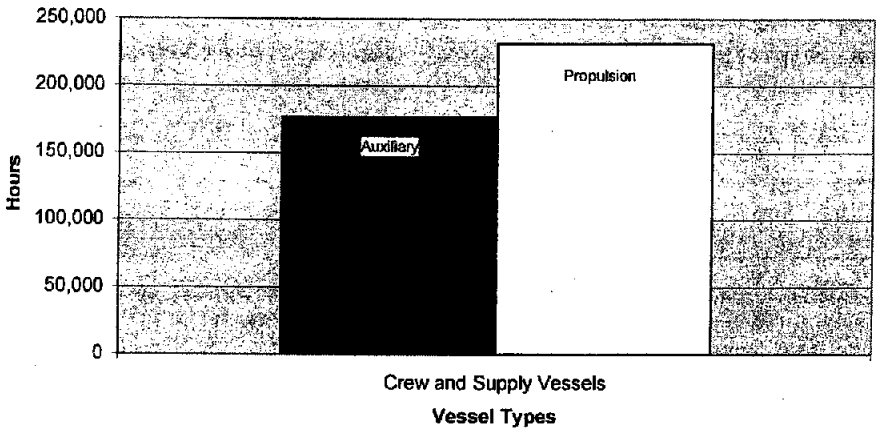


Figure 3 provides information on the total number of hours of operation per year for auxiliary and propulsion engines by vessel type. Barge and dredge vessels totaled 139,130 and 12,100 hours, respectively, annually.

Figure 3: Total Engine Hours of Operation Per Year



Attachment I

Barge and Dredge Vessel Survey
Sample Forms

SURVEY INSTRUCTIONS

Before filling out the survey form, please read the following instructions carefully. A sample form is included for your assistance.

Explanations for each survey data field are provided below. If you operate more than one vessel, **please complete one survey form for each vessel you operate.**

Survey Data Fields

CONTACT / OWNER / OPERATOR INFORMATION

Contact, Owner, and Operator Information: Complete box(es) with appropriate information.

Contact Name (and Title): Enter the name and title of the person to be contacted by the ARB in case we have questions about the information provided.

Operator Information: If the vessel operator is different from the contact , please enter the name, title, and company information of the person or company which currently operates the vessel.

Owner Information: If the vessel owner is different from the operator, enter the name, title, and company information of the person or company having all the incidents of ownership, including the legal title, or is the mortgagor of the vessel.

Company Name: Enter the name of the company that corresponds with the contact, operator, or owner.

Mailing Address/City/State/ZIP Code: Mailing address, City, State, and ZIP code of the contact person, owner, or operator.

Date: Enter the date the survey form was completed.

Email: Enter the email address of the contact person.

Phone: Enter the phone number of the contact, operator, or owner.

Fax: Enter the fax number of the contact, operator, or owner.

VESSEL INFORMATION

Vessel Name: Enter the name of the vessel being reported (one vessel per sheet).

Year Build: Enter the year the vessel was built.

Length and Width: Enter the length and width of the vessel.

Home Port: Enter the vessel's home port. A vessel's home port is the principal place for embarkation or debarkation, or the loading or unloading of supplies, and is normally used for the overnight berthing of the vessel.

U.S. Coast Guard Number: Please enter the U.S. Coast Guard documentation number assigned to the vessel. If the vessel is not documented with the U.S. Coast Guard, please provide the International Maritime Organization Identification (IMO ID) and/or the Maritime Mobile Service Identities (MSSI) number (preferably the latter).

VESSEL INFORMATION (continued)

Vessel Type: Please check the box(s) best describing the vessel, either dredge, barge, or other. If other, please describe other on the line below. If the vessel is used for more than one type of operation, check all boxes that apply.

Type of Dredge or Barge: Provide a descriptive name for the dredge or barge which describes the primary function. i.e. hopper dredge, derrick barge, construction barge, tank barge, etc.

Dredge / Barge Activity Level: Please estimate the rate of increase or decrease in this vessel's activity in percent per year. This helps us estimate growth rates of this industry for our emission inventory model.

2008 OPERATING AREA INFORMATION

Port or County: Please list the areas where this vessel operated in 2008, either the California county or port and the percent of time spent in each area.

PERP ENGINE INFORMATION

Portable Engine Registration Program (PERP) Engines: Engines in your fleet we have been able to identify as registered in PERP are listed on the sheet with the tab labeled "PERP". The engine information available from the registration data is included. If this information is current, you may cut and paste this block of engine information to the vessel engine information sheet for the appropriate vessel.

VESSEL ENGINE INFORMATION

Propulsion/Auxiliary Engines: Please enter the following information about your vessel's propulsion and auxiliary engines in the appropriate space provided (one line per engine). If information is not applicable, please mark "N/A". If the information is not available, please make your best estimate.

Propulsion Engine

Engine Position: Enter the position of the propulsion engine on the vessel (i.e. port, starboard, bow thruster etc.)

Engine Type: Enter the engine type either marine, off-road (nonroad) or on-road engine.

Auxiliary Engine

PERP Registered: Please enter the PERP (Portable Engine Registration Program) registration number if the engine is currently registered with PERP.

Engine Type: Enter the engine type either marine, off-road (nonroad) or on-road engine.

Engine Use Description: Please describe what function the engine provides power for on the vessel, such as electric generator, deck winch, suction pump, etc.

Manufacturer: Enter the name of the manufacturer of each engine.

Engine Family: Enter the engine family of each engine on the vessel, or enter NA if there is no applicable family.

Model: Please provide the model number of each engine.

Model Year: Please provide the model year of each engine.

Number of Cylinders: Please provide the number of cylinders for each engine.

Total Engine Displacement: Please provide the total displacement of each engine in liters.

Maximum Rated Horsepower: Please provide the maximum rated horsepower of each engine.

Annual Fuel Consumed: Please provide your best estimate of the annual fuel use for each engine for 2008. If you are unable to allocate the fuel use by engine, please provide total fuel consumption per vessel at the bottom. ARB will then use an alternative method to estimate the "per engine" fuel use.

2008 Annual Operating Hours: Please enter the total annual operating hours for each engine and an estimate of the approximate distribution of where these hours were spent:

(1) within 3 miles of shore (including in-port activities);
(2) beyond 3 miles out to 24 miles from shore;
(3) beyond 24 miles from shore.

CONTACT / OWNER / OPERATOR INFORMATION

CONTACT

Date: _____

Contact Name: _____ Title: _____

Company Name: _____

Mailing Address: _____ Email: _____

City / State: _____ Phone: _____

ZIP Code: _____ Fax: _____

OPERATOR, if different from contact ☐ Same as Contact

Operator Name: _____ Title: _____

Company Name: _____

Mailing Address: _____ Email: _____

City / State: _____ Phone: _____

ZIP Code: _____ Fax: _____

OWNER, if different from operator ☐ Same as Operator

Owner Name: _____ Title: _____

Company Name: _____

Mailing Address: _____ Email: _____

City / State: _____ Phone: _____

ZIP Code: _____ Fax: _____

For each vessel that you operate, please complete one VESSEL FORM

PERP Engines (Auxilary Engines)

PERP Reg. #	Engine Type	Engine Use Description	Engine Family	Manufacturer	Model	Model Year	Number of Cylinders	Total Engine Displacement	Maximur Rated Horsepow

COMPANY & CONTACT INFORMATION

Company Name: M.T. Marine Services Contact Name: Maximillian Torque Date: 7/30/09

VESSEL INFORMATION

Vessel Name: Salty Year Build: 1981

Home Port: Any Port Length: 250

U.S. Coast Guard No.: VN99999999 Width: 50

☐ IMO ☒ MSSI No: 123456789 Type of Dredge or Barge: Hopper Dredge *Describe Other:

Vessel Type: Dredge ☑ Barge ☐ Other* ☐

Dredge / Barge Activity: Increasing: 5 % Yearly; Decreasing: % Yearly; No Change:

2008 OPERATING AREA INFORMATION

Port or County	Port or County	Port or County	Port or County	Port or County
Port of Los Angeles	Santa Barbara Co.	San Diego Co.		
25 %	25 %	50 %	%	%

ENGINE INFORMATION

Propulsion Engines

Engine Position	Engine Type	Engine Family	Manufacturer	Model	Model Year	Number of Cylinders	Total Engine Displacement	Maximum Rated Horsepower	2008 Annual Fuel Consumed (Gallons)	2008 Annual Operating Hours: Total Hours	0 to 3 miles	>3 to 24 miles	>24 miles
Port	Marine	TCP64.4RDZPBR	Caterpillar	D-399	1996	16	64.4	1125	90,500	1,000	750	250	
Starboard	Marine	TCP64.4RDZPBR	Caterpillar	D-399	1996	16	64.4	1125	90,500	1,000	750	250	
Bow Thruster	Marine	TCP14.6RDZBWR	Caterpillar	3406	1996	8	14.6	325	3,000	200	200		

Auxiliary Engines

PERP Registered (if yes, enter reg.#)	Engine Type	Engine Use Description	Engine Family	Manufacturer	Model	Model Year	Number of Cylinders	Total Engine Displacement	Maximum Rated Horsepower	2008 Annual Fuel Consumed (Gallons)	2008 Annual Operating Hours: Total Hours	0 to 3 miles	>3 to 24 miles	>24 miles
123456	Off Road	Generator	TCP32.2RDZMLR	Caterpillar	D-379	1996	8	32.2	536	30,500	1,550	1,300	250	
123457	Off Road	Generator	TCP32.2RDZMLR	Caterpillar	D-379	1996	8	32.2	536	30,500	1,550	1,300	250	
123458	Off Road	Dredge Pump	TCP32.2RDZMLR	Caterpillar	D-379	1996	8	32.2	565	30,500	1,550	1,300	250	
123459	Off Road	Dredge Pump	TCP32.2RDZMLR	Caterpillar	D-379	1996	8	32.2	565	30,500	1,550	1,300	250	
								Total Fuel for all engines		306,000				

Appendix C

Emission Inventory Methodology

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Appendix C

Updates on the Emissions Inventory for Commercial Harbor Craft Operating in California

1. INTRODUCTION

This section provides background on ARB's commercial harbor craft (CHC) emissions inventory, the purposes and goals in updating the emissions inventory, and a general overview of the updates made to the emissions inventory.

In 2007, ARB staff developed an updated CHC emissions inventory (2007 emissions inventory) using a consistent statewide methodology. This emissions inventory was used to support the regulatory analysis of the *Regulations to Reduce Emissions from Diesel Engines on Commercial Harbor Craft Operated Within California Waters and 24 Nautical Miles of the California Baseline* (harbor craft regulation), which was adopted on November 15, 2007 by the Air Resources Board. CHC are grouped into nine vessel types, including ferry and excursion vessels, tow boats, tug boats, pilot vessels, work boats, crew and supply vessels, commercial fishing vessels, charter fishing vessels, and other types of vessels that do not fit into the above eight categories.

The 2007 emissions inventory was based on the best information and best methodology available to ARB staff at the time the inventory was developed. Since there was no single data set that covered all CHC operating in California, vessel population data were collected from various sources, including the U.S. Coast Guard documentation data, the California Department of Fish and Game registration data, the ARB Harbor Craft Survey, and information from recent emission inventory estimates generated for the Port of Los Angeles. Staff estimated that there were about 4,200 CHC vessels operating in California in year 2004. Vessel and engine profiles, including vessel and engine type, age, size, annual hours of operation, annual fuel use etc., were developed based on ARB's survey that collected information for about 850 vessels, about 20 percent of the statewide CHC population. Future year emissions were forecasted based on estimated vessel/engine activity growth and estimated future engine age profiles. Emissions factors accounted for fuel sulfur content and increasing emission rates with engine age and use.

The proposed amendments to ARB's CHC regulation focus on crew and supply vessels; and barge and dredge vessels operating in California. To support the regulatory analysis of the amendments, staff updated the crew and supply vessel emissions inventory using 2009 initial reporting data and developed the barge and dredge vessel emissions inventory using 2009 survey information.

Vessel and engine data were reported to ARB in 2009 in compliance with ARB's 2007 CHC regulation. Many more engines and much more information were included in the reporting database than the information collected in the 2004 ARB survey. The reporting database virtually covers all crew and supply vessels operated in California. This offers ARB staff an opportunity to update crew and supply vessel emissions inventory with better and more complete data. The updated inventory has been used to support the regulatory analysis of the amendments to the ARB's CHC regulation. While the fundamental emissions estimation methodology is largely unchanged from the methodology used for the 2007 emissions inventory, the reporting data were used to update vessel and engine population, activity, engine useful life, and engine load.

Currently, barge and dredge vessels are not regulated under the ARB's CHC regulation. In 2009, ARB staff conducted a survey to collect information on barges and dredges operated in California. A preliminary emissions inventory was developed to support the inclusion of barge and dredge vessels in the CHC regulation.

2. METHODOLGY

The fundamental methodology remains unchanged from the methodology used for the 2007 emissions inventory except for the changes described in this section. The methodology documentation for the 2007 emissions inventory can be downloaded at: http://www.arb.ca.gov/regact/2007/chc07/appb.pdf.

The basic equation for the estimating PM and NOx emissions from a commercial harbor craft engine is:

$$E = EF_0 \times F \times (1 + D \times \frac{A}{UL}) \times HP \times LF \times Hr$$

Where:

E is the amount of emissions of a pollutant (PM and NOx) emitted during one period;
EF_0 is the model year, horsepower and engine use (propulsion or auxiliary) specific zero hour emission factor (when engine is new);
F is the fuel correction factor which accounts for emission reduction benefits from burning cleaner fuel;
D is the horsepower and pollutant specific engine deterioration factor, which is the percentage increase of emission factors at the end of the useful life of the engine;
A is the age of the engine when the emissions are estimated;
UL is the vessel type and engine use specific engine useful life;
HP is rated horsepower of the engine;
LF is the vessel type and engine use specific engine load factor;
Hr is the number of annual operating hours of the engine.

Total emissions from the California statewide commercial harbor craft fleet can be estimated by summing up the emissions from individual engines or by multiplying the emissions rates, average emissions per engine per year, with the engine population.

DATA SOURCE OVERVIEW

Statewide, about 21 vessel owner/operators reported information for about 70 crew and supply vessels with 163 propulsion engines and 73 auxiliary engines. Staff believes nearly 100 percent of crew and supply vessels operating in California waters are included in the reporting data set. Reporting data were generally consistent with estimates derived from the 2004 survey.

ARB's reporting data set includes vessel and engine information like vessel name, vessel owner, operator, home port, vessel use, engine model year, engine use, engine model, engine horsepower, engine annual fuel use, engine annual hours of operation. The information is complete for most vessels and engines. Staff believes that ARB's CHC reporting data set is the best currently available single data source for estimating emissions from crew and supply vessels operating in California. Staff decided to use the reporting data set to update ARB's crew and supply vessel emissions inventory. ARB staff made follow-up phone calls to clarify information not in the reporting data. Staff also obtained additional information on where vessels operate.

Staff also conducted a survey in 2009 to collect information on barge and dredge vessels operating in California waters. Information for about 400 auxiliary engines, and less than 10 propulsion engines was collected, representing nearly 100 percent of the statewide population of the equipment. Most barge and dredge vessels are not self-propelled and most of the engines are off-road engines for auxiliary purposes such as generating electricity, powering pumps, winches, cranes, etc. Information collected in the barge and dredge vessel survey is similar to the crew and supply vessel information reported to ARB, such as vessel name, vessel use, engine model year, engine horse power, engine annual hours of operation, and engine annual fuel use, etc. Staff developed a statewide barge and dredge vessel emissions inventory based on the information collected from the survey.

CREW AND SUPPLY VESSEL EMISSIONS ESTIMATION

Crew and Supply Vessel Population

There are about 70 crew and supply vessels with 163 propulsion engines and 73 auxiliary engines in the reporting data set with valid data. Based on the information ARB staff had, it was assumed 100 percent of crew and supply vessels operated in California in 2008 reported to ARB in compliance with the ARB's CHC regulation.

Because the reporting data are complete, staff was able to estimate emissions for each individual engine and each individual vessel operating in California and to aggregate the emissions to generate a statewide emissions inventory.

Crew and Supply Vessel Engine Hours of Operation and Engine Load

Analysis of the reporting data indicates that crew and supply vessel engines operate at a lower load with longer hours for propulsion engine than previously estimated. Table 1 and Table 2 compare average hours of operation and engine load for the ARB 2004 survey and 2009 reporting data set.

Table1: Crew and Supply Vessel Engine Hours of Operation

	2004 Survey Data	2009 Reporting Data	% Changed
Propulsion Engine	752	1,796	139%
Auxiliary Engine	3,321	2,265	-32%

Table 2: Crew and Supply Vessel Engine Load

	2004 Survey Data	2009 Reporting Data	% Changed
Propulsion Engine	0.45	0.38	-15%
Auxiliary Engine	0.43	0.32	-27%

The 2009 reporting data load factors are estimated as the average engine load weighted by engine horsepower and annual hours of operation. Large engines operating longer hours have more weight on the load factor. The new load factors are about15 percent and 27 percent lower than the load factors derived from the 2004 survey data for propulsion and auxiliary engines, respectively.

Crew and Supply Vessel Useful Life

Staff defines engine useful life as the age when 50 percent of engines retire from the fleet and 100 percent of engines are assumed to retire at the age of two useful lives. Based on comments from vessel owner/operators that marine engines are maintained very well because of the high capital costs, ARB staff assumed a 28 year of useful life for crew and supply vessel engines. Extending useful life from 22 as previously assumed to 28 years has a minor impact on emissions estimates.

Adjusting Crew and Supply Vessel Emission Rates Using Source Testing Data

The Santa Barbara County Air Pollution Control District (APCD) maintains a permitting program to reduce emissions from crew and supply vessels visiting offshore oil platforms in Santa Barbara County. Based on the requirements in the sample permits provided by the Santa Barbara County APCD, crew and supply vessels serving the oil platforms are required to achieve a NOx emissions rate of 8.4 g/bhp-hr for main engines using a combination of turbo-charging, enhanced inter-cooling, and 4 degrees timing retard and to achieve 5.99 g/bhp-hr for other vessels with newer engines. Most vessels

serving oil platforms in Santa Barbara County, including those vessels transiting in Ventura County APCD, have some degree of NOx control for main engines to achieve the target emission rates required by the permits.

Under the permits, at least one crew and one supply vessel must be tested per year per platform. The tests are performed at cruise load. Most of the crew and supply vessels that operate in Santa Barbara County waters have been tested at some time. Emission source testing data were used by the districts to estimate emissions from crew and supply vessels.

Staff obtained source test data from Santa Barbara County APCD. The average NOx emission rates of the 287 valid engine testing records is about 239 lb/1000 gallon fuel or about 6.3 grams/hp-hr. Staff used this number to adjust emission rates of engines that have emission control technology information in ARB's reporting data set and the emission rates of engines operating in Santa Barbara County APCD.

PM is not tested in the source tests. Therefore, based on engineering judgement, staff estimated a 10 percent PM emissions disbenefit due to NOx reduction strategies.

Crew and Supply Vessel Emissions Spatial Allocation

Based on phone conversations with vessel owner/operators, staff understands most vessels operate close to where their home ports are while several vessels operate in areas away from their home ports. For example, some vessels home-ported in Huntington Beach operate most of their time in Santa Barbara County or Ventura County. Supply vessels serving oil platforms in Santa Barbara County are too big to be home-ported in Santa Barbara County and these vessels have to transit from Port Hueneme in Ventura County to oil platforms in Santa Barbara County. Staff developed spatial allocation factors for each engine based on vessel home port and the percentage of time spent in each air district.

BARGE AND DREDGE EMISSIONS ESTIMATION

ARB staff collected information for about 400 auxiliary engines and less than ten propulsion engines used on barge and dredge vessels operating in California waters. Information collected in the barge and dredge vessel survey includes vessel name, vessel use, engine model year, engine horse power, engine annual hours of operation, and engine annual fuel use, etc. In cases when data fields in the survey are missing, staff filled missing information using average of available information by engine use.

Since most barges and dredges are non-self-propelled and most of the engines are off-road engines for auxiliary purposes such as generating electricity, powering pumps, winches, cranes, etc, staff used emission factors from OFFROAD model as the zero-hour emission factors and used OFFROAD fuel consumption rate to estimate barge and dredge fuel use. The OFFROAD is a model used to generate emissions inventory data for off-road mobile sources. The major categories of engines and vehicles included in

OFFROAD2007 are agricultural, construction, lawn and garden and off-road recreation, and equipment from hedge trimmers to cranes. More information about the OFFORAD model can be found at http://www.arb.ca.gov/msei/offroad/offroad.htm.

Staff estimated barge and dredge vessel engine load factors using engine horsepower, engine annual fuel use and annual hours of operation for each engine use category. Staff defined engine useful life as half of the age of the oldest engine by engine use. When the information is not available or there are too few data points to perform a valid analysis for certain engine use categories, staff used engine load or useful life of the same engine use in the OFFROAD model. Table 3 shows barge and dredge vessel engine load, useful life and data sources for this inventory.

Table 3: Barge and Dredge Vessel Engine Load, Useful Life

Engine Use	Engine Load	Data Source	Engine Useful Life	Data Source
Compressor	0.54	Survey	19.5	Survey
Crane	0.42	Survey	9.0	OFFROAD
Deck door engine	0.89	Survey	16.0	OFFROAD
Dredger	0.51	OFFROAD	16.0	OFFROAD
Generator	0.75	Survey	22.5	Survey
Hoist swing winch	0.31	Survey	27.0	Survey
Other	0.80	Survey	16.0	OFFROAD
Pump	0.71	Survey	21.0	Survey
propulsion	0.45	Survey	17.0	Survey

EMISSION FORECASTING

Based on discussions with vessel owner/operators, staff believes that both crew and supply vessel activity; and barge and dredge vessel activity will remain relatively constant in the future. As a result, staff assumed no growth for crew and supply vessel or barge and dredge vessel activity through 2025.

ESTIMATION OF BENEFITS OF THE PROPOSED AMENDMENTS

The proposed amendments of ARB's harbor craft regulation require existing engines onboard crew and supply vessels; and barges and dredges to be repowered with the current model year engines if the engines meet the model year and hours of operation criteria prescribed in Table 16 and Table 17 of the Staff report of the amendments. Staff assumed that new engines used to replace the existing engines have the same horsepower and the same operation pattern, i.e. hours of operation and location, as the existing engines. The new engines are cleaner than the old engines being replaced because of the more stringent emissions standards and less engine deterioration which increases as engines age.

Staff estimated emissions from these new engines using the same methodology described above. Staff estimated the emissions reduction benefits by subtracting the new model year emissions from the engines being replaced. Staff noticed there are more emission reductions in some years than others. The amount of emission reduction at a given calendar year is a function of the age distribution, horsepower, hours of operation of the fleet, and the compliance schedule.

2. EMISSION ESTIMATES

This section summarizes the updated crew and supply vessel emission estimates, barge and dredge vessel emissions estimates. This section also provides a summary of the comparison with previous crew and supply vessel emissions inventory and the comparison with independent emissions estimates by the Santa Barbara County APCD, the Ventura County APCD, and the Port of Los Angeles and the Port of Long Beach.

CREW AND SUPPLY VESSEL EMISSIONS

Crew and Supply Vessel Emission Estimates and Comparison with Previous Emissions Inventory

Figure 1 and Figure 2 compare the updated crew and supply vessel NOx and PM emissions estimates for years 2008 through 2025 using ARB's reporting data and the previous 2007 emissions inventory based on ARB's 2004 survey. The comparison shows that the 2010 crew and supply vessel emissions inventory (2008 as base year) are significantly higher than the 2007 emissions inventory (2004 as base year).

Figure 1: NOx Emissions from Crew and Supply Vessels in California

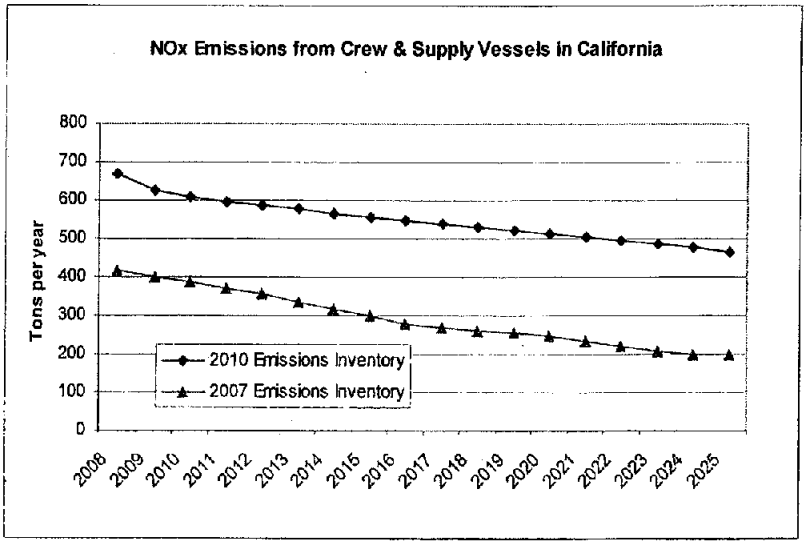
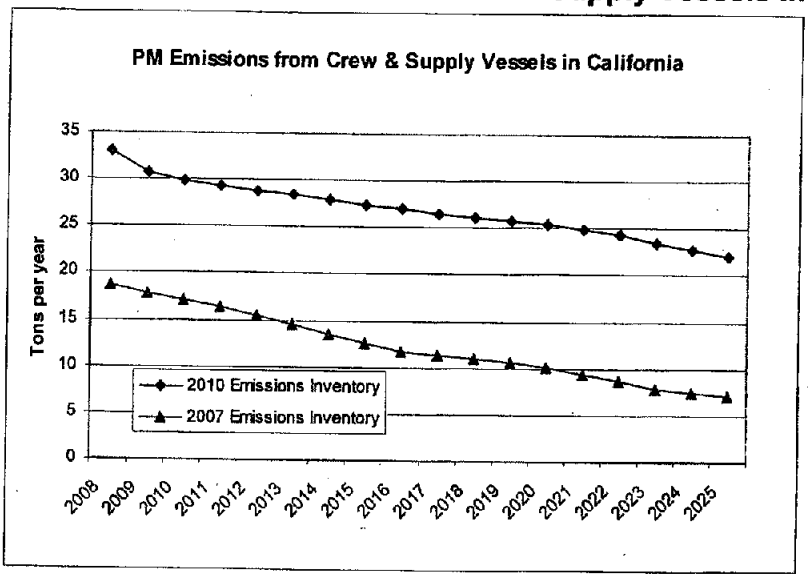


Figure 2: Diesel PM Emissions from Crew and Supply Vessels in California



Crew and Supply Vessel Emission Estimates by the Districts

Table 4 summarizes crew and supply vessels emissions estimates by the districts. More than 90 percent of statewide crew and supply vessel emissions occurred in the South Coast AQMD, Santa Barbara County, and Ventura County districts in 2008 where most of the oil platforms are. Vessels in Santa Barbara County account for a larger percentage of PM emissions than NOx emissions because NOx emission control required by the permits.

Table 4: Crew and Supply Vessel Emission Estimates by Air Districts for Year 2008 (tons/year)

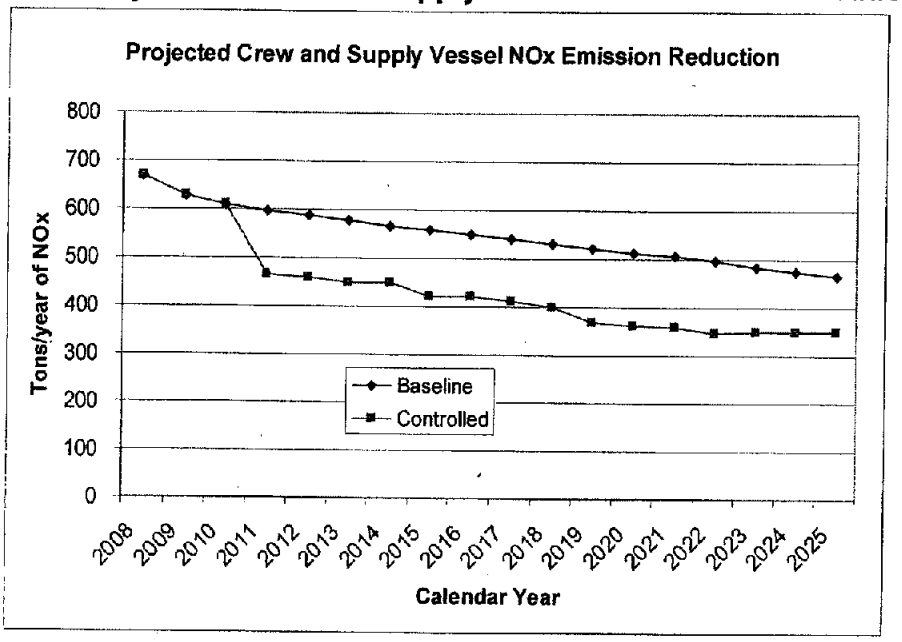
Air District	NOx	Percent of Total	PM	Percent of Total
BA	42.0	6%	1.4	4%
SB	138.2	21%	10.2	31%
SC	336.9	50%	14.4	44%
SD	11.3	2%	0.4	1%
VEN	140.8	21%	6.5	20%
Total	669.3	100%	33.0	100%

Crew and Supply Vessel Emission Reduction

The projected statewide annual emission reduction for crew and supply vessels is presented in Figures 3 and 4. Figure 3 shows that the projected statewide NOx emissions from and supply vessels are estimated to be about 670 tpy in 2008, dropping to about 466 tpy in 2025 without the proposed amendments. The reduction in uncontrolled emissions over this period is due to the anticipated or planned replacement

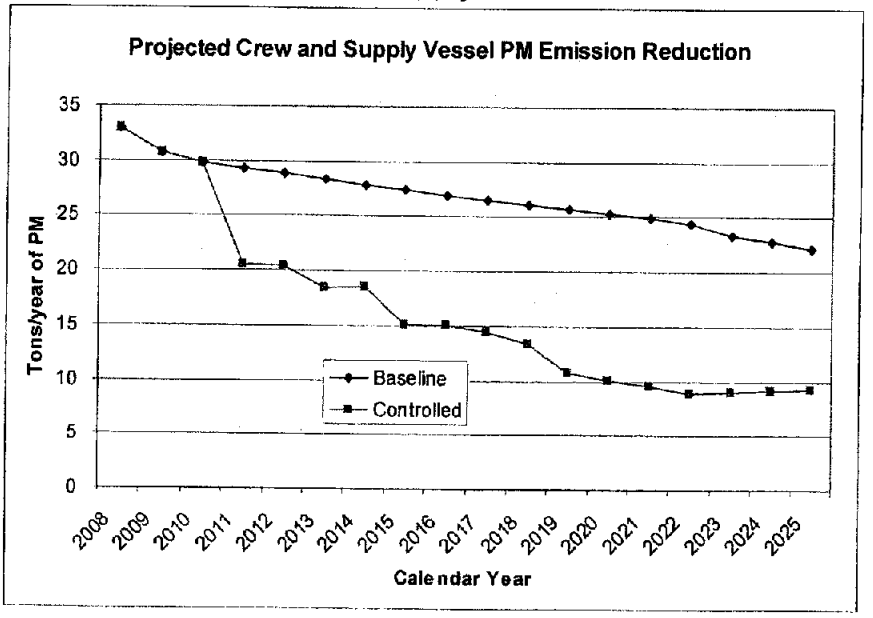
of older engines. With the proposed amendments in place, the NOx emissions would be further reduced from 466 tpy to about 350 tpy in 2025.

Figure 3: Projected Crew and Supply Vessel NOx Emission Reduction



Statewide, the baseline uncontrolled diesel PM emissions from crew and supply vessels are estimated to be about 33 tpy in 2008, dropping to about 22 tpy in 2025. With the proposed amendments in place accelerating engine turnover, would reduce diesel PM emissions in 2025 from 22 tpy to less than 10 tpy.

Figure 4: Projected Crew and Cupply Vessel PM Emission Reduction



BARGE AND DREDGE VESSEL EMISSIONS

Figure 5 shows that the projected statewide NOx emissions from barge and dredge vessels in California are estimated to be about 760 tpy in 2008, dropping to about 340 tpy in 2025 without the proposed amendments. The reduction in uncontrolled emissions over this period is due to the anticipated or planned replacement of older engines. With the proposed amendments in place, the NOx emissions would be further reduced from 340 tpy to about 255 tpy in 2025.

Figure 5: Projected Barges and Dredges NOx emission reduction

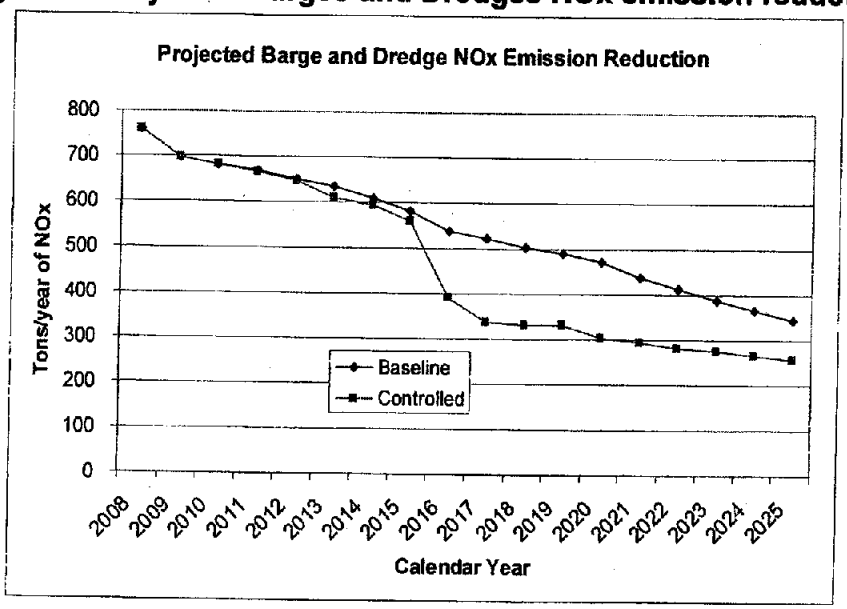


Figure 6 illustrates the statewide barge and dredge vessel engine diesel PM emissions with and without the proposed amendments. Statewide, the baseline uncontrolled diesel PM emissions from barges and dredges are estimated to be about 33 tpy in 2008, dropping to about 12 tpy in 2025. With the proposed amendments in place accelerating engine turnover, diesel PM emissions would be reduced in 2025 from 12 tpy to less than 7 tpy.

Figure 6: Projected Barges and Dredges PM emission reduction

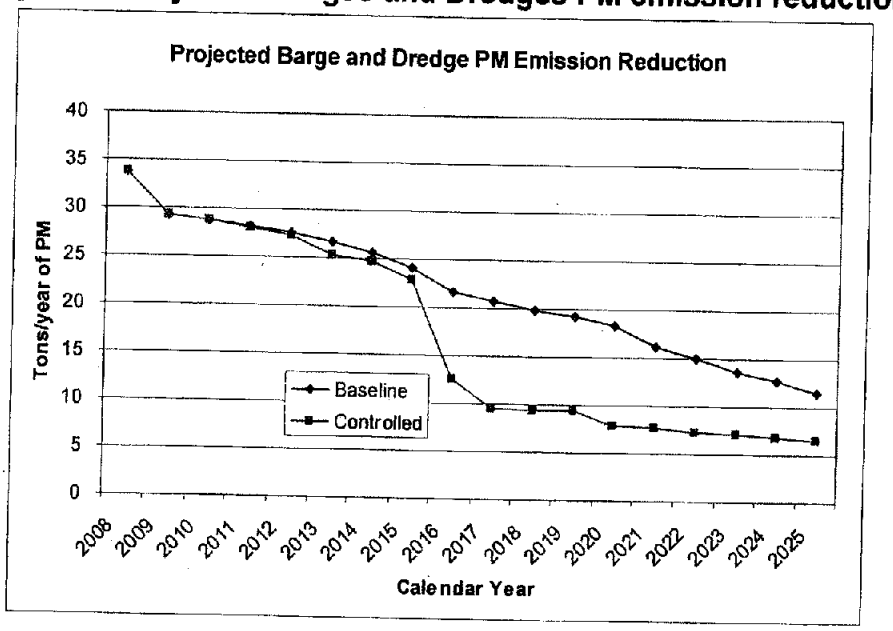


Table 5 shows emissions from barge and dredge vessels by air district. The Bay Area AQMD and the San Diego County APCD account for more than 50 percent of the statewide emissions from barge and dredge vessels.

Table 5: Barge and Dredge Emission Estimates by Air Districts for Year 2008 (tons/year)

Air District	NOx	% of Total	PM	% of Total
BA	206.5	27%	9.2	27%
IMP	6.8	1%	0.3	1%
MBU	28.8	4%	1.3	4%
NCU	62.9	8%	2.8	8%
SAC	10.3	1%	0.5	1%
SB	10.3	1%	0.5	1%
SC	129.9	17%	5.8	17%
SD	180.2	24%	8.0	24%
SJU	23.2	3%	1.0	3%
VEN	92.9	12%	4.1	12%
YS	7.7	1%	0.3	1%
Total	759.6	100%	33.4	100%

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Appendix D

Methodology of Estimating Economic Impacts

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Appendix D

ECONOMIC IMPACTS METHODOLOGY

This chapter discusses the estimated costs and economic impacts associated with implementation of the proposed amendments to the Commercial Harbor Craft Regulation (CHC Regulation). The expected capital and recurring costs for potential compliance options, the cost and associated economic impacts on businesses, as well as an analysis of the cost-effectiveness of proposed CHC amendments to the regulation are presented. ARB staff calculated the economic impacts associated with the proposed amended CHC regulation using the same methodology as was done for the 2007 CHC regulation. Generally, costs discussed in this section are presented in 2009 dollars, but the tables also contain the values adjusted for net present value (NPV) to estimate "today's dollars" of future net cash. The equations and calculation method can be found in the Air Resources Board, Technical Support Document: Proposed Regulation for Commercial Harbor Craft, September 2007.

A. Summary of the Economic Impacts

In assessing the costs associated with the proposed amendments to the CHC Regulation, ARB staff developed two different estimates, one for "regulatory costs" and another for "new equipment costs." Regulatory costs are the estimated costs resulting from the proposed amendments taking into consideration the residual value of the in-use engine being replaced, the residual value of the most recent engine rebuild work, recordkeeping and reporting costs, and the time value of money associated with the early engine replacement. New equipment costs are the estimated total out-of-pocket costs for purchasing and installing a new engine (engine replacement cost) in crew and supply, barge, and dredge vessels. The new equipment costs for purchasing and installing a new engine are costs that the vessel owner would eventually pay, but the proposed amendments to the CHC regulation requires this service to be performed earlier than normal.

Staff estimates the lifetime regulatory cost for compliance with the proposed amendments to the regulation to be approximately $15 million (2009 dollars or adjusted to $9.9 million NPV) from 2011 through 2022. New equipment costs are estimated at approximately $46 million dollars (2009 dollars or adjusted to $31 million NPV) over the lifetime of the proposed amendments (2011 to 2022).

Staff evaluated the economic impacts the proposed amendments had on crew and supply, barge and dredge businesses by estimating the effect of the regulatory cost on typical business's "return on owner's equity" (ROE). The ROE approach, found that the overall change in ROE would range from a negligible decline of about 0.45 percent for a typical barge and dredge company, to a decline of 1.44 percent for a crew and supply company. Overall, most affected businesses will be able to absorb the costs of the proposed amendments to the CHC regulation with no significant adverse impacts on

their profitability. Generally, the ARB considers a 10 percent change in ROE to be the threshold at which businesses experience a significant adverse impact.

A few federal, State, and local agencies will be impacted by the proposed amendments to the CHC regulation. One federal agency, U.S. Army Corps of Engineers, one state agency, State of California – the Department of Parks and Recreation, and two local agencies (Monterey Regional Water Pollution Control Agency (RWPCA) and Santa Cruz Port District) would be impacted by the in-use engine requirements. Estimated regulatory costs to all of these agencies range from $1,900 to $60,000. Additional details are presented in Table D-13.

Cost-effectiveness is expressed in terms of costs in dollars per unit of emissions reduced (pounds or tons). Low cost-effectiveness results from efficient regulation reductions. The cost-effectiveness for the proposed amendments to the CHC regulation is determined by dividing the regulatory costs by the total pounds of diesel PM reduced during the years 2011 to 2022. Costs are presented in 2009 equivalent expenditure dollars and also shown adjusted for net present value. Table D-1 shows the cost-effectiveness estimate for the proposed amendments expressed three ways. First, all costs assigned to PM, second, cost divided equally between PM and NOx, and third, PM and NOx emissions are combined. The cost-effectiveness values are within the range of cost effectiveness for other diesel engine regulations adopted by the ARB. See Table D-19 for other ARB regulation cost-effectiveness totals.

Table D-1: Summary of Average Amended Proposed Regulation Cost-Effectiveness for the Period 2011-2022

Emissions	Total Regulatory Cost		Total Emissions	Total Cost Effectiveness	
	2009 Dollars ($ millions)	NPV ($ millions)	Total Emissions Reduced	2009 Dollars	NPV
All costs assigned to PM					
PM	$15	$9.9	435,000 lbs	$35/lb	$23/lb
Divide Costs Equally Between PM and NOx					
PM	$7.5	$5.0	435,000 lbs	$17/lb	$11/lb
NOx	$7.5	$5.0	2,800 tons	$2,690/ton	$1,780/ton
Combine PM and NOx Emissions					
PM + NOx	$15	$9.9	6,030,000 lbs	$2.50/lb	$1.65/lb

All values rounded

B. Legal Requirements

In this section we explain the legal requirements that must be satisfied in analyzing the economic impacts of the proposed amendments to the CHC regulation.

Section 11346.3 of the Government Code requires State agencies assess the potential for adverse economic impacts on California business enterprises and individuals when proposing to adopt or amend any administrative regulation. The assessment shall include a consideration of the impact of the proposed amended regulation on California jobs, business expansion, elimination or creation, and the ability of California business to compete with businesses in other states. Also, California state agencies are required to estimate the cost or savings to any State or local agency in accordance with instructions adopted by the Department of Finance (DOF). The estimate shall include any non-discretionary cost or savings to local agencies and the cost or savings in federal funding to the State.

In addition, Health and Safety Code section 57005 requires the ARB to perform an economic impact analysis of submitted alternatives to a proposed regulation before adopting any major regulation. A major regulation is defined as a regulation that will have a potential cost to California business enterprises in an amount exceeding ten million dollars in any single year. Because the estimated cost of the amendments to the CHC Regulation does not exceed 10 million dollars in any single year, the proposed amendments to the CHC Regulation do not constitute a major regulation. However, two alternatives were considered.

The following is a description of the methodology used to estimate costs as well as ARB staff's analysis of the economic impacts on California businesses, as well as, federal, State, and local agencies.

C. Methodology for Estimating Costs Associated with Proposed Regulation

In this section, the estimated costs associated with the proposed amendments are discussed.

Briefly, the methodology entailed:

- Two different estimates of costs were developed, regulatory costs and new equipment costs.
    - The regulatory costs are the estimated costs resulting from the proposed amendments taking into consideration the residual value of the in-use engine being replaced, the residual value of the most recent engine rebuild work, recordkeeping and reporting costs, and the time value of money associated with the early engine replacement.
    - New equipment costs are the estimated total out-of-pocket costs for purchasing and installing a new engine (engine replacement cost), and recordkeeping and reporting costs. The portion of new equipment out-of-pocket costs for purchasing and installing a new engine are costs

that the vessel owner would eventually pay, but the proposed amendments require this service to be performed earlier than normal.

- Engine replacement (repowering) was the assumed in-use engine compliance option.
- Operating and maintenance costs for replacement engines were assumed to be the same as for an existing engine.
- No new reporting costs are involved. No additional reporting costs included pertaining to the amended proposed CHC regulation. The owners of the effected vessel engines are currently required to report to the CHC regulation, the PERP, or districts.
- Costs were estimated in 2009 dollars and also adjusted to NPV using a 5 percent discount rate.

1. Costs

a. Engine Replacement (Repower) Costs:

The estimated costs for purchasing and installing a new diesel-fueled engine in an in-use vessel were determined using actual cost data from the Port of Los Angeles Community Advisory Committee China Shipping Settlement Funding submittals and cost information provided by industry and vessel owners. Staff's estimate of the average costs per engine horsepower for purchase and installation of a new main and auxiliary diesel-fueled engine are shown in Table D-2. The marine auxiliary engines are typically smaller horsepower than the propulsion engines, but the prices of some marine auxiliary engines are more expensive on a per horsepower comparison. In addition, repowering auxiliary engines in crew and supply vessels may be more difficult, requiring more installation time and costs compared to most barge and dredge vessels. Thus, the average cost for crew and supply auxiliary engine is higher than propulsion engines and barge and dredge auxiliary engines.

Table D-2: Estimated Vessel Engine Replacement Costs

Engine Category	Average Cost ($/hp)[A]	
	Crew and Supply	Barge and Dredge
Propulsion Engine	$ 214	$ 270
Auxiliary Engine	$ 508	$285

[A] Includes engine, labor, and ancillary equipment costs.

b. Early Replacement Costs

(i) Residual Value of Engine

Staff anticipates that most operators of crew and supply, barge, and dredge vessels will comply with the proposed amendments by replacing existing engines with new engines. There will be situations where engines have to be replaced before the end of the engine's useful service life. In these situations, the costs associated with the loss of the residual or remaining value of the engine being replaced is assigned to this regulatory action. In situations where the engine is being replaced after the end of the useful service life, costs associated with the engine replacement are not assigned to the regulation. (The equations and calculation method can be found in the Air Resources Board, Technical Support Document: Proposed Regulation for Commercial Harbor Craft, September 2007.)
Table D-3 presents ARB estimates of the useful service life and total life for main and auxiliary engine on crew and supply, barge, and dredge vessels. (See Appendix C)

Table D-3: Estimated Useful Service and Total Life of Selected Vessel Engines

Vessel Engine Type	Useful Service Life	Total Life
Crew and Supply Main	28	56
Crew and Supply Auxiliary	28	56
Barge and Dredge Main	17	34
Barge and Dredge Auxiliary	Varies depends on the type	Varies

(ii) Residual Value of Engine Rebuild Work

As with the previous section and discussion of the residual value of the engine, there is also a residual value to the most recent engine rebuilds or overhauls. The engine overhauls are categorized as either a "major" or "top end" overhaul. The frequency of these overhauls can depend on the engine application and the amount of annual use. Engines used under high loads and long hours may need to be overhauled more often. (See Air Resources Board, Technical Support Document: Proposed Regulation for Commercial Harbor Craft, September 2007 as reference for more details.)

c. Operation and Maintenance Costs – Replacement Engines

Based on discussion with engine manufacturers, we do not anticipate that there will be any change in the operating and maintenance costs for new engines compared to the engines that are being replaced.

d. Monitoring, Recordkeeping, and Reporting Costs

The proposed amendments to the CHC regulation require no additional monitoring, reporting, and recordkeeping costs. Monitoring and reporting costs for crew and supply vessels were included in the 2007 CHC Regulation. Barge and dredge vessel owner/operators previously reported and kept records as a requirement of the 2007 CHC regulation, the PERP, or local air district permit requirements. Additional annual reporting is not required, however there are occasions specified in the proposed amendments when reporting would be required. These occasions include the purchase of a new engine or vessel, a change in engine or vessel ownership, a change in engine operating hours, submitting a compliance plan for engines subject to replacing the engine, and compliance demonstration.

2. Future Year Equipment Populations Subject to the Proposed Amendments

Staff estimated the engine inventory for future years to determine the number of in-use engines required to come into compliance in each year. Staff used the vessel and engine inventory and emissions model to calculate equipment growth, annual use, age distribution, and attrition for the vessel categories. Future year equipment populations for each compliance year were evaluated by the inventory model to determine the number of engines to be replaced for each compliance year.

Table D-4 presents the expected number of in-use crew and supply vessel engines per year required to comply with the requirements of the amendments. The total estimated number of crew and supply vessel engines replaced is expected to be 150 over the compliance years 2011 to 2022.

Table D-4: Estimated Population of In-Use Crew and Supply Vessel Engines Subject to Amendments to CHC Regulation Emission Limits

Year	Main	Auxiliary	Total
2011	21	12	33
2012	5	1	6
2013	3	0	3
2014	3	0	3
2015	6	4	10
2016	2	1	3
2017	14	0	14
2018	8	4	12
2019	9	5	14
2020	8	11	19
2021	3	5	8
2022	22	3	25
Total	**104**	**46**	**150**

Table D-5 presents the expected number of in-use barge and dredge vessel engines per year required to comply with the requirements of the amendments. The estimated number of engines replaced is expected to be 129 over the compliance years 2011 to 2022.

Table D-5: Estimated Population on In-Use Barge and Dredge Vessel Engines Subject to Amendments to CHC Regulation

Year	Main	Auxiliary	Total
2011	0	5	5
2012	0	3	3
2013	0	7	7
2014	0	6	6
2015	0	5	5
2016	0	43	43
2017	1	44	45
2018	0	6	6
2019	0	4	4
2020	0	3	3
2021	0	1	1
2022	0	2	2
Total	**1**	**128**	**129**

D. Total Regulatory and New Equipment Costs

Table D-6 and Table D-7 provide the regulatory costs attributed to the in-use engine requirements of the proposed amendments. The in-use engine regulatory costs are derived from the residual value of the replaced engine, the residual value of the most recent overhaul, the time value of money for the earlier than anticipated repower cost, and the reporting cost. Reporting costs include the cost of updating the initial information as engines are replaced. The in-use crew and supply vessel total regulatory costs for the amendments over the years 2011 to 2022 are estimated to be about $9.5 million (2009 dollars). The in-use barge and dredge vessel total regulatory costs are estimated to be about $5.6 million (2009 dollars). Values adjusted to NPV are also shown in the Tables.

Table D-6: Estimated Regulatory Costs for Crew and Supply Vessel In-Use Engine Replacement

Year	Regulatory Cost					
	Main (2009 $)	Main (NPV)	Auxiliary (2009 $)	Auxiliary (NPV)	Total (2009 $)	Total (NPV)
2011	$671,000	$611,000	$179,000	$164,000	$850,000	$775,000
2012	$102,000	$89,000	$6,000	$6,000	$108,000	$95,000
2013	$246,000	$200,000	$0	$0	$246,000	$200,000
2014	$83,000	$65,000	$0	$0	$83,000	$65,000
2015	$922,000	$682,000	$159,000	$118,000	$1,081,000	$800,000
2016	$129,000	$91,000	$99,000	$69,000	$228,000	$160,000
2017	$858,000	$576,000	$0	$0	$858,000	$576,000
2018	$676,000	$432,000	$85,000	$55,000	$761,000	$487,000
2019	$1,258,000	$764,000	$238,000	$145,000	$1,496,000	$909,000
2020	$695,000	$403,000	$386,000	$224,000	$1,081,000	$627,000
2021	$278,000	$153,000	$194,000	$108,000	$472,000	$261,000
2022	$2,126,000	$1,117,000	$63,000	$33,000	$2,189,000	$1,150,000
Total	**$8,044,000**	**$5,183,000**	**$1,409,000**	**$922,000**	**$9,453,000**	**$6,105,000**

All values rounded

Table D-7: Estimated Regulatory Costs for Barge and Dredge Vessel In-Use Engine Replacement

Year	Regulatory Cost					
	Main (2009 $)	Main (NPV)	Auxiliary (2009 $)	Auxiliary (NPV)	Total (2009 $)	Total (NPV)
2011	$0	$0	$82,000	$75,000	$82,000	$75,000
2012	$6,000	$6,000	$64,000	$55,000	$70,000	$61,000
2013	$0	$0	$137,000	$113,000	$137,000	$113,000
2014	$0	$0	$344,000	$269,000	$344,000	$269,000
2015	$0	$0	$150,000	$112,000	$150,000	$112,000
2016	$0	$0	$1,958,000	$1,382,000	$1,958,000	$1,382,000
2017	$0	$0	$1,825,000	$1,224,000	$1,825,000	$1,224,000
2018	$0	$0	$173,000	$111,000	$173,000	$111,000
2019	$0	$0	$26,000	$16,000	$26,000	$16,000
2020	$0	$0	$304,000	$176,000	$304,000	$176,000
2021	$0	$0	$252,000	$138,000	$252,000	$138,000
2022	$0	$0	$283,000	$148,000	$283,000	$148,000
Total	**$6,000**	**$6,000**	**$5,598,000**	**$3,819,000**	**$5,604,000**	**$3,825,000**

All values rounded

Table D-8 and Table D-9 provide summaries of the new equipment compliance costs for the replacement of in-use engines with new engines. The in-use engine new equipment costs are derived from the capital and installation repowers costs and the reporting cost. The new equipment costs for repowering an in-use engine are costs that the vessel owner would eventually pay, but the proposed amendments requires this service to be performed earlier than normal. The initial reporting costs were not included in this analysis because those requirements are already in the CHC Regulation and not part of the proposed amendments. Subsequent year reporting costs include the cost of updating the initial information as engines are replaced. The total in-use engine replacement new equipment costs associated with the amendments over the years 2011 to 2022 are estimated to be about $20 million for crew and supply vessel engines and $27 million for barge and dredge vessel engines.

Table D-8: Estimated New Equipment Costs for In-Use Crew and Supply Vessel Engine Replacement

Year	New Equipment Costs					
	Main (2009 $)	Main (NPV)	Auxiliary (2009 $)	Auxiliary (NPV)	Total (2009 $)	Total (NPV)
2011	$2,486,000	$2,213,000	$754,000	$671,000	$3,240,000	$2,884,000
2012	$367,000	$311,000	$61,000	$52,000	$428,000	$363,000
2013	$856,000	$691,000	$0	$0	$856,000	$691,000
2014	$201,000	$155,000	$0	$0	$201,000	$155,000
2015	$1,656,000	$1,212,000	$353,000	$259,000	$2,009,000	$1,471,000
2016	$202,000	$141,000	$393,000	$274,000	$595,000	$415,000
2017	$1,407,000	$935,000	$0	$0	$1,407,000	$935,000
2018	$1,218,000	$770,000	$83,000	$53,000	$1,301,000	$823,000
2019	$2,483,000	$1,496,000	$424,000	$256,000	$2,907,000	$1,752,000
2020	$1,281,000	$735,000	$614,000	$353,000	$1,895,000	$1,088,000
2021	$535,000	$292,000	$314,000	$172,000	$849,000	$464,000
2022	$4,051,000	$2,108,000	$64,000	$34,000	$4,115,000	$2,142,000
Total	**$16,743,000**	**$11,059,000**	**$3,060,000**	**$2,124,000**	**$19,803,000**	**$13,183,000**

Table D-9: Estimated New Equipment Costs for In-Use Barge and Dredge Vessel Engine Replacement

Year	New Equipment Costs					
	Main (2009 $)	Main (NPV)	Auxiliary (2009 $)	Auxiliary (NPV)	Total (2009 $)	Total (NPV)
2011	$0	$0	$418,000	$372,000	$418,000	$372,000
2012	$41,000	$35,000	$266,000	$226,000	$307,000	$261,000
2013	$0	$0	$926,000	$748,000	$926,000	$748,000
2014	$0	$0	$1,181,000	$908,000	$1,181,000	$908,000
2015	$0	$0	$603,000	$442,000	$603,000	$442,000
2016	$0	$0	$10,881,000	$7,586,000	$10,881,000	$7,586,000
2017	$55,000	$37,000	$7,892,000	$5,241,000	$7,947,000	$5,278,000
2018	$0	$0	$452,000	$286,000	$452,000	$286,000
2019	$0	$0	$104,000	$63,000	$104,000	$63,000
2020	$0	$0	$1,419,000	$813,000	$1,419,000	$813,000
2021	$0	$0	$999,000	$546,000	$999,000	$546,000
2022	$0	$0	$1,395,000	$726,000	$1,395,000	$726,000
Total	**$96,000**	**$72,000**	**$26,536,000**	**$17,957,000**	**$26,632,000**	**$18,029,000**

E. Estimated Costs to Businesses

The costs and economic impacts on businesses are presented in this section. The overall impact on business competitiveness, employment, and other impacts on business are also presented.

1. Potential Business Impacts Based on Change to Return on Owners' Equity (ROE)

In this section, we analyze the estimated cost and potential impacts created by the proposed amendments to CHC Regulation on businesses in California. This analysis is based on a comparison of the ROE for affected businesses before and after the inclusion of the regulatory costs. The analysis used publicly available information to assess the impacts on competitiveness, jobs, and business expansion, elimination, or creation. From the limited financial data staff obtained on crew and supply, barge, and dredge owner/operators, approximately 56 percent of these companies would be considered a small business.

Based on 2009 CHC Regulation initial reporting data, staff estimates that there are about 20 crew and supply vessel businesses. Based on the 2007 CHC regulation initial reporting, air district permits, the PERP database, and the 2009 barge and dredge vessel survey about 25 barge and dredge vessel businesses that will be affected by the amendments.

The ROE approach used in evaluating the potential economic impact of the proposed amendments on California businesses is as follows:

(1) Affected businesses were identified from responses to the 2007 CHC Regulation initial reporting requirements, air district permits, the PERP database, and 2009 barge and dredge vessel survey.

(2) The cost for compliance was estimated and averaged over the years a particular company was affected.

(3) The total annual cost for each business was adjusted for both federal and state taxes.

(4) These adjusted costs were subtracted from net profit data, either actual net profit from Dun and Bradstreet or industry averages applied to the number of employees, and the results used to calculate the Return on Owners' Equity (ROE). The resulting ROE was then compared with the ROE before the subtraction of the adjusted costs to determine the impact on the profitability of the businesses.

Using Dun and Bradstreet financial data when data were available, staff calculated the ROEs, both before and after the subtraction of the adjusted annual costs, for the typical businesses from each industry category. These calculations were based on the following assumptions.

- All affected businesses are subject to federal and state tax rates of 35 percent and 9.3 percent, respectively.

- Affected businesses are neither able to increase the prices of their services nor lower their costs of doing business through cost-cutting measures.

These assumptions, though reasonable, might not be applicable to all affected businesses.

As shown in Table D-10, the average ROE of the businesses in the categories listed changed by about 0.95 percent. The decline in profitability was 1.44 percent for crew and supply vessels, and 0.45 percent for barge and dredge vessels. Generally, the ARB considers a 10 percent change in ROE to be the threshold at which businesses experience a significant adverse impact. These businesses, however, are unlikely to have to absorb the entire cost of this proposed amended regulation. To the extent that they are able to pass on the cost of the regulation, the impact on their profitability would be less than estimated here. Thus, staff expects most affected businesses to be able to absorb the cost of the regulation with no significant impact on their profitability.

Table D-10: Affected Businesses with Change in ROE

Category	ROE % Change
Crew and Supply	-1.44%
Barge and Dredge	-0.45%
Average	-0.95%

These businesses may be able to reduce the impact of the proposed amendments on their businesses by taking advantage of available public funding. The costs impacts presented here do not take into consideration the impact of incentive or grant funding. The Carl Moyer Program funding is a potential funding source for companies that comply early or achieve emission reductions beyond the amendments. However, most barges and dredges are not self-propelled and would not be eligible for Moyer funding.

2. Potential Impact on Employment, Business Creation, Elimination or Expansion

a. Potential Impact on Employment

The proposed amendments are not expected to cause a measurable change in California employment and payroll. The staff's profitability analysis shows that the impact on business profitability is minor. The proposed amendments, however, are likely to result in a small increase in employment in businesses that make, sell, install, maintain, and retrofit marine engines. Staff believes jobs will not be eliminated as a result of the amendments, but it may lead to the augmentation or alteration of job duties, leading to a net expansion of boat building, repair, and yard businesses, resulting in an increase in the number of jobs.

b. Potential Impact on Business Creation, Elimination or Expansion

The proposed amendments would have no measurable impact on the status of California businesses. This is because the regulation costs are not expected to impose a significant impact on the profitability of businesses in California. However, some small businesses with little or no margin of profitability may lack the financial resources to comply in a timely manner. These businesses may be able to take advantage of available public funding such as the Carl Moyer program or Proposition 1B funds to lessen the economic impact of the proposed amendments.

While some individual businesses may be affected adversely, the proposed amendments may provide some business opportunities for existing California businesses or result in the creation of new businesses or expansion of current businesses. California businesses that make, install, retrofit, and maintain marine engines may benefit from increased crew and supply, barge, and dredge businesses spending on compliance.

c. Potential Impact on Business Competitiveness

The proposed amendments would have no significant impact on the ability of California businesses to compete with businesses in other states. Non-California vessels operating in California will be required to meet the same regulatory requirements as California-based vessels.

3. Estimated Regulatory Cost for Small and Typical Business

About 60 percent of the companies that own crew and supply vessels are considered small businesses, having less than 100 employees. Approximately 50 percent of the companies operating barge and dredge vessels are considered to be typical businesses, having more than 100 employees. The estimated regulatory cost for small and typical business is presented in Table D-11 and Table D-12. The estimated regulatory cost for a small business ranges from $18,000 to $629,000 for crew and supply business and from $14,000 to $84,000 for barge and dredge business. The estimated regulatory cost for a typical business ranges from $5,000 to $537,000 for crew and supply business and from $27,000 to $584,000 for barge and dredge business.

Table D- 11: Estimated Regulatory Cost for Crew and Supply Small and Typical Business (adjusted to 2009 NPV)

Year	Cost to Small Business			Cost to Typical Business		
	Total Cost	No. of Small Business	Average Cost	Total Cost	No. of Typical Business	Average Cost
2011	$629,000	1	$629,000	$142,000	3	$47,000
2012	$84,000	2	$42,000	$10,000	2	$5,000
2013	$40,000	1	$40,000	$160,000	1	$160,000
2014	$18,000	1	$18,000	$0	0	$0
2015	$30,000	1	$30,000	$768,000	2	$384,000
2016	$91,000	1	$91,000	$69,000	1	$69,000
2017	$338,000	3	$113,000	$236,000	1	$236,000
2018	$485,000	2	$243,000	$0	0	$0
2019	$370,000	4	$93,000	$537,000	1	$537,000
2020	$625,000	3	$208,000	$0	0	$0
2021	$260,000	3	$87,000	$0	0	$0
2022	$1,136,000	4	$284,000	$11,000	1	$11,000

All values rounded

Table D-12: Estimated Regulatory Cost for Barge and Dredge Small and Typical Business (adjusted to 2009 NPV)

Year	Cost to Small Business			Cost to Typical Business		
	Total Cost	No. of Small Business	Average Cost	Total Cost	No. of Typical Business	Average Cost
2011	$15,000	1	$15,000	$59,000	1	$59,000
2012	$0	0	$0	$55,000	2	$28,000
2013	$0	0	$0	$108,000	4	$27,000
2014	$169,000	2	$84,000	$100,000	2	$50,000
2015	$0	0	$0	$112,000	4	$28,000
2016	$269,000	10	$27,000	$1,049,000	8	$131,000
2017	$42,000	3	$14,000	$1,167,000	2	$584,000
2018	$70,000	1	$70,000	$40,000	1	$40,000
2019	$16,000	1	$16,000	$0	0	$0
2020	$0	0	$0	$176,000	1	$176,000
2021	$0	0	$0	$138,000	1	$138,000
2022	$0	0	$0	$148,000	1	$148,000

All values rounded

F. Potential Costs to Local, State, and Federal Agencies

The proposed amendments directly affect a few local, State and Federal agencies. Those public agencies will have an insignificant cost impact to comply with the proposed amendments. The calculated costs are shown in Table D-13. The estimated regulatory costs range from $1,900 to $60,000 (2009 dollars). The estimated new equipment costs range from $24,700 to $393,000 (2009 dollars). These costs will be incurred between 2014 and 2016, because the owners and operators of these engines would not have to comply in the first compliance years because of the original engine model year. Staff estimated the amendments would have no significant impact on these public agencies.

Table D-13: Costs to Local, State, and Federal Agencies

Area	Agency	Compliance Year	Regulatory Costs	Regulatory Costs (2009 NPV)	New Equipment Costs	New Equipment Costs (2009 NPV)
Local	Monterey RWPCA	2016	$1,900	$1,300	$24,700	$17,000
	Santa Cruz Port District	2016	$44,800	$31,600	$393,000	$274,000
	Total		$46,700	$32,900	$417,700	$291,000
Federal	U.S. Army Corps of Engineers	2012 & 2013	$9,100	$7,800	$302,000	$246,000
State	State of California - Parks	2014	$60,000	$47,000	$143,000	$110,000

All values rounded

G. Cost-Effectiveness

In this section, the cost-effectiveness of the proposed amendments to the CHC regulation is estimated. Cost-effectiveness is expressed in terms of control costs (dollars) per unit of air emissions reduced (tons or pounds). As described below, for example, the cost-effectiveness for the proposed amendments is determined by dividing the total cost of the proposed amendments by the total pounds of diesel PM emissions reduced during the years 2011 to 2022. All costs are in 2009 equivalent expenditure dollars. The net present value estimates "today's dollars" of future net cash are also presented.

1. Expected Emission Reductions

Staff estimated the projected total emission reductions under the proposed amendments using the statewide harbor craft inventory. The following Table D-14 and Table D-15 provide a summary of the annual statewide diesel PM and NOx reductions that will result from the amendments. The amendments are expected to reduce almost 293,000 pounds of diesel PM and 1,622 tons of NOx by 2022 for crew and supply vessels, 142,000 pounds of diesel PM and 1,175 tons of NOx for barge and dredge vessels.

Table D-14: Statewide Diesel PM and NOx Annual Emission Reductions from 2011 to 2022 for Crew and Supply Vessels

Year	PM Reduction (pounds/year)			NOx Reduction (tons/year)		
	Main	Aux	Total	Main	Aux	Total
2011	15,999	1,471	17,470	119	13	132
2012	15,370	1,381	16,751	114	12	126
2013	18,657	1,284	19,941	115	11	126
2014	17,433	1,198	18,631	106	11	117
2015	23,207	1,485	24,692	122	13	135
2016	22,247	1,515	23,762	113	13	126
2017	22,852	1,426	24,278	114	12	126
2018	24,010	1,369	25,379	119	12	131
2019	28,502	1,395	29,897	143	11	154
2020	29,036	1,440	30,476	141	11	152
2021	29,161	1,455	30,616	137	10	147
2022	29,429	1,388	30,817	140	10	150
Total	**275,903**	**16,807**	**292,710**	**1,483**	**139**	**1,622**

Values are rounded.

Table D-15: Statewide Diesel PM and NOx Annual Emission Reductions from 2011 to 2022 for Barge and Dredge Vessels

Year	PM Reduction (pounds/year)			NOx Reduction (tons/year)		
	Main	Aux	Total	Main	Aux	Total
2011	0	336	336	0	3	3
2012	132	430	562	1	4	5
2013	0	2,753	2,753	0	23	23
2014	0	1,771	1,771	0	15	15
2015	0	2,454	2,454	0	21	21
2016	0	18,217	18,217	0	149	149
2017	85	22,246	22,331	1	184	185
2018	47	20,760	20,807	0	171	171
2019	39	19,573	19,612	0	160	160
2020	34	20,865	20,899	0	169	169
2021	31	17,123	17,154	0	141	141
2022	29	15,437	15,466	0	133	133
Total	**397**	**141,965**	**142,362**	**2**	**1,173**	**1,175**

Values are rounded.

2. Cost-Effectiveness

To determine the cost-effectiveness of the amendments, we divided the sum of the annual regulatory costs (2011 to 2022) for the amendments by the diesel PM emission reductions over the same time period attributable to the amendments. The regulatory costs include the remaining value of the engine being replaced (engine, supporting equipment, and installation labor), the residual value of the most recent maintenance, and recordkeeping and reporting costs. The estimated overall cost-effectiveness (total PM reduced divided by total regulatory costs) is $32 per pound of diesel PM reduced for crew and supply vessels and $39 per pound of diesel PM reduced for barge and dredge vessels, if all the costs of compliance are allocated to diesel PM reduction, or $35 per pound of diesel PM reduced for both vessel categories.

Since the amendments will also result in reductions in oxides of nitrogen (NOx) emissions, staff conducted a second cost-effectiveness analysis in which half of the cost of compliance was allocated to PM benefits and half the cost was allocated to NOx benefits. This results in cost-effectiveness values of $16/lb for diesel PM and $2,915/ton for NOx for crew and supply vessels, $20/lb for diesel PM and $2,384/ton for NOx for barges and dredges, or $17.30 for diesel PM and $2,600/ton for NOx both vessel categories

A third method to express cost effectiveness is to use the sum of the combined PM and NOx reductions (approximately 3.5 million pounds for crew and supply vessels, 2.5 million pounds for barge and dredge vessels). Using this approach, the resulting cost effectiveness for the proposed amendments is about $2.70 per pound of PM and NOx reduced for crew and supply vessels, $2.25 per pound of PM and NOx reduced for

barge and dredge vessels, or $2.50 per pound of PM and NOx for both vessel categories (2009 dollars). These cost-effectiveness values are presented in 2009 expenditure dollars and adjusted for NPV in Table D-16, Table D-17, and Table D-18 below.

Table D-16: Summary of Average Cost Effectiveness for Crew and Supply Vessels for the period 2011 to 2022

Emissions	Total Emissions Reduced 2011-2022	Total Regulatory Cost 2011-2022	Total Cost-Effectiveness	Total Regulatory Cost 2011-2022 (2009 NPV)	Total Cost-Effectiveness (2009 NPV)
All costs assigned to PM					
PM	293,000 lbs	$9,453,000	$32/lb	$6,105,000	$21/lb
Divide Costs Equally Between PM and NOx					
PM	293,000 lbs	$4,726,000	$16/lb	$3,053,000	$10/lb
NOx	1,600 tons	$4,726,000	$2,915/ton	$3,053,000	$1,882/ton
Combine PM and NOx Emissions					
PM + NOx	3,536,000 lbs	$9,453,000	$2.70/lb	$6,105,000	$1.70/lb

All values rounded

Table D-17: Summary of the Aver~ge Cost Effectiveness for Barge and Dredge Vessels for the Period 2011 – 2022

Emissions	Total Emissions Reduced 2011-2022	Total Regulatory Cost 2011-2022	Total Cost-Effectiveness	Total Regulatory Cost 2011-2022 (2009 NPV)	Total Cost-Effectiveness (2009 NPV)
All costs assigned to PM					
PM	142,000 lbs	$5,604,000	$39/lb	$3,825,000	$27/lb
Divide Costs Equally Between PM and NOx					
PM	142,000 lbs	$2,802,000	$20/lb	$1,913,000	$13/lb
NOx	1,200 tons	$2,802,000	$2,384/ton	$1,913,000	$1,628/ton
Combine PM and NOx Emissions					
PM + NOx	2,493,000 lbs	$5,604,000	$2.25/lb	$3,825,000	$1.50/lb

All values rounded

Table D-18: Summary of Average Amended Proposed Regulation Cost-Effectiveness for the Period 2011-2022

Emissions	Total Regulatory Cost		Total Emissions	Total Cost Effectiveness	
	2009 Dollars ($ millions)	NPV ($ millions)	Total Emissions Reduced	2009 Dollars	NPV
All costs assigned to PM					
PM	$15	$9.9	435,000 lbs	$35/lb	$23/lb
Divide Costs Equally Between PM and NOx					
PM	$7.5	$5.0	435,000 lbs	$17/lb	$11/lb
NOx	$7.5	$5.0	2,800 tons	$2,690/ton	$1,780/ton
Combine PM and NOx Emissions					
PM + NOx	$15	$9.9	6,030,000 lbs	$2.50/lb	$1.65/lb

All values rounded

As shown Table D-19, the cost-effectiveness of the proposed amendments is in the range of other regulations recently adopted by the ARB. For example, the diesel PM cost-effectiveness of the solid waste collection vehicle rule was estimated at $28 per pound, excluding the benefits of NOx and hydrocarbon reductions (ARB, 2003a). The cost-effectiveness of the stationary diesel engine airborne toxic control measure (ATCM) was estimated to range from $4 to $26 per pound of diesel PM reduced (ARB,2003b). Finally, the transport refrigeration unit ATCM was estimated to have a cost-effectiveness of $10 to $20 per pound of diesel PM reduced (ARB, 2003c).

Table D-19: Diesel PM Cost Effectiveness of the Proposal and Other Regulations/Measures (Attributes All Costs to Each Pollutant Individually)

Regulation or Airborne Toxic Control Measure	Diesel PM Cost- Effectiveness Dollars/ Pound PM
Commercial Harbor Craft (2007)	$29
Commercial Harbor Craft (2010 amendments)	**$35***
In-Use Off-Road Diesel Vehicles	$40
Cargo Handling Equipment Proposal	$41
Solid Waste Collection Vehicle Rule	$28
Stationary Diesel Engine ATCM	$4 - $26
Transport Refrigeration Unit ATCM	$10 - $20

*$23 for Net Present Value

H. Availability of Incentive Funding

Incentive programs have the ability to achieve emissions reductions early or beyond those required by regulations. California has one of the largest clean air incentive programs in the nation – the Carl Moyer Program – with up to $140 million available each year through State and local funds. This level of funding is far from sufficient to pay for all the reductions needed to provide clean air. Incentive programs, such as the Carl Moyer Program, fund the incremental cost of cleaner-than-required engines, equipment, and other sources of pollution providing early or extra emission reductions. Carl Moyer Program emission reductions are credited in California's State Implementation Plan and must be real, surplus to regulatory requirements, quantifiable, and enforceable. To be eligible for Carl Moyer funds, marine vessels must be self-propelled. Most barges and dredges would not be eligible because few have propulsion engines.

The Carl Moyer Program is implemented as a partnership between ARB and the districts. ARB provides program oversight and minimum program requirements and the districts select and fund projects. Statewide, the Carl Moyer Program has been oversubscribed every year, and this continues to be the case today. Eligible marine vessel projects compete with on-road, off-road, agricultural pump, locomotive, and other projects for funding.

In November 2006, California voters approved $1 billion in incentive funding to reduce emissions from goods movement activities. Proposition 1B funds will also be available to eligible commercial harbor craft operators for repowering engines, retrofitting vessels with hybrid systems, and replacing vessels with cleaner models. At the Board meeting held on March 25, 2010, the *Proposed Update to the Proposition 1B Program Guidelines* were approved, which included project options that would fund up to 80% of the cost for non-regulated vessels and up to 50% for the early compliance of regulated vessels. The Board will award the next Proposition 1B funding allocations to local agencies in June 2010 with additional funding to be made available as bond monies are received by ARB.

I. Analysis of Alternatives

In this section, the cost-effectiveness of the proposed amendments is compared to two alternative control options. The first alternative would accelerate the barge and dredge compliance schedule but the crew and supply vessels would follow the proposed compliance schedule. The other alternative is to slow down the compliance timeline for both crew and supply vessels and barge dredge vessels. The first alternative would achieve greater emission reductions, but with higher regulatory cost. The second alternative analyzed results in lower regulatory cost, but emissions are reduced less.

Alternative 1: Accelerate Barge and Dredge Vessels Compliance Schedule and Require the Crew and Supply Vessels to Follow the Proposed Compliance Schedule

For Alternative 1, barge and dredge vessels throughout the State would be subject to a 2011 to 2020 accelerated compliance schedule. Crew and supply vessels would still be subject to the 2011 to 2022 regular compliance schedule. This alternative would speed up the engine replacements in the first five years. The engine replacement comparison for both alternatives is shown in Table 20. The estimated new equipment cost of this alternative is $52 million which is about $6 million higher than the proposed amendments new equipment compliance cost, as shown in Table D-21, and the regulatory cost is $19 million which is about $4 million higher than the proposed amendments regulatory cost, shown in Table D-22. The total diesel PM emissions reduced with this alternative would be greater than with the proposed schedule, 82,000 pounds during the 12 years from 2011 to 2022 as shown in Table D-23. The total NOx reduction of this same time period would be 3,400 tons which is about 600 tons greater than the proposed schedule. The resulting cost-effectiveness for this alternative is higher than the proposed schedule, $37 per pound of diesel PM reduced. The resulting cost effectiveness, dividing the cost equally between diesel PM and NOx, would be $19 per pound of diesel PM reduced and $2,850 per ton of NOx reduced. The cost effectiveness comparison is shown in Table D-24. This alternative has greater emission reductions benefits but with higher regulatory cost.

This alternative further increases the number of vessels complying early and restricts the amount of time and money from funding sources. Also, the additional early expenses for businesses reduce their ability to spread the compliance cost over the proposed time. Based on these reasons, staff does not recommend this alternative.

Table D-20: Statewide Annual In-Use Engine Replacements

Year	Number of Propulsion Engines			Number of Auxiliary Engines		
	Reg	Alt 1	Alt 2	Reg	Alt 1	Alt 2
2011	21	22	10	17	47	2
2012	5	5	2	4	10	5
2013	3	3	10	7	62	8
2014	3	4	2	6	11	7
2015	6	6	2	8	39	1
2016	2	2	2	44	7	7
2017	15	14	7	44	5	3
2018	8	8	0	10	6	37
2019	9	9	4	10	6	43
2020	8	8	20	13	13	12
2021	3	3	17	6	5	19
2022	22	22	25	4	3	10
Total	**105**	**106**	**101**	**173**	**214**	**154**

Table D-21: Statewide Annual New Equipment Compliance Costs for Crew and Supply Vessels and Barge and Dredge Vessels

Year	New Equipment Compliance Costs			New Equipment Compliance Costs (2009 NPV)		
	Reg	Alt 1	Alt 2	Reg	Alt 1	Alt 2
2011	$3,657,000	$7,427,000	$1,152,000	$3,256,000	$6,612,000	$1,026,000
2012	$735,000	$951,000	$611,000	$624,000	$807,000	$518,000
2013	$1,782,000	$15,909,000	$2,229,000	$1,439,000	$12,839,000	$1,801,000
2014	$1,382,000	$2,989,000	$1,046,000	$1,063,000	$2,298,000	$804,000
2015	$2,612,000	$7,501,000	$929,000	$1,913,000	$5,492,000	$680,000
2016	$11,476,000	$1,058,000	$1,392,000	$8,001,000	$738,000	$971,000
2017	$9,354,000	$1,521,000	$2,409,000	$6,213,000	$1,011,000	$1,600,000
2018	$1,753,000	$2,721,000	$10,064,000	$1,109,000	$1,720,000	$6,364,000
2019	$3,011,000	$3,908,000	$7,792,000	$1,815,000	$2,355,000	$4,694,000
2020	$3,314,000	$3,291,000	$3,062,000	$1,901,000	$1,888,000	$1,758,000
2021	$1,848,000	$849,000	$7,250,000	$1,010,000	$464,000	$3,962,000
2022	$5,510,000	$4,115,000	$6,362,000	$2,868,000	$2,142,000	$3,312,000
Total	**$46,437,000**	**$52,240,000**	**$44,298,000**	**$31,212,000**	**$38,366,000**	**$27,490,000**

Values are rounded

Table D-22: Statewide Annual Regulatory Costs for Crew and Supply Vessels and Barge and Dredge Vessels

Year	Regulatory Cost			Regulatory Cost (2009 NPV)		
	Reg	Alt 1	Alt 2	Reg	Alt 1	Alt 2
2011	$932,000	$1,852,000	$410,000	$850,000	$1,684,000	$373,000
2012	$178,000	$466,000	$65,000	$156,000	$403,000	$56,000
2013	$383,000	$4,621,000	$446,000	$313,000	$3,776,000	$368,000
2014	$427,000	$1,331,000	$210,000	$334,000	$1,031,000	$166,000
2015	$1,231,000	$2,790,000	$236,000	$912,000	$2,066,000	$174,000
2016	$2,186,000	$388,000	$262,000	$1,542,000	$273,000	$188,000
2017	$2,683,000	$964,000	$648,000	$1,800,000	$648,000	$432,000
2018	$934,000	$1,136,000	$2,132,000	$598,000	$726,000	$1,369,000
2019	$1,521,000	$1,749,000	$2,113,000	$925,000	$1,063,000	$1,291,000
2020	$1,385,000	$1,441,000	$1,330,000	$803,000	$835,000	$772,000
2021	$725,000	$473,000	$3,316,000	$399,000	$261,000	$1,833,000
2022	$2,472,000	$2,189,000	$2,973,000	$1,298,000	$1,150,000	$1,561,000
Total	**$15,057,000**	**$19,400,000**	**$14,141,000**	**$9,930,000**	**$13,916,000**	**$8,583,000**

Values are rounded

Table D-23: Statewide Annual Diesel PM and NOx Emission Reductions

Year	PM Reductions (pounds)			NOx Reductions (tons)		
	Reg	Alt 1	Alt 2	Reg	Alt 1	Alt 2
2011	17,806	25,552	7,517	135	202	56
2012	17,314	23,051	7,689	132	182	58
2013	22,694	46,574	17,238	149	337	130
2014	20,401	43,420	16,734	131	309	126
2015	27,145	51,578	19,771	156	348	126
2016	41,978	46,068	19,242	275	302	123
2017	46,609	44,695	25,831	311	285	144
2018	46,186	46,781	38,354	301	297	242
2019	49,509	50,293	40,934	314	315	264
2020	51,375	49,714	42,544	321	309	267
2021	47,771	45,730	48,103	288	269	297
2022	46,282	43,544	47,957	282	252	295
Total	**435,071**	**516,999**	**331,913**	**2,796**	**3,409**	**2,128**

Table D-24: Summary of Average Cost-Effectiveness for the Period 2011- 2022

Emissions	Proposed Regulation		Regulation Alternative 1		Regulation Alternative 2	
	Cost in 2009 Dollars	Cost in NPV	Cost in 2009 Dollars	Cost in NPV	Cost in 2009 Dollars	Cost in NPV
All costs assigned to PM						
PM ($/lb)	35	23	38	27	43	26
Divide Costs Equally Between PM and NOx						
PM ($/lb)	17	11	19	14	21	13
NOx ($/ton)	2,690	1,780	2,850	2,040	3,320	2,020
Combine PM and NOx Emissions						
PM + NOx ($/lb)	2.50	1.65	2.65	1.90	3.00	1.90

Values are rounded

Alternative 2: Decelerate the compliance schedule for both crew and supply vessels and barge and dredge vessels

For Alternative 2, the compliance schedule for both crew supply vessels and barge dredge vessels would be decelerated. This would result in many engines being replaced later than the proposed amendments compliance schedule. Both the estimated new equipment cost and regulatory cost of this alternative are lower than the proposed amendments. As shown in Table D-21, the estimated new equipment compliance cost for this alternative is $44 million which is about $2 million lower than the proposed amendments compliance schedule. As shown in Table D-22, the estimated regulatory cost for this alternative is $14 million which is about $1 million lower than the proposed amendments compliance schedule. The diesel PM and NOx reductions associated with this alternative, as shown in Table D-23, would be about 332,000 pounds PM and 2,128 tons of NOx. This alternative has significantly less

emission reductions benefit with a slightly less regulatory cost compared to the proposed amendments compliance schedule. The cost-effectiveness for this alternative is a significantly higher than the proposed amendments at $43 per pound of diesel PM reduced, as shown above in Table D-24.

This alternative would slow down engine replacements resulting in higher diesel PM and NOx emissions. The engine replacement comparison for both alternatives is shown in Table D-20. This alternative was not selected as it is not as cost-effective nor beneficial for air quality and public health as the proposed amendments.

REFERENCES:

(ARB, 2003a) Air Resources Board, *Staff Report: Initial Statement of Reasons for Proposed Rulemaking, Proposed Diesel Particulate Matter Control Measure for On-Road Heavy-Duty Residential and Commercial Solid Waste Collection Vehicles*, June, 2003.

(ARB, 2003b) Air Resources Board, *Staff Report: Initial Statement of Reasons for Proposed Rulemaking, Airborne Toxic Control Measure for Stationary Compression-Ignition Engines*, September, 2003.

(ARB, 2003c) Air Resources Board, *Staff Report: Initial Statement of Reasons for Proposed Rulemaking, Airborne Toxic Control Measure for In-Use Diesel-Fueled Transport Refrigeration Units (TRU) and TRU Generator Sets, and Facilities Where TRUs Operate*, October, 2003.

CALIFORNIA AIR RESOURCES BOARD

NOTICE OF PUBLIC HEARING TO CONSIDER ADOPTION OF PROPOSITION 1B GRANTS FOR FY 2008-09 AND FY 2009-10 FUNDS TO REDUCE EMISSIONS FROM GOODS MOVEMENT

The Air Resources Board (ARB or Board) will conduct a public hearing at the time and place noted below to consider adoption of Proposition 1B grants for fiscal year (FY) 2008-09 and FY2009-10 funds to reduce emissions from goods movement.

DATE: June 24, 2010

TIME: 9:00 a.m.

PLACE: California Environmental Protection Agency
Air Resources Board
Byron Sher Auditorium
1001 I Street
Sacramento, California 95814

This item may be considered at a one-day meeting of the Board, which will commence at 9:00 a.m., June 24, 2010. Please consult the agenda for the meeting, which will be available at least 10 days before June 24, 2010, to determine the order of agenda items.

BACKGROUND

The movement of freight (goods movement) throughout California results in emissions of diesel particulate matter (diesel PM), oxides of nitrogen (NOx), and other pollutants. Goods movement involves the use of a variety of mobile emission sources, such as heavy duty trucks, diesel locomotives, ocean-going cargo ships, harbor craft, and cargo handling equipment. ARB has identified diesel PM as a toxic air contaminant, and NOx contributes to regional ozone and PM levels that exceed State and federal air quality standards. The emissions from these mobile sources result in significant human health risks and adverse environmental effects, particularly when such sources release emissions near already heavily-impacted communities located in California's trade corridors where these sources operate.

The Proposition 1B: Goods Movement Emission Reduction Program (Program), approved by voters in 2006, authorizes $1 billion in bond funding to the ARB to cut freight emissions in four priority trade corridors. The State budgets for FY2007-08, FY2008-09, and FY2009-10 appropriated nearly $750 million total to ARB for the Program. The major sources eligible for bond funding include heavy-duty diesel trucks, freight locomotives, cargo ships at berth, commercial harbor craft, cargo handling equipment, and infrastructure for electrification of truck stops, distribution centers, and other places where trucks congregate.

The Program is a partnership between ARB and local agencies (like air districts and ports) to quickly reduce air pollution emissions and health risk from freight movement along California's four priority trade corridors. ARB awards Program funding to local agencies; those agencies then use a competitive process to provide incentives to equipment owners to upgrade to cleaner technology. However, project starts are now contingent on the availability of bond funding.

The Board adopted funding targets for the trade corridors as well as for the four funding categories (trucks, locomotives, ships at berth, and commercial harbor craft). The $500 million appropriated for FY2008-09 and FY2009-10 will be tentatively allocated based on these targets and awarded when the monies are available. Under the State's current fiscal policies, ARB's ability to award the funds is dependent on the availability of cash from bond sales or other State financing mechanisms.

The Program is proposing to reserve $25 million for ARB's current and future administrative costs. The $475 million balance will be tentatively allocated at the June Board meeting in two phases: Phase 1 - $200 million at the June Board meeting and Phase 2 - $275 million in mid-2011 based on anticipated funds from Spring 2011 bond sales. ARB released a Notice of Funding Availability on April 15, 2010 to solicit applications from local agencies for $500 million. Seven qualifying local agencies in the four corridors and a State agency (ARB) submitted 15 project proposals, requesting over $1.1 billion to upgrade over 16,000 pieces of equipment.

ARB staff's recommendation for the tentative allocation of up to $475 million and the award in two phases is shown below. ARB staff is recommending that the Board award the $200 million in Phase 1 based on the Board-approved priority of trucks, locomotives, and ships at berth projects to reduce the elevated health risks in communities near where these sources operate.

Staff Proposal for June 2010 Allocations (Million $)

Trade Corridor	Funding Category	Tentative Allocation	Phase 1	Phase 2
Los Angeles/Inland Empire	Trucks	$141.5	$42.5	$99.0
	Locomotives	$30.9	$6.2	$24.7
	Ships	$61.3	$61.3	---
	Corridor Total	**$233.7**	**$110.0**	**$123.7**
Central Valley	Trucks	$78.5	$58.5	$20.0
	Locomotives	$27.7	---	$27.7
	Corridor Total	**$106.2**	**$58.5**	**$47.7**
Bay Area	Trucks	$33.3	$8.0	$25.3
	Locomotives	$2.3	---	$2.3
	Ships	$23.9	$20.0	$3.9
	Corridor Total	**$59.5**	**$28.0**	**$31.5**
San Diego/Border Region	Trucks	$25.0	$3.0	$22.0
	Harbor Craft	$ 0.5	$0.5	---
	Corridor Total	**$25.5**	**$3.5**	**$22.0**
Loan Assistance	Trucks	$50.0	---	$50.0
TOTAL		**$474.9**	**$200.0**	**$274.9**

AVAILABILITY OF DOCUMENTS

Summary tables, the complete applications submitted by the local and State agencies, and the preliminary staff recommendations are available on the Program website at http://www.arb.ca.gov/gmbond along with the Program Guidelines and other relevant documents. ARB staff expects to release the Staff Report on June 14, 2010, with proposed funding recommendations for consideration by the Board at the June 24 meeting.

Paper copies of the Staff Report may be obtained from ARB's Public Information Office, 1001 I Street, First Floor, Environmental Services Center, Sacramento, California, 95814, or by calling (916) 322-2990, starting June 15, 2010. The Staff Report may also be obtained from ARB's website at http://www.arb.ca.gov/gmbond.

SUBMITTAL OF PUBLIC COMMENTS AND AGENCY CONTACT PERSON

Interested members of the public may also present comments orally or in writing at the meeting, and may be submitted by postal mail or by electronic submittal before the meeting. To be considered by the Board, written comments not physically submitted at the meeting must be received **no later than 12:00 noon, June 23, 2010**, and addressed to the following:

Postal mail: Clerk of the Board, Air Resources Board
1001 I Street, Sacramento, California 95814

Electronic submittal: http://www.arb.ca.gov/lispub/comm/bclist.php

Please note that under the California Public Records Act (Government Code section 6250 et seq.), your written and oral comments, attachments, and associated contact information (e.g., your address, phone, email, etc.) become part of the public record and can be released to the public upon request. Additionally, this information may become available via Google, Yahoo, and other search engines.

The Board requests but does not require 20 copies of any written submission. Also, the ARB requests that written and e-mail statements be filed at least 10 days prior to the meeting so that ARB staff and Board members have time to fully consider each comment. Further inquiries regarding this matter should be directed to Ms. Sherrie Sala-Moore, Air Resources Engineer, at (916) 322-0343 or Ms. Barbara Van Gee, Manager, Goods Movement Program Section, at (916) 322-5350.

To request a special accommodation or language needs for any of the following:

- An interpreter to be available at the hearing.
- Have documents available in an alternate format (i.e. Braille, Large print) or another language.
- A disability-related reasonable accommodation.

Please contact the Clerk of the Board at (916) 322-5594 or by facsimile at (916) 322-3928 as soon as possible, but no later than 10 business days before the scheduled Board hearing. TTY/TDD/Speech to Speech users may dial 711 for the California Relay Service.

Para solicitar alguna comodidad especial o necesidad de otro idioma para alguna de las siguientes:

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- Una acomodación razonable relacionados con una incapacidad.

Por favor llame a la oficina del Secretario del Consejo de Recursos Atmosféricos al (916) 322-5594 o envíe un fax al (916) 322-3928 no menos de diez (10) días laborales antes del día programado para la audiencia. Para el Servicio Telefónico de California para Personas con Problemas Auditivos, ó de teléfonos TDD pueden marcar al 711.

CALIFORNIA AIR RESOURCES BOARD

James N. Goldstene
Executive Officer

Date: June 7, 2010

CALIFORNIA AIR RESOURCES BOARD

NOTICE OF PUBLIC MEETING TO CONSIDER THE ADOPTION OF THE PROPOSED AB 118 AIR QUALITY IMPROVEMENT PROGRAM FUNDING PLAN FOR FISCAL YEAR 2010-11

The Air Resources Board (Board or ARB) will conduct a public meeting at the time and place noted below to consider adoption of the *Proposed AB 118 Air Quality Improvement Program Funding Plan For Fiscal Year 2010-11* (FY 2010-11 Funding Plan).

DATE: June 24, 2010

TIME: 9:00 a.m.

PLACE: California Environmental Protection Agency
Air Resources Board
Byron Sher Auditorium
1001 I Street
Sacramento, California 95814

This item may be considered at a two-day meeting of the Board, which will commence at 9:00 a.m., Thursday, June 24, 2010, and may continue at 8:30 a.m., Friday, June 25, 2010. This item may not be considered until June 25, 2010. Please consult the agenda for the meeting, which will be available at least 10 days before June 24, 2010, to determine the day on which this item will be considered.

Background:

The Air Quality Improvement Program (AQIP) is a voluntary incentive program created under the *California Alternative and Renewable Fuel, Vehicle Technology, Clean Air, and Carbon Reduction Act of 2007* (Assembly Bill (AB) 118, Statutes of 2007, Chapter 750) to fund clean vehicle and equipment projects as well as research on the air quality impacts of alternative fuels and workforce training. The AQIP focuses on reducing criteria pollutant emissions, with concurrent reductions in greenhouse gas emissions. The AQIP is funded through 2015 via revenues generated by motor vehicle and equipment fees.

In April 2009, the Board adopted the AQIP Guidelines which direct, by regulation, ARB's implementation of the AQIP and require ARB to obtain annual approval of the AQIP Funding Plan. The annual Funding Plan serves as each year's blueprint for expending the AQIP funds appropriated to the ARB in the annual State budget, establishing ARB's priorities for the funding cycle and describing the projects ARB intends to fund. Project solicitations that provide all the programmatic details potential grantees need to apply for funds are issued annually for each of the projects identified in the Funding Plan.

In fiscal year (FY) 2009-10, the Board directed AQIP funds to support development and deployment of the advanced technologies needed to meet California's longer-term, post-2020 State Implementation Plan (SIP) and other air quality goals. This provides the opportunity for ARB to fund projects that do not fit within the statutory framework of ARB's other incentive programs' which focus on near-term emission reductions from fully commercialized technologies. The Board approved the funding of four deployment projects - vouchers for heavy-duty hybrid vehicles, and rebates for zero-emission vehicles, lawn and garden equipment, and agricultural utility terrain vehicles - as well as advanced technology demonstration projects. To date ARB has encumbered approximately 95 percent of FY 2009-10 AQIP funds and launched all four voucher and rebate projects.

Description of the Fiscal Year 2010-11 Funding Plan:

The FY 2010-11 Funding Plan builds upon the successes of projects established last year and recommends continued funding for those AQIP project categories. The Board envisioned that many of the project categories included in the FY 2009-10 Funding Plan would be funded for multiple years in order to accelerate early deployment of these critical clean air technologies. Continuation of these projects maintains project continuity and provides a larger overall impact on the selected technologies that can only be achieved through multiple years of funding. ARB staff believes the guiding principles the Board established in the FY 2009-10 Funding Plan continue to be appropriate and used them to identify projects for this funding year. Table 1 presents staff's proposed allocations based on the $40 million appropriation in the Governor's proposed FY 2010-11 Budget.

Table 1: Projects Proposed for AQIP Funding in FY 2010-11

Project Category	Funding Target[1] ($ millions)
Hybrid Truck and Bus Voucher Incentive Project	Up to 25
Clean Vehicle Rebate Project	Up to 5
Lawn and Garden Equipment Replacement Project	Up to 1
Zero-Emission Agricultural Utility Terrain Vehicle Rebate Project	Up to 0.5
Off-Road Hybrid Technology Pilot **<<NEW>>**	Up to 3
Advanced Demonstration Projects	Up to 5.5
TOTAL PROPOSED FUNDING	**$40**

[1]Funding based on the Governor's proposed FY 2010-11 State Budget. Funding amounts will be adjusted if necessary based on the final State Budget and revenues into the Air Quality Improvement Fund.

ARB is proposing the Hybrid Truck and Bus Voucher Incentive Project (HVIP) continue to receive the bulk of AQIP funding. Based on strong early consumer demand since the project's launch in February 2010, ARB believes a continued investment will help hybrid technology penetrate the California marketplace. In addition, ARB is proposing to continue the investment in zero-emission vehicles (ZEV) anticipating an increase in vehicle availability and consumer demand through 2011 for light-duty ZEVs through the

Clean Vehicle Rebate Project (CVRP). ARB proposes to shift funding of commercial zero-emission vehicles (e.g., electric delivery trucks) to the HVIP from the CVRP to better reflect the process for purchasing these vehicles. ARB staff also proposes to add a new project category in order to pilot accelerated deployment of hybrid off-road equipment and evaluate the emission benefits of hybrid technology in off-road applications.

The proposed FY 2009-10 Funding Plan includes contingencies that enable ARB to quickly and effectively refine next year's AQIP in response to new information. Under this proposal, lessons learned from the first year of implementation are incorporated to give the Executive Officer the authority to make specific adjustments, if necessary. These provisions provide a transparent method for modification of funding targets if the final State Budget appropriation, AQIP revenues, or vehicle/equipment demand or availability differ significantly from current projections.

AVAILABILITY OF DOCUMENTS AND AGENCY CONTACT PERSONS

ARB has prepared a report entitled: "Proposed AB 118 Air Quality Improvement Program Funding Plan for Fiscal Year 2010-11". Copies of the proposed FY 2010-11 Funding Plan can be accessed on the ARB's website at http://www.arb.ca.gov/msprog/aqip/aqip.htm or may be obtained from ARB's Public Information Office, 1001 I Street, First Floor, Environmental Services Center, Sacramento, California, 95814, (916) 322-2990, at least 30 days prior to the scheduled meeting on June 24, 2010.

Inquiries regarding the proposed FY 2010-11 Funding Plan may be directed to Ms. Meri Miles, Air Pollution Specialist, at (916) 322-6370 or mmiles@arb.ca.gov .

SUBMITTAL OF COMMENTS

Interested members of the public may also present comments orally or in writing at the meeting and may be submitted by postal mail or by electronic submittal before the meeting. To be considered by the Board, written comments not submitted at the meeting must be received **no later than 12:00 noon, June 23, 2010,** and addressed to the following:

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1001 I Street, Sacramento, California 95814

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The Board requests, but does not require, 20 copies of any written submission. Also, ARB requests that written and e-mail statements be filed at least 10 days prior to the meeting so that ARB staff and Board members have time to fully consider each comment. Further inquiries regarding this matter should be directed to Ms. Meri Miles, Air Pollution Specialist, at (916) 322-6370 or Mr. Andrew Panson, Staff Air Pollution Specialist, at (916) 323-2881.

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- A disability-related reasonable accommodation.

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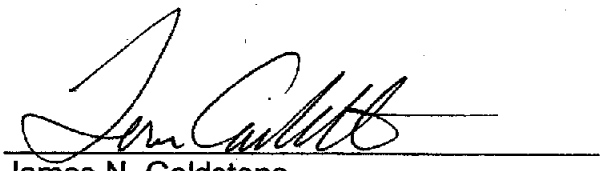
CALIFORNIA AIR RESOURCES BOARD



James N. Goldstene
Executive Officer

Date: May 24, 2010

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs see our website at www.arb.ca.gov.

California Environmental Protection Agency

Air Resources Board

PROPOSED AB 118 AIR QUALITY IMPROVEMENT PROGRAM FUNDING PLAN FOR FISCAL YEAR 2010-11

Date of Release: **May 24, 2010**
Scheduled for Consideration: **June 24, 2010**

LIST OF ACRONYMS

AB	Assembly Bill
AQIP	Air Quality Improvement Program
ARB	Air Resources Board
ARRA	American Recovery and Reinvestment Act
CCSE	California Center for Sustainable Energy
CVRP	Clean Vehicle Rebate Project
Energy Commission	California Energy Commission
EVI	Electric Vehicles International
FY	Fiscal Year
GVWR	Gross Vehicle Weight Rating
HVIP	Hybrid Truck and Bus Voucher Incentive Project
IRS	Internal Revenue Service
LBS	Pounds
LGER	Lawn and Garden Equipment Replacement Project
NEV	Neighborhood Electric Vehicle
PHEV	Plug-in Hybrid Electric Vehicle
PLACE	Providing Loan Assistance for California Equipment
PTO	Power Take Off
SIP	State Implementation Plan
SJVUAPCD	San Joaquin Valley Unified Air Pollution Control District
UTV	Utility Terrain Vehicle
ZEM	Zero-emission Motorcycle
ZEV	Zero-emission Vehicle

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Executive Summary

The Air Quality Improvement Program (AQIP) is a voluntary incentive program created under the *California Alternative and Renewable Fuel, Vehicle Technology, Clean Air, and Carbon Reduction Act of 2007* (Assembly Bill (AB) 118, Statutes of 2007, Chapter 750) to fund clean vehicle and equipment projects as well as research on the air quality impacts of alternative fuels and workforce training. The AQIP focuses on reducing criteria pollutant emissions, with concurrent reductions in greenhouse gas emissions. The AQIP is funded through 2015.

The Governor's proposed State Budget for Fiscal Year (FY) 2010-11 provides $40 million for AQIP projects. The *Proposed AB 118 Air Quality Improvement Program Funding Plan for Fiscal Year 2010-11* (FY 2010-11 Funding Plan) outlines the Air Resources Board's (ARB) plans for expending these funds. The plan establishes:

- ARB priorities for this year's funding cycle.
- Funding allocations for each project category.
- Program refinements based on public input and evaluation of last years' projects.
- Contingency provisions should mid-year refinements be necessary.

The AQIP expands ARB's portfolio of air quality incentives, providing the opportunity to fund projects outside the statutory framework of other incentive programs – the Carl Moyer Program, Goods Movement Emission Reduction Program, and Lower-Emission School Bus Program – which focus on near-term emission reductions from fully commercialized emission control technologies. With broader statutory flexibility, the AQIP funds are unique in providing ARB with a significant, ongoing funding source to help pay for technology advancing projects.

Incentives for early deployment of next generation technologies support ARB policy priorities and fill a critical niche not served by ARB's other incentive programs. By funding these next generation technologies with AQIP funds, ARB is:

- Accelerating turnover of the fleet to the zero- and near-zero emission technologies needed to meet California's longer-term, post-2020 State Implementation Plan (SIP) and climate change commitments.
- Accelerating the commercialization of technologies that will provide the next generation of products for ARB's other incentive programs such as the Carl Moyer Program.
- Raising consumer awareness and acceptance so that advanced technologies can become mainstream consumer choices.

- Enabling future ARB regulations.

The AQIP is also aiding the California economy and helping to position the state for green job growth over the next decade. Many of the vehicles or vehicle components funded under AQIP are manufactured in California and distributed through extensive local dealership networks.

In 2009 the Board adopted the Air Quality Improvement Program Guidelines which direct, by regulation, ARB's implementation of the AQIP and require ARB to obtain annual approval of the AQIP Funding Plan. The annual Funding Plan serves as each year's blueprint for expending the AQIP funds appropriated to ARB in the annual State Budget. ARB directed funds to support development and deployment of the advanced technologies needed to meet California's longer-term, post 2020 SIP and other air quality goals. Staff proposes that this overarching principle again guide ARB's AQIP investments for the upcoming year. Continued investments in the next generation of vehicles, equipment, and emission controls are essential if California hopes to meet its long-term air quality goals.

The Board approved the FY 2009-10 AQIP Funding Plan in April 2009. Last year's plan allocated about $42 million to fund five major projects:

- Hybrid Truck and Bus Voucher Incentive Project (HVIP)
- Clean Vehicle Rebate Project (CVRP)
- Lawn and Garden Equipment Replacement Project
- Zero-emission Agricultural Utility Terrain Vehicle (UTV) Rebate Project
- Advanced Technology Demonstrations.

Nearly all of last year's funds have been encumbered and all projects are operating successfully.

Summary of FY 2010-11 Funding Proposal

This year's proposed Funding Plan builds upon the successes of projects in last year's plan, providing continued funding for the existing AQIP project categories at approximately the same percentages as last year. Staff is not proposing any major changes. A multi-year funding commitment was envisioned when the Board approved these categories in FY 2009-10, and continued funding will help advance these technologies to the point where they can be sustainable without incentives. In addition to the five existing categories, one new project category is proposed to pilot off-road hybrid equipment as shown in Table ES-1, and demonstration projects deferred from last year will be prioritized for funding. The existing AQIP projects are working as envisioned, so staff is proposing only minor refinements which are described in the

Funding Plan. The proposed project categories and funding targets are listed in Table ES-1.

Table ES-1: Projects Proposed for AQIP Funding in FY 2010-11

Project Category	Allocation[1] (in $ millions)	% of Total AQIP Budget
Hybrid Truck and Bus Voucher Incentive Project (HVIP)	Up to 25	62.5%
Clean Vehicle Rebate Project (CVRP)	Up to 5	12.5%
Lawn and Garden Equipment Replacement Project (LGER)	Up to 1	2.5%
Zero-Emission Agricultural Utility Terrain Vehicle (UTV) Rebate Project	Up to 0.5	1.2%
Off-Road Hybrid Technology Pilot ***<<NEW PROJECT>>***	Up to 3	7.5%
Advanced Demonstration Projects	Up to 5.5	13.7%
TOTAL	**$40 Million**	100%

[1]Funding based on the Governor's proposed FY 2010-11 Budget. Funding amounts will be adjusted if necessary based on the final State Budget and revenues into the Air Quality Improvement Fund.

The cornerstone of the AQIP for FY 2010-11 will remain the HVIP aimed at accelerating deployment of new hybrid medium- and heavy-duty vehicles in California. Staff is proposing up to $25 million in new funding which supports purchase of about 1,000 new hybrid trucks and buses. This amount augments the $20 million ARB has already invested in the HVIP. Hybrid technology can significantly reduce criteria pollutant, air toxic, and greenhouse gas emissions – particularly in refuse trucks, work trucks, delivery vans, urban buses, and other vehicles with high stop-and-go or idling duty cycles. ARB's funding will ultimately accelerate manufacturer investment in hybrid technology and contribute to the production economies of scale that will bring down vehicle costs and help these vehicles become established in the California marketplace.

The HVIP has shown early success with strong consumer demand. Since the program's public launch in February 2010, California fleets have requested nearly $10 million in vouchers to purchase over 300 hybrid trucks. This expanded the entire national fleet of hybrid trucks by over 10 percent within just a few months, and shows the impact of ARB's investment in bringing this technology to California. Staff proposes to maintain the HVIP's basic structure, with modifications related to lessons learned from the first year of implementation.

The CVRP provides consumer rebates for new zero-emission vehicles (ZEVs) and plug-in hybrids (PHEVs). Staff is proposing up to $5 million to continue the CVRP, augmenting the $4 million directed to this project in FY 2009-10. Consumer acceptance of ZEVs and PHEVs is critical for widespread commercialization of advanced technology vehicles, which will ultimately transform the California light-duty vehicle population and lead to substantial future emission reductions.

Staff also proposes to continue the investments to augment local air districts' lawn and garden equipment replacement programs for zero-emission equipment, and rebates to California agricultural consumers for purchase of new zero-emission utility terrain vehicles.

A new project category is proposed which will provide up to $3 million to pilot accelerated deployment of hybrid off-road equipment and evaluate the emission benefits of hybrid technology in off-road applications. This will lay the groundwork for considering a hybrid equipment voucher project in future years. Expanding the use of hybrid technology in off-road equipment is part of staff's multi-year vision for AQIP which was presented to the Board last April.

Up to $5.5 million is proposed for demonstration projects that continue to accelerate the next generation of advanced technologies to reduce mobile source emissions. Projects not funded last year due to lower than expected revenues will be given priority in this year's plan. Funded projects must have the potential for commercialization within three years after demonstration and the ability to gain significant market penetration.

Contingency Provisions

As in last year's plan, the proposed Funding Plan includes contingency provisions in the event circumstances change between Board approval and the time solicitations are issued or funds awarded, providing the Executive Officer authority to make mid-course adjustments if necessary. The Funding Plan describes the specific conditions under which the contingency provisions could be triggered. As evidenced last year, these provisions are necessary in the event revenues are lower than the appropriation amount. The contingency provisions describe how funding targets for each project category would be adjusted if revenues are lower than the budget appropriation. Contingency provisions also address the inherent uncertainties in forecasting both the availability of new technologies just reaching the market and consumer demand. The Funding Plan includes provisions to address excess demand or insufficient demand in the various project categories.

Recommendation

Staff recommends that the Board approve the proposed FY 2010-11 Funding Plan, building on the success of the current funding.

I. Introduction

The Governor's proposed budget provides $40 million for the Air Quality Improvement Program (AQIP) projects in Fiscal Year (FY) 2010-11. AQIP is an incentive program created under the *California Alternative and Renewable Fuel, Vehicle Technology, Clean Air, and Carbon Reduction Act of 2007 (Assembly Bill [AB] 118, Statutes of 2007, Chapter 750)* through 2015. AQIP funds are unique in that they provide ARB with a significant, ongoing funding source to pay for technology advancing projects for the first time. The AQIP focuses primarily on reducing criteria pollutant emissions, with concurrent reductions in greenhouse gas emissions. The AQIP expands ARB's portfolio of air quality incentives, providing the opportunity to fund projects that do not fit within the statutory framework of existing incentive programs that focus on near-term reductions to criteria pollutants and toxics. The AQIP is one of three incentives programs created under AB 118, which authorizes roughly $200 million annually for air quality and alternative or renewable fuels. The other two incentive programs are managed by the California Energy Commission (Energy Commission) and the Bureau of Automotive Repair.

The *Proposed AB 118 Air Quality Improvement Program Funding Plan for Fiscal Year 2010-11* (FY 2010-11 Funding Plan) provides a roadmap for expending AQIP funds appropriated to the ARB in the FY 2010-2011 State Budget. The plan establishes:

- ARB priorities for the funding cycle.
- Funding allocations by project category.
- Changes in program implementation based on public input and evaluation of subsequent years' projects.
- Contingency provisions should mid-year refinements be necessary.

The remainder of this section provides background on the AQIP. The next section contains a summary of the FY 2010-11 funding proposal and descriptions of the project categories and contingency provisions. Future actions will also be discussed.

A. Implementation of the AQIP

Program Purpose

The AQIP provides funding through 2015 for California air quality improvement projects related to fuel and vehicle technologies. Similar to other ARB incentives, statute requires that emission benefits from the AQIP be surplus to what is already required by local, state and federal regulation. The AB 118 statute allows for a range of eligible AQIP project categories, which can be divided into three general project types:

1. *Commercial Deployment*. These projects include the next generation of advanced technology vehicles and equipment just reaching commercialization. Consumer incentives are needed because these products generally cost more

than their traditionally powered (e.g., gas or diesel) counterparts, which can be a significant deterrent to their purchase. Incentives will accelerate consumer acceptance and have the immediate benefit of reducing criteria pollutants and greenhouse gas emissions. Incentives may lead to an economy of scale by reducing production and sales costs as volume increases, and accelerating technology transfer to other sectors.

2. *Advanced technology demonstration*. ARB's goal in funding demonstration projects is to help demonstrate the viability of new technology. AQIP funds are used to accelerate advanced technology vehicles, equipment or emission controls which are on the cusp of commercialization. The demonstration projects funded now could become AQIP deployment projects several years from now if the technology proves successful.

3. *Research and workforce training*. Statute allows the AQIP to fund research on the air quality impacts of alternative fuels, research to increase biofuel production, and workforce training related to advanced technologies. These project types provide the information and training necessary to develop the advanced fuels and vehicles most effective in reducing air pollution.

Statute directs ARB to evaluate potential projects based on potential reduction of criteria or toxic air pollutants, cost-effectiveness, contribution to regional air quality improvement, and ability to promote the use of clean alternative fuels and vehicle technologies.

Guiding Regulations and Previous Board Actions

In 2008, the Board adopted the Air Quality Guidelines (Cal. Code Regs., tit. 13, § 2340 et. seq.), often termed the "anti-backsliding guidelines." This regulation is intended to ensure that ARB's and the Energy Commission's AB 118 programs maintain or improve upon emission benefits achieved through California's existing air quality programs. In 2009, the Board adopted the Air Quality Improvement Plan Guidelines (AQIP Guidelines), (Cal. Code Regs., tit. 13, § 2350-2359), a regulation that defines administrative requirements for the AQIP, and requires a Board approved Funding Plan on how AQIP funds will be spent each fiscal year, prior to releasing solicitations and awarding funds. Also in 2009, the Board approved the Fiscal Year 2009-10 AQIP Funding Plan.

Guiding Principles for AQIP

In 2009, the Board established overarching implementation priorities and guiding principles for AQIP funds as part of the FY 2009-10 Funding Plan. As was presented at AQIP public workshops in December 2009 and April 2010, staff believes these guiding principles continue to be appropriate and used them to identify projects for this funding year. Broad principles include:

- Supporting development and deployment of advanced technologies needed to meet California's longer-term, post 2020 State Implementation Plan (SIP) goals and climate change goals.

- Focusing program funds on areas underserved through other incentive programs.

For deployment projects, guiding principles also include:

- Accelerating advanced technologies to support significant penetration by the 2024 extreme ozone nonattainment area attainment date.
- Funding new, commercialized technologies that are on the cusp of widespread deployment.
- Modifying consumer choice to buy cleaner vehicles, which may not have occurred without a monetary incentive.

Demonstration project guiding principles focus on projects that:

- Demonstrate the potential to provide cost-effective emission reductions.
- Can be economically viable without subsidy.
- Will be ready for commercialization within three years following demonstration.
- Apply to the California marketplace.

B. Program Benefits

California's air quality challenges require the development and widespread deployment of zero- and near-zero-emission technologies. Most of the AQIP emission benefits are associated with long-term impacts from accelerating technology deployment needed to meet California's longer-term, post 2020 SIP goals, and the greenhouse gas reduction goals called for in ARB's Climate Change Scoping Plan. AQIP supports these air quality goals through:

- Reducing production costs through increased sales and production volume.
- Accelerating technology transfer of zero-emission and hybrid technologies.
- Reducing barriers to new technology commercialization by accelerating consumer acceptance.

Some of the vehicles or vehicle components funded under AQIP are manufactured and assembled in California and distributed through extensive local dealership networks. For example, ISE and Enova Systems are California manufacturers that provide hybrid systems for vehicle models listed as eligible for the Hybrid Truck and Bus Voucher Incentive Program (HVIP). So far, 60 California-based hybrid truck dealers and 25

California-based fleets are participating HVIP. Electric Vehicles International (EVI), a commercial ZEV manufacturer in Stockton, has two vehicle models eligible for consumer rebate under the Clean Vehicle Rebate Project (CVRP). Tesla, a Palo Alto based company, manufactures the Roadster which is an eligible zero-emission vehicle (ZEV), while Vantage Vehicles International, Inc. manufacturers and assembles its eligible neighborhood electric vehicle (NEV) in California. Zero Motorcycles is a California-based company that manufacturers and assembles its eligible zero-emission motorcycle (ZEM) entirely within the state.

C. Coordination with the California Energy Commission

The AB 118 statute also authorizes the Energy Commission to develop and deploy alternative and renewable fuels and advanced transportation technologies focused on greenhouse gas reductions to help attain the state's climate change policies through the Alternative and Renewable Fuel and Vehicle Technology Program. Potential overlap exists between our AB 118 programs because many technologies achieve both greenhouse gas and criteria pollutant reductions. Unlike the AQIP, however, the Energy Commission has authority to fund infrastructure projects (such as fueling and charging stations and storage facilities), and alternative fuel production projects such as hydrogen, ethanol, biomass-based diesel, natural gas and propane. In areas of overlap, ARB and the Energy Commission continue to complement each other, with ARB focusing on hybrid and zero-emission vehicle deployment and the Energy Commission focusing on alternative fueled vehicles and infrastructure, vehicle retrofits, and technology demonstration.

Both ARB and the Energy Commission can also fund workforce training projects. The Energy Commission has taken significant steps in workforce training and development, allocating $15 million in the FY 2008-09 and 2009-10 Investment Plan to develop labor market information, regional sector workforce development plans, and training and education program development and delivery. Because of the Energy Commission's significant investments in workforce training, ARB staff does not propose funding for these project types in the FY 2010-11 Funding Plan. However, ARB will continue to assess needs and opportunities in this important area; for example, a training program focused on hybrid vehicles could complement project funding for hybrid vehicle deployment. Energy Commission staff will present the $108 million FY 2010-2011 Investment Plan for approval by the Energy Commission in July 2010.

In future years, ARB and the Energy Commission may jointly fund projects in cases where demand exceeds each agency's available funds. At the policy level, ARB is represented on the Advisory Committee established to assist the Energy Commission in developing each year's Investment Plan. At the technical level, ongoing coordination occurs between the two agencies' program staff.

D. Coordination with Other State and Federal Incentive Programs

ARB is implementing AQIP in a coordinated manner with other state and federal air quality programs. In February 2009, the American Recovery and Reinvestment Act (ARRA) was signed into law, providing billions of dollars to stimulate the U.S. economy. While the ARB received over $15 million in ARRA grants, no AQIP funds were ultimately used for match funding on federal grants because those projects were not selected. As new opportunities unfold, staff will evaluate ways to leverage AQIP funds – either as a match to obtain federal funds to augment California's air quality programs, or through opportunities to fold federal funding into the AQIP.

It is a priority of ARB to coordinate our entire portfolio of incentives programs. An Incentive Programs Advisory Group, led by Board Member Sandra Berg, provides an ongoing forum for discussing policy level issues relating to the development and implementation of California's air quality incentive programs. The group is composed of individuals from a range of interests that provide advice and guidance to ARB.

E. Status of Air Quality Loan Program for Trucks

The 2008-2009 FY State Budget included a one-time appropriation from the AQIP to implement a heavy-duty vehicle air quality loan program to assist smaller on-road fleets (fleets of 20 or fewer vehicles) affected by the ARB's In-Use Truck and Bus Regulation and the Heavy-Duty Vehicle Greenhouse Gas Emission Reduction Regulation. Available funding from this appropriation to implement the program, referred to as Providing Loan Assistance for California Equipment (PLACE), totals about $35 million.

The program provides a stable financing structure that enables lenders to provide competitive-rate loans to small businesses that fall just outside of conventional underwriting standards. To enhance PLACE, ARB recently expanded the loan guarantee program to include truck manufacturers' financing divisions and also successfully tested a pilot lease-to-own program. ARB is also in the process of developing a direct loan program to expand our financing options to California businesses. As of March 2010, ARB's programs have provided over $10.3 million in financing.

As part of developing this year's plan, staff evaluated whether additional AQIP funds were needed to sustain the PLACE. Staff concluded that existing funds are currently sufficient to continue the PLACE this year, so staff does not propose allocating any FY 2010-11 AQIP funds to this loan program. Staff will reevaluate the need for additional funding in next year's Funding Plan.

F. Status of Fiscal Year 2009-10 AQIP Projects

In FY 2009-10, $42.3 million was appropriated for AQIP in the State Budget, and the Funding Plan approved by the Board was based on this amount. However, available funding is contingent upon actual revenues in the Air Quality Improvement Fund which is funded primarily by motor vehicle fees. Revenues available to fund FY 2009-10 AQIP projects were approximately $29 million, so ARB staff needed to revise AQIP project funding levels mid-year as discussed below. To date, ARB has encumbered nearly all of its available funds. Table I-1 presents a list of the current project categories, grantees selected to implement each project, funding levels, and dates the funding became available to consumers.

Table I-1. Status of FY 2009-10 AQIP Projects

Project	Grantee	Consumer Launch	FY09-10 Funding Plan Allocation	FY09-10 Awards [1]
Deployment Projects				
Hybrid Truck & Bus Voucher Incentive	CALSTART	2/3/2010	$25M	$20.4M
Clean Vehicle Rebate	CA Center for Sustainable Energy	3/15/2010	$5M	$4.1M
Agricultural UTV Rebate	SJVAPCD	April 2010	$1.3M	$1.1M
Lawn & Garden Equipment Replacement	8 air districts	March/April 2010	$2M	$1.6M
Demonstration Projects				
Locomotive After-treatment Technology Demonstration	March 2010 Solicitation; funds to be awarded in June		$2M	$0.8M
Hybrid Marine Vessel Demonstration	April 2010 Solicitation; funds to be awarded in June		$1M	Up to $1M
Other Demonstration Projects[1]	Deferred until FY 2010-11due to lower than expected revenues		$6M	N/A
Total Funding			**$42.3M**	**$29M**

[1] FY 2009-10 allocations were reduced from $42.3 million to $29 million based on available revenues.

AQIP revenues were lower than expected due to the economic downturn. In August 2009, staff adjusted AQIP funding targets from $42.3 million to $34.6 million based on an early revenue forecast. Allocations for each project category were reduced in equal proportion in accordance with the contingency provisions in the FY 2009-10 Funding Plan. Solicitations for all of the AQIP deployment projects were then issued, and grants awarded. AQIP revenue projections were subsequently revised to $29 million based on a second mid-year assessment. Because the deployment project grants had been awarded, it was necessary to reduce funding for demonstration projects to about $2 million to account for the shortfall. Staff released two demonstration project solicitations in the spring of 2010 and deferred the remaining projects.

II. Proposed Funding Plan for FY 2010-2011

Staff proposes to continue funding the AQIP project categories established in the FY 2009-10 Funding Plan. The Board envisioned that many of these project categories would be funded for multiple years in order to maintain project continuity and provide a larger overall impact on the selected technologies. Continuing investments in the next generation of vehicles, equipment, and emission controls is critical to meeting California's long-term air quality goals. Each of the proposed projects is discussed in more detail in this chapter.

A. Summary of Funding Proposal

This year's Funding Plan builds upon the successes of projects implemented in FY 2009-10. The HVIP remains the largest and most visible AQIP project. Based on strong early consumer demand since the project's launch, staff believes a continued investment will help hybrid technology penetrate the California marketplace. ARB staff also proposes to add a new project category in order to pilot accelerated deployment of hybrid off-road equipment and evaluate the emission benefits of this technology in off-road applications. Table II-1 presents staff's proposed FY 2010-11 project category allocations based on the $40 million appropriation for AQIP projects in the Governor's proposed budget. A description of each project category follows.

Table II-1: Projects Proposed for AQIP Funding in FY 2010-11

Project Category	Allocation[1] (in $ millions)	% of Total AQIP Budget
Hybrid Truck and Bus Voucher Incentive Project	Up to 25	62.5%
Clean Vehicle Rebate Project	Up to 5	12.5%
Lawn and Garden Equipment Replacement Project	Up to 1	2.5%
Zero-Emission Agricultural Utility Terrain Vehicle Rebate Project	Up to 0.5	1.2%
Off-Road Hybrid Technology Pilot ***<<NEW PROJECT>>***	Up to 3	7.5%
Advanced Demonstration Projects	Up to 5.5	13.7%
TOTAL	**$40 Million**	100%

[1]Funding based on the Governor's proposed FY 2010-11 Budget. Funding amounts will be adjusted if necessary based on the final State Budget and revenues into the Air Quality Improvement Fund.

B. Description of Project Categories

This section describes each project category, including the benefits to air quality and technology innovation, FY 2009-10 project status, proposal for FY 2010-11, solicitation process and future trends in funding needs.

Hybrid Truck and Bus Voucher Incentive Project (HVIP)

Funding Target: Up to $25 million

Synopsis: Consumer vouchers for half the incremental cost of a new hybrid truck or bus.

Project Benefits:

- Spur early production volumes, lower long-term production cost
- Reduce criteria pollutants, advance technology needed for long-term SIP commitments.
- Reduce carbon dioxide (CO_2) emissions, progress towards Climate Change Scoping Plan's truck hybridization measure.

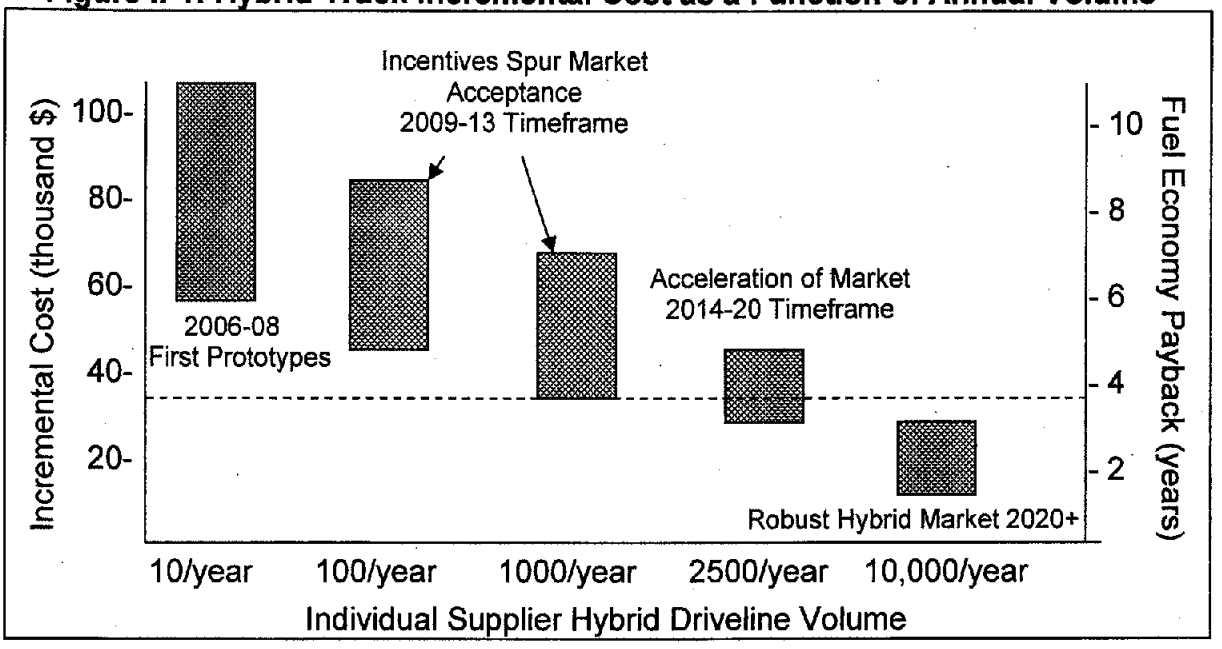
Overview

Hybrid vehicle technology can significantly reduce criteria pollutant, air toxic, and greenhouse gas emissions – particularly in delivery vehicles, refuse trucks, work trucks, urban buses, and other vehicles with high stop-and-go or idling duty cycles. Hybrid vehicles can also provide significant fuel economy benefits and fuel cost savings to the fleet owner, and therefore have the opportunity to be self-sustaining with some cost reductions. Significant market penetration of hybrid trucks and buses by 2020 is critical to helping the state meet its long-term SIP and climate change goals.

The HVIP plays a critical role in accelerating early market penetration of hybrid technology. Production capacity has significant growth potential, but current production volumes result in costs averaging $30,000 to $70,000 more than non-hybrid counterparts. Staff expects cost reductions to occur as hybrid driveline production volumes reach 2,500 to 5,000 annually per manufacturer (see Figure II-1). At this volume, the fuel savings will pay back the higher up-front costs within three to five years.

The HVIP is the nation's first program to directly reduce the up-front cost of a hybrid truck or bus, with fleets able to secure a voucher as part of their purchase order through their dealer. The HVIP enables the buyer of an eligible hybrid truck or bus to receive a set voucher amount based on the gross vehicle weight rating (GVWR) of the vehicle. This streamlined approach – with eligible vehicles and preset voucher amounts available on a first-come, first-served basis – has proven popular with vehicle dealers, manufacturers, and California fleets.

Figure II-1: Hybrid Truck Incremental Cost as a Function of Annual Volume



Source: Center on Globalization, Government and Competitiveness[1]; NESCAFF[2]; and CALSTART[3].

ARB staff envisions the HVIP as a multi-year project to bridge the gap until the incremental costs decline to a point where incentives are no longer needed. As such, staff proposes continued funding of up to $25 million for FY 2010-11.

FY 2009-10 Project Status

In FY 2009-10, the HVIP had $19.4 million for vouchers to accelerate introduction of new hybrid trucks and buses into California fleets. Since the program's public launch in February 2010, California fleets have requested nearly $10 million in vouchers to purchase over 300 hybrid trucks. This is over ten percent of the approximately 2,000 hybrid trucks on the road nationwide. The high demand for vouchers thus far is likely due to willingness of California fleets to invest in this more fuel-efficient technology as the up-front cost declines, as well as the relative simplicity of the voucher funding model. Table II-2 shows the distribution of vehicle vouchers by California region.

[1] Center on Globalization, Governance and Competitiveness – Duke, *Manufacturing Climate Solutions: Carbon Reducing Technologies and U.S. Jobs*, November 2008, and *Hybrid Drivetrains for Medium and Heavy-Duty Trucks*, June 2009.

[2] Northeast States for Coordinated Air Use Management (NESCAFF) et al, *Reducing Heavy-Duty Long Haul Combination Truck Fuel Consumption and CO2 Emissions, Final Report*, October 2009.

[3] CALSTART, Hybrid Technologies: A Ready Next Step to Kick-Start High Efficiency Trucks, Presentation by Bill Van Amburg, August 14, 2008, and *Hybrid Medium and Heavy-Duty Vehicles: Status, Benefits and Next Steps to Speed Commercialization*, June 2009.

Table II-2: Regional Voucher Distribution	
California Region	**Number of Vouchers Issued[1]**
South Coast	164
Bay Area	104
San Joaquin Valley	30
San Diego	22
Ventura	7
Sacramento	5
Other	3
TOTAL	**335**

[1]Total vouchers allotted as of April 28, 2010.

HVIP vouchers are available for over forty hybrid truck and bus vehicle makes and models from multiple truck and bus manufacturers. The majority of vouchers committed thus far have been for purchase of urban package delivery and beverage delivery vehicles, with an average voucher amount of about $29,000.

ARB partnered with CALSTART – selected via competitive solicitation – to implement the FY 2009-10 HVIP. CALSTART leads day-to-day project implementation, while ARB has overarching responsibility for project development and oversight. CALSTART's duties include training of vehicle dealers and fleets, development of the HVIP website, processing of vouchers, and coordinating with and reporting to ARB. Over 95 percent of HVIP funds are for direct vehicle vouchers; with less than five percent going toward project administration. Additional information regarding HVIP implementation can be found at www.californiahvip.org and in the HVIP Implementation Manual.[4]

Staff Proposal for FY 2010-11

Staff proposes up to $25 million in continued funding for the HVIP (subject to revenues) in next year's Funding Plan. Demand for first-year funds suggests California fleets will invest in the 1,000 new hybrid trucks and buses this funding will support, and hybrid vehicle and component manufacturers have the capacity to fulfill this demand. AQIP funding will further accelerate manufacturer investment in hybrid technology and contribute to the production economies of scale that will bring down vehicle costs.

The HVIP is working as envisioned, so staff proposes only minor refinements to the basic structure of the project described in last year's Funding Plan and the HVIP Implementation Manual. Key proposed updates are described below.

Commercial Zero-Emission Vehicles: Last year's AQIP Funding Plan included consumer rebates for commercial zero-emission vehicles as part of the CVRP. Staff proposes moving zero-emission trucks and buses from the CVRP to the HVIP because the purchasing process for these vehicles – with vehicles ordered in advance for specific fleets and functions – more closely reflects that of hybrid trucks. Staff proposes that zero-emission vehicle voucher amounts match (rather than exceed) those for hybrid

[4] Air Resources Board and CALSTART. Hybrid Truck and Bus Voucher Incentive Project Implementation Manual, January 2010. www.arb.ca.gov/msprog/aqip/hvip.htm .

vehicles, since the hybrid vehicle market has much greater near-term potential to become self-sustaining over a diversity of vehicle vocations. Staff proposes these changes be made effective following Board approval of the FY 2010-11 Funding Plan so fleets can begin reserving vouchers immediately for new electric commercial vehicles.

Vehicle Voucher Amounts: Demand thus far suggests existing HVIP voucher amounts are generating adequate demand for interested fleets to invest in hybrid trucks and buses. However, staff proposes three modifications to next year's HVIP voucher amounts and weight categories based on lessons learned this year. First, an additional category for zero-emission and plug-in hybrid commercial vehicles weighing 8,500 to 10,000 pounds (lbs) GVWR would be added to the program at a funding level of $10,000. This new eligible weight class would encourage vehicle manufacturers with plans for smaller, more efficient commercial electric or plug-in hybrid trucks and buses to target California for initial vehicle sales. This weight category would likely include shuttle buses, delivery vehicles, and vehicles with similar applications. Non-plug-in hybrid technology in this new weight range is similar to that of light-duty vehicles, so staff proposes only plug-in hybrids (and zero-emission vehicles) be eligible for vouchers. Vehicles typically used for residential or personal use and which are not purchased by a public or commercial fleet would not be eligible. Other consumer and vehicle eligibility requirements will be made in consultation with the HVIP Work Group and included in the project Implementation Manual.

Staff also proposes increasing the existing voucher amount for the 10,001 to 14,000 lbs GVWR category from $10,000 to $15,000. To date, manufacturers have not offered hybrid vehicles in this weight category as part of the HVIP. Hybrids of this size are required to be ARB-certified – a requirement not applicable to heavier classes. The increase in voucher incentive may help stimulate demand and will better reflect the costs associated with bringing these vehicles to market.

Additionally, staff proposes refining the 33,000 lbs GVWR and above vehicle weight class – currently funded at $35,000. A vehicle between 33,001 to 38,000 lbs GVWR will be eligible for a $30,000 voucher, while a 38,001 lbs GVWR and above vehicle will receive a $35,000 voucher. Table II-3 presents staff's proposed hybrid and zero-emission vehicle voucher amounts for next year's HVIP.

Table II-3: Draft Eligible Truck and Bus Voucher Amounts for FY 2010-11

Gross Vehicle Weight in Pounds (lbs)	Base Vehicle Incentive[1]
8,500 – 10,000 lbs[2]	$10,000
10,001 – 14,000 lbs	$15,000
14,001 – 26,000 lbs	$20,000
26,001 – 33,000 lbs	$25,000
33,001 – 38,000 lbs	$30,000
> 38,000 lbs	$35,000

[1]The first HVIP-eligible hybrid vehicle purchased by a fleet and ARB-certified vehicles above 14,000 lbs are each eligible for an additional $5,000 voucher.
[2]This weight category includes plug-in hybrid and zero-emission vehicles only.

Public Fleets: Demand for HVIP vouchers has been largely driven by private fleets, with public agencies requesting less than five percent of vouchers requested thus far. Stakeholders from public agencies have communicated that budget cuts and operational costs have deterred participation in HVIP. Others have indicated that public agencies have difficulty accessing vouchers on a first-come, first-served basis given the procurement process requiring competitive bid, and the timing of when purchasing decision are made.

Staff proposes monitoring public fleet participation as FY 2009-10 HVIP funds are drawn down and setting aside up to ten percent of FY 2010-11 HVIP funds specifically for public fleets. Staff would coordinate with the HVIP Work Group to determine the amount of set aside funding and the process for accessing the funds. Staff would also evaluate opportunities to leverage match funds from interested air districts or other entities to further buy-down these vehicle costs.

Hybrid Vehicle Eligibility: Hybrid truck and bus models currently have two avenues to becoming HVIP-eligible – being ARB-certified or listed as eligible for the Internal Revenue Service (IRS) Heavy-Duty Hybrid Vehicle Tax Credit. Staff proposes continuing these mechanisms for determining vehicle eligibility; with ARB-certified vehicles over 14,000 lbs still provided an additional $5,000 voucher amount. Because the federal tax credit expired on January 1, 2010, and the IRS has stopped evaluating and adding hybrid vehicles to its list,[5] ARB staff is evaluating and approving vehicles for the HVIP based on the criteria used by the IRS until the federal tax credit is renewed (federal legislation to renew this tax credit is currently under congressional review). If the tax credit is not renewed, ARB staff proposes working with the HVIP Work Group on a process to evaluate non-ARB certified hybrid truck and bus models for HVIP eligibility.

Hybrid Vehicle Testing: With the increasing diversity of vehicle vocations and configurations for which hybrid trucks are available, staff proposes allowing up to five percent of total HVIP funds be used for emissions testing and data collection. Voluntary testing would enable ARB to better understand the emission characteristics of hybrid trucks and buses as they operate over diverse duty cycles. This testing component will be described in the HVIP solicitation.

Contingency Provisions: The supply and demand for hybrid vehicles is expected to remain strong over the next several years. Because the HVIP represents such a large investment, however, staff believes it prudent to include two transparent milestones for evaluating project progress and ensuring project funds are spent effectively.

1. If less than seventy-five percent of the FY 2009-10 HVIP funds have been reserved by fleets at the time of the FY 2010-11 solicitation, staff will reassess the FY 2010-11 funding allocation. Staff proposes that the Executive Officer have authority to reallocate up to half of the FY 2010-11 HVIP funds to other AQIP projects with greater need. Any fund reallocation will be commensurate

[5] IRS Qualified Alternative Fuel Motor Vehicles (WAFMV) and Heavy Hybrid Vehicles can be found at: http://www.irs.gov/businesses/article/0,,id=175456,00.html).

with project needs and will be conducted in consultation with the public work groups for the project categories affected.

2. If less than half of next year's HVIP funds are reserved by fleets by July 1, 2011, the Board could direct staff to divert up to half of the unallocated HVIP funding to other AQIP projects. This decision would be presented to the Board when it considers staff's proposed FY 2011-12 Funding Plan.

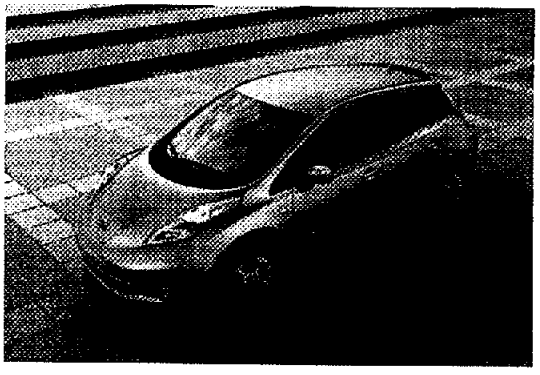
Project Solicitation

Staff proposes to issue this year's HVIP solicitation in September/October 2010. Similar to last year, the solicitation will be open to individuals, federal, state, and local government entities and agencies, and organizations with California heavy-duty vehicle, vehicle incentive, or air quality experience. Solicitations will be evaluated using scoring criteria similar to last fiscal year, and the grantee will be responsible for outreach and implementation of the HVIP statewide. Staff proposes retaining the flexibility to issue separate solicitations for vehicle testing or public fleet aspects of the HVIP. Staff also proposes retaining the maximum allowable costs for project administration and outreach at five percent of the project award.

Future Trends in Funding Needs

Staff anticipates the incremental cost between hybrid and non-hybrid trucks and buses will decrease as production volumes increase. According to manufacturers, hybrid trucks and buses should become cost-competitive with non-hybrids when production volumes reach 2,500 to 5,000 units per hybrid system supplier. This threshold should be reached in the hybrid truck and bus market between 2013 and 2016, allowing project funds to target other promising project categories.

Clean Vehicle Rebate Project (CVRP)



Funding Target: Up to $5 million

Synopsis: Consumer rebates for zero-emission and plug-in hybrid light-duty vehicles.

Project Benefits:

- Support transportation sector emission reductions needed in the post-2020 timeframe
- Spur commercialization of the cleanest vehicles available

Overview

Zero-emission vehicles and near-zero-emission vehicles are a key element of California's plan for attaining health based air quality standards and meeting the state's greenhouse gas emission reduction goals. While manufacturers have made strides in advancing light-duty vehicle emissions technology, financial incentives for plug-in hybrid electric vehicle (PHEV) and ZEV technologies are still necessary in order to seed the market for widespread commercialization of the cleanest vehicle technologies. As such, last year the Board approved the CVRP, designed to facilitate the development and widespread commercialization of ZEVs and PHEVs by offsetting a portion of the higher cost of advanced automotive technologies. Staff proposes to continue the CVRP for 2010-2011 and add $5 million to the current project.

FY 2009-10 Project Status

In late 2009, ARB awarded the California Center for Sustainable Energy (CCSE) $4.1 million through a competitive solicitation to implement the statewide CVRP. The CVRP launched on March 15, 2010 with the online application available at www.cvrp.energycenter.org. CVRP offers vehicle rebates depending on vehicle type, issued on a first-come, first-served basis. As of May 1, 2010, 20 vehicle models including light-duty ZEVs, commercial ZEVs, ZEMs, and NEVs are currently eligible. Additional vehicle models will be added to the eligibility list as they become available. Project details are available in the CVRP Implementation Manual.[6] Due to the recent launch of the project, and the limited number of vehicles currently eligible, most of the funds remain from last year's allocation of $4.1 million.

[6] Air Resources Board and CCSE. 2010. Implementation Manual for the Zero Emission and Plug-In Hybrid Light-Duty Vehicle (Clean Vehicle) Rebate Project; http://www.arb.ca.gov/msprog/aqip/cvrp.htm .

Staff Proposal for FY 2010-11

Staff proposes allocating up to $5 million (subject to revenues) to continue the CVRP. Staff developed this funding target based on preliminary discussions with vehicle manufacturers and other stakeholders. Fiscal year 2010-11 funds will augment existing funds, bringing the two-year funding total to $9.1 million. Taking into account administrative costs, this funding level is sufficient to incentivize approximately 1,600 full function ZEVs (at $5,000 each). The rebate amounts will be equivalent to those approved last year. Table II-4 summarizes the maximum rebate amount per vehicle and the maximum project funding for each vehicle type.

Table II-4: Clean Vehicle Rebate Project Maximum Rebate Amounts		
Vehicle Type	**Maximum Rebate Amount**	**Maximum Project Funding**
Light-Duty Zero-Emission Vehicle		Up to $5 million
Type II, III, IV, or V (range ≥ 100 miles)	$5,000	
Type I.5 (range ≥ 75, < 100 miles)	$4,000	
Type I (range ≥ 50, < 75 miles	$3,000	
Light-Duty Plug-in Hybrid Electric Vehicle	$3,000	
Neighborhood Electric Vehicle	$1,500	Up to $1 million
Zero-Emission Motorcycle	$1,500	

Table II-5 lists a number of automotive manufacturers that have made recent ZEV and PHEV product announcements. Based on these announcements, staff believes sufficient funds have been allocated to the CVRP this FY. Staff continues to collaborate with stakeholders to evaluate the ZEV/PHEV market.

Table II-5: Clean Vehicle Availability		
Vehicle Manufacturer	**Make**	**Roll Out Date**
BMW	ActiveE	July 2011
Coda	Coda	late 2010
Fisker	Karma	late 2010
Ford (Azure Dynamics)	Transit Connect	December 2010
General Motors	Chevrolet Volt	late 2010
Nissan	LEAF	December 2010
Th!nk	City	2011
Toyota	Plug-In Prius	2011

To address the uncertainty inherent in predicting the future roll out of new technology, staff proposes the following provisions to respond to insufficient or excess demand:

Contingency Provision-Additional Demand: If the project becomes oversubscribed, ARB will coordinate with the Energy Commission to assess whether Energy Commission funds could be used to augment ARB funds. This approach is consistent with the Energy Commission's draft FY 2010-11 Investment Plan. If additional funds are not available, staff proposes that consumers be put on a waiting list in the order in which the rebate application was received. Rebates will be disbursed according to

waiting list order, although the ARB will not be able to guarantee funding until the Board approves next year's Funding Plan and the Legislature appropriates funding.

Contingency Provision-Funding Reallocation: If rebates have not been requested for at least half of the FY 2009-10 funds by the first quarter of 2011, staff will reassess the need for the full $5 million prior to issuing the FY 2010-11 CVRP solicitation. Staff proposes that the Board delegate to the Executive Officer the authority to redirect a portion of the CVRP allocation to other project categories if less than half of the rebate funds have been requested and the reassessment indicates a lack of vehicle availability.

In addition to the contingency provisions, staff is proposing one other update to the CVRP:

Commercial ZEVs: Staff is proposing to shift the commercial ZEV category to the HVIP. As discussed in the previous section on HVIP, the process for purchasing commercial ZEVs is similar to that of hybrid trucks and buses, and will allow consumers to access funds at the time of vehicle order. Moving these vehicles will allow CVRP funds to be directed entirely to light-duty vehicles.

Project Solicitation

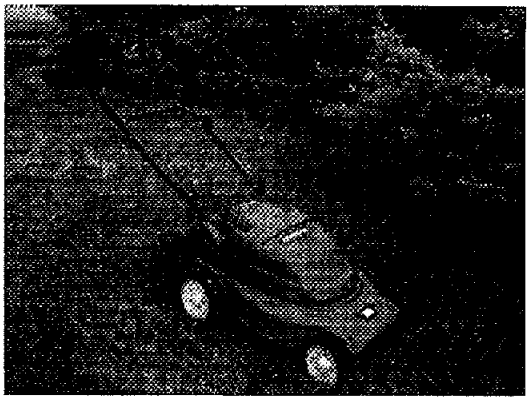
The solicitation process will remain unchanged with the same eligibility and administrative requirements as FY 2009-10. Entities with experience implementing a grant program and general knowledge of ARB's clean vehicle programs will be eligible to apply to administer the rebate project. No major changes to the scoring criteria are proposed. Administration and outreach costs are capped at ten percent. The current project Implementation Manual will be updated where necessary in collaboration with the CVRP Work Group and selected grantee.

Future Trends in Funding Needs

To achieve California's long term air quality and greenhouse gas emission reduction goals, ARB will continue to rely on advanced technology light-duty vehicles. State and federal consumer incentives in the near-term[7] will accelerate the deployment of these vehicles by reducing the incremental cost during the transition from vehicle introduction to profitable economy of scale production. During this period, incentives, both monetary and non-monetary, are necessary to make advanced technology vehicles attractive until the ZEV market reaches pre-commercial scale and consumer demand leads to increased production and reduced vehicle pricing. As manufacturers ramp up ZEV and PHEV production in the 2012-2014 timeframe, the CVRP will unlikely be able to keep pace. At that point, ARB will need to consider reducing rebate amounts and making changes in vehicle eligibility. ARB will to continue to coordinate with the Energy Commission to identify opportunities to augment this effort with additional funds from their AB 118 program.

[7] Air Resources Board. 2009. Summary of Staff's Preliminary Assessment of the Need for Revisions to the ZEV Regulation; http://www.arb.ca.gov/msprog/zevprog/2009zevreview/zevwhitepaper.pdf.

Lawn and Garden Equipment Replacement Project (LGER)



Funding Target: Up to $1 million

Synopsis: Augment non-attainment air districts' lawn and garden equipment replacement programs.

Project Benefits:

- Reduce criteria pollutant emissions by replacing residential gas-powered equipment with zero-emission equipment
- Accelerate development of zero-emission commercial equipment

Overview

Lawn and garden equipment replacement is specifically identified in statute as one of the equipment categories to be eligible for funding under the AQIP. Last year, the Board approved funding for the Lawn and Garden Equipment Replacement Project (LGER) which is designed to replace internal combustion lawn and garden equipment with cordless zero-emission lawn and garden equipment and to encourage further development and deployment of this technology. These AQIP funds are used to augment local air districts' lawn and garden equipment replacement programs. These local programs have been successful in reducing criteria pollutant emissions cost-effectively, but have been limited in scope due in part to lack of funding. Staff believes that funding for this project continues to be a necessary step in also encouraging development of zero-emission technology in the commercial lawn and garden equipment. This project category was established in the AQIP FY 2009-10 Funding Plan, and based on the demand for rebates in FY 2009-10, staff proposes to continue funding for this category.

FY 2009-10 Project Status

Last year, $1.6 million was awarded via competitive solicitation to 8 local air districts designated as non-attainment for the federal 8-hour ozone standard to augment their existing exchange programs. Air district lawn mower exchange events began in March and will continue through August. Staff expects most of the funds granted in FY 2009-10 will be spent this summer; however, some districts plan to spend these funds over several years. Additional information on the LGER Project and air districts' lawn mower exchange programs is available at: http://www.arb.ca.gov/msprog/aqip/lger.htm .

Staff Proposal for FY 2010-11

Staff proposes funding up to $1 million (subject to revenues) to continue the LGER Project. The proposed allocation is reduced from last year's $1.6 million allocation

because some air districts indicated plans to spend FY 2009-10 LGER Project funds over several years. Staff proposes only minor refinements to the basic structure of the project described in last year's Funding Plan and the air district's LGER Project Implementation Manuals. Key proposed updates are described below.

Remaining FY 2009-10 LGER Project Funds: Under the current LGER Project, districts are required to expend state funds by June 30, 2012. However, staff anticipates that many of the districts participating in this project will fully expend awarded state funds and have zero-emission equipment operating well before state funds in the new fiscal year become available. In order to reward those districts that successfully and expeditiously expend first year funds, staff proposes to add scoring criteria in the FY 2010-11 solicitation that provides additional points to air districts that have spent the majority of their FY 2009-10 funds at the time an application for new funds is submitted to ARB.

Match Funding: In the LGER Project, local air districts are required to match AQIP funds with an equal amount of local funding. This provision follows precedent for a match fund requirement set in many of ARB's existing incentive programs and ensures that AQIP funds are used to augment air districts' programs not replace the funding source. For FY 2009-10 only, ARB allowed air districts to use local funds from past exchange events to count toward its match fund requirement. To eliminate the possibility of double counting and ensure local air district financial commitment this year, staff proposes to require that district matching funds be new funds allocated for future exchange events.

Additional Zero-Emission Equipment: Staff is proposing an option for districts to use AQIP funds to replace other commercially available cordless zero-emission equipment, such as cordless electric hedge trimmers, in addition to lawn mowers. Equipment may be for residential or commercial use. Expanding the list of eligible equipment is consistent with the LGER Project's goal of encouraging consumer acceptance of zero-emission technologies and accelerating deployment in the commercial sector.

Project Solicitation

As approved by the Board last year, the LGER Project will continue to be open to all air districts designated as non-attainment for the federal 8-hour ozone standard, and will focus on districts with the worst air quality. More than one air district may be selected for LGER Project funding. Districts selected for the LGER Project may use up to ten percent of their award for administrative and outreach costs.

Future Trends in Funding Needs

While both commercial and residential cordless zero-emission lawn and garden equipment are eligible for the LGER project, staff expects only residential equipment to be available for purchase during the project's first few years. Staff will be evaluating electric commercial lawn and garden as a potential advanced technology demonstration project. Staff anticipates that the availability of incentive funding, combined with advances in battery technology will help bring zero-emission commercial equipment to the commercial market.

Agricultural Utility Terrain Vehicle (UTV) Rebate Project

Funding Target: Up to $500,000

Synopsis: Rebate for California growers that provides 15 percent of the MSRP for new zero-emission all terrain vehicles and utility vehicles.

Project Benefits:

- Reduce criteria pollutant emissions from fuel-powered utility terrain vehicles used in agriculture
- Accelerate consumer acceptance of zero-emission work vehicles

Overview

The term utility terrain vehicle (UTV) collectively describes all-terrain vehicles and utility vehicles, both of which are extensively used in the agricultural industry. The population of internal combustion engine UTVs in the California agricultural industry is second only to that of agricultural tractors.[8] Immediate emission reductions of criteria pollutants as well as greenhouse gases can be achieved from these sources by switching to zero-emission technology. Additionally, much of the state's agricultural activities are centered in non-attainment areas that need additional emission reductions to meet air quality standards.

While electric UTVs are commercially available, the cost of these vehicles relative to a gasoline or diesel-powered counterpart can be a deterrent to purchase. The Agricultural UTV Rebate Project encourages and accelerates the purchase of zero-emission work vehicles for use in California agricultural operations by providing rebates of 15 percent of the manufacturer's suggested retail price (MSRP), up to a maximum of $2,500. Recreational vehicles are not eligible for rebates. This project category was established in the AQIP FY 2009-10 Funding Plan and is proposed for continued funding in FY 2010-11.

FY 2009-10 Project Status

Early in 2010, ARB awarded the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) $1.1 million through a competitive selection process to implement the statewide UTV rebate project. This funding provides rebates for about 600 vehicles on a first-come, first-served basis. The project launched for consumers in April 2010. Rebate applications and project information is available through the project website at:

[8] Baker, R. 2008. Characterization of the off-road equipment population. Final report prepared for the California Air Resources Board and the California Environmental Protection Agency. Contract No. 04-315 (This study combined utility vehicles and ATVs in the general category of an ATV).

http://www.valleyair.org/Grant_Programs/UTV/UTVWeb.htm or by contacting the SJVUAPCD. Additional project details are available in the project's Implementation Manual.[9]

Staff Proposal for FY 2010-11

Staff proposes new funding of up to $500,000 to continue the Agricultural UTV Rebate Project. Given the project's recent launch, most of the funds remain from last year's allocation. The FY 2010-11 funds will serve to augment existing funds, bringing the two year funding total to $1.6 million. Staff believes this funding level will sustain the project through the next year, but is proposing provisions to address excess or insufficient demand.

Some agricultural stakeholders have provided feedback that the rebate amount of 15 percent is not sufficient to incentivize purchase of an all-electric UTV. Staff researched the incremental costs between all-electric UTVs and their equivalent gas-powered counterparts and found the incremental cost to be between 4 and 15 percent in most cases. Staff believes the current rebate amount is sufficient on this basis, but acknowledges that additional considerations such as infrastructure requirements, battery range and recharge time may be deterrents to purchase. Staff will continue to meet with stakeholders, monitor rebate demand, and assess cost-effectiveness under the current project. Staff is proposing to monitor and adjust, if appropriate, the rebate amount during FY 2010-11. Rebates will continue to be disbursed on a first-come, first-served basis. A summary of proposed modifications is described below.

Contingency Provision-Additional Demand: In the event the project becomes oversubscribed, staff proposes that consumers be put on a waiting list in the order in which the rebate application was received. When additional funds become available, rebates will be disbursed according to waiting list order, although the ARB will not be able to guarantee funding until the Board approves next year's Funding Plan and the Legislature appropriates funding.

Contingency Provisions-Funding Reallocation: If rebates have not been requested for at least half of the FY 2009-10 funds by December 2010/January 2011, staff will reassess the need prior to issuing the FY 2010-11 solicitation for the full $500,000. Staff proposes that the Board delegate to the Executive Officer the authority to redirect a portion of the Agricultural UTV Rebate Project allocation to other project categories if less than half of the rebate funds have been requested by this time.

Project Solicitation

Staff proposes that the solicitation process remain the same as last year. Air districts or other qualified non-profit or public entities will be eligible to apply through competitive solicitation to administer the rebate project. Up to ten percent of the project funding will be available for project administration and outreach. The existing project

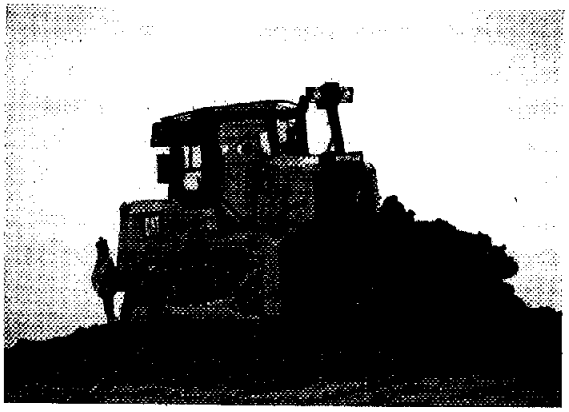
[9] ARB and SJVUAPCD. 2010. Agricultural Utility Terrain Vehicle Rebate Project Implementation Manual; http://www.arb.ca.gov/msprog/agip/ag_utv.htm .

Implementation Manual will be updated as necessary in collaboration with the Agricultural UTV Rebate Project Work Group and selected grantee.

Future Trends in Funding Needs

The incremental cost between electric and internal combustion engine UTVs is expected to decrease with advances in battery technology, improvements in battery supply and distribution networks, and reduced production and sales costs as volumes increase. As battery performance and pricing evolves, some manufacturers of electric UTVs may change to more advanced battery types (e.g., lead-acid to lithium-ion). Incentives for deployment of zero-emission UTVs in the agricultural sector is expected to decrease to the point where rebates are unnecessary as consumers realize benefits associated with reduced fuel consumption and less maintenance, combined with equivalent or superior vehicle performance and reduced purchase price. Future funding for this category will be evaluated as part of developing the FY 2011-12 Funding Plan.

Off-Road Hybrid Equipment Pilot Project (Off-Road Pilot Project)



Funding Target: Up to $3 million

Synopsis: Accelerate early deployment and evaluate emission benefits of hybrid equipment.

Project Benefits:

- Accelerate transition of hybrid technology to the off-road sector
- Lay the groundwork for a potential hybrid off-road equipment voucher project in future AQIP funding years.

Overview

Hybrid off-road excavators and dozers are now commercially available for purchase by California fleets. This technology shows promise in providing criteria pollutant and greenhouse gas emission reductions, while also achieving significant fuel economy benefits and fuel cost savings. Two manufacturers – Caterpillar and Komatsu – offer hybrid equipment for sale in California, and other manufacturers are preparing to offer hybrid equipment over the next year. This technology offers an opportunity for lower emissions and fuel economy savings; however, purchases are expected to be slow in the near term due to the hybrid systems' 20 to 30 percent cost premium.

Staff Proposal for FY 2010-11

Staff proposes up to $3 million (subject to revenues) for a Hybrid Off-Road Equipment Pilot Project to encourage development and deployment of hybrid off-road equipment in California fleets. The project will fund approximately half of the incremental cost of hybrid off-road equipment, and include additional funding for in-use testing to quantify the emission benefits of the hybrid system over the equipment's typical duty cycle. Staff anticipates that the emissions data and information learned from this project could provide the foundation for a more comprehensive hybrid equipment voucher project in future AQIP funding years. Data from this project may also provide a mechanism for hybrid equipment purchasers to generate credit towards compliance with ARB's In-Use Off-Road Diesel Vehicle Regulation.

At the April 2009 Board meeting on the FY 2009-10 AQIP Funding Plan, staff presented the Board with its multi-year vision for the AQIP, which included future funding to encourage the use of hybrid technology in off-road equipment. This project is a first step in implementing that vision.

Electric Power Take-Off. The Off-Road Pilot Project could include funding for electric Power Take-Off (PTO) in on-road vehicles. Several commercially available trucks use electric PTO that reduces or eliminates the need for vehicle idling to operate lifts, cranes, refrigeration units, or other functions. Vehicles which use electric systems for PTO but not hybrid or electric vehicle propulsion are not eligible for funding under the HVIP project. Electric PTO is eligible for Energy Commission AB 118 funding, and as of May 15, 2010, the Energy Commission is evaluating applications for projects using this technology. ARB will coordinate with the Energy Commission to determine if additional funding is needed, and to ensure that any eventual AQIP project complements Energy Commission investments.

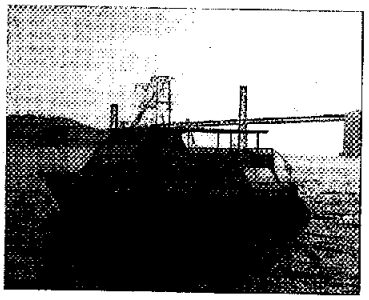
Project Solicitation

Staff proposes funds for this project be granted via a request for proposals (RFP), with air districts and other public agencies, in addition to vehicle manufacturers, fleets, non-profits and other private entities eligible to apply. Multiple entities could potentially be awarded partial project funding. Allowable costs for project administration and outreach will be capped at ten percent. Staff will work with the Hybrid Off-Road Equipment Pilot Project Work Group to determine project requirements, including project evaluation criteria, eligible equipment, and emission testing protocols.

Future Trends in Funding Needs

Hybrid technology has the potential to provide significant air quality and fuel economy benefits in the off-road equipment sector. This pilot project will help staff evaluate near-term viability for this technology in various off-road vocations, as well as potential future funding needs for this project category.

Advanced Technology Demonstration Projects



Funding Target: Up to $5.5 million

Synopsis: Demonstrate the viability of advanced technology vehicles, equipment or emission controls

Project Benefits:

- Accelerate commercialization and deployment of cleaner technologies in the California marketplace
- Support California's goals of criteria pollutant and toxic emission reductions and greenhouse gas emission reductions.

Overview

ARB's goal in funding demonstration projects under the AQIP is to help accelerate the next generation of advanced technologies to reduce criteria pollutant emissions from mobile sources. AQIP funding will be used to demonstrate the viability of new technologies with a focus on the off-road sector and transit and school bus category. Viable projects must have the potential for commercialization within three years after demonstration, and the ability to gain significant market penetration in California.

FY 2009-10 Project Status

Last year the Board approved allocating $9 million toward advanced demonstration projects. However, lower than expected AQIP revenues over the fiscal year required subsequent adjustments to the project allocation, such that only about $2 million in funds was ultimately available. ARB prioritized the locomotive and marine categories for funding in FY 2009-10, and deferred the remaining projects for funding in 2010-11. An $800,000 solicitation was released in March 2010 for the demonstration of advanced aftertreatment technologies for medium-horsepower locomotives. This project is a high priority action identified in ARB's report entitled Technical Options to Achieve Additional Emissions and Risk Reductions from California Railroads.[10] In April 2010, a solicitation for up to $1 million was released to demonstrate hybrid technology in marine vessels, which aligns with ARB's goal of hybrid technology demonstration and alternative compliance with the harbor craft rule. Grantees for both projects will be selected before the end of the fiscal year.

[10] ARB, Technical Options to Achieve Additional Emissions and Risk Reductions from California Locomotives and Railyards. August 2009.

Staff Proposal for FY 2010-11

ARB staff proposes FY 2010-11 funding of up to $5.5 million (subject to revenues) for advanced technology demonstration projects in the locomotive, marine, off-road and agriculture and transit and school bus categories. Funds will be used for demonstration projects deferred from the FY 2009-10 Funding Plan due to the decrease in last year's revenues, with the exceptions of the proposed changes discussed below. Table II-5 lists proposed project categories, project types and funding targets.

Table II-5: FY 2010-11 Advanced Technology Demonstration Projects Proposed Funding Targets

Project Category	Proposed Funding Levels[1]
Locomotive - Demonstration of new locomotive engines that meet or exceed the Low-Emitting Locomotive emission level	Up to $1 million
Marine - Demonstration of hybridization or other advanced marine engines - Demonstration of technology to reduce main engine usage while maintaining vessel operational requirements.	Up to $1 million
Agricultural and Off-Road Equipment - Tier IV off-road engines or their equivalent - Retrofits for existing agriculture and off-road engines that reduce NOx emissions by at least 55% and PM emissions by at least 85% - Retrofits that reduce PM emissions from Tier 0 off-road engines by at least 85% - Cordless zero-emission commercial lawn and garden equipment	Up to $2 million
Transit and School Bus - Zero-emission transit buses - Zero-emission and advanced plug-in hybrid school buses	Up to $2 million

[1] Total available funding is up to $5.5 million. Each category may not be funded at the full funding level.

In addition to the projects listed in Table II-5, staff may consider additional projects in its grant solicitations as long as they meet the Board-approved guiding principles for AQIP demonstration projects and fit into one or more of the established demonstration categories.

Off-Road Hybrid Equipment Pilot: Off-Road equipment hybridization was a concept developed during demonstration project work group meetings leading up to the FY 2009-10 Funding Plan. Since that time, off-road hybridization has advanced beyond the demonstration stage with the commercial availability of hybrid off-road equipment from major manufacturers such as Caterpillar and Komatsu. However, vehicle testing is still warranted to document the emission benefits of the hybrid system over various duty cycles and to assess the equipment's performance under different operational scenarios. Staff proposes to move this project type out of the demonstration project category and introduce it as a pilot project under AQIP.

School Bus Demonstration Projects: In the FY 2009-10 Funding Plan, the Board approved three types of school bus projects for demonstration. After discussions with

the California Highway Patrol and school bus stakeholders during a public work group meeting in June 2009, it was determined that the high cost of school bus safety certification would be a barrier for two of the approved project types. Consequently, staff proposes eliminating hybrid retrofits and school bus engine efficiency retrofits on existing school buses due to the high cost of safety certification. If the economics of certification improves, staff will consider reevaluating these projects for funding in the future. The other Transit and School Bus project types from the FY 2009-10 Funding Plan (zero-emission transit buses and zero-emission and advanced plug-in hybrid school buses) remain as potential demonstration projects in FY 2010-11

Combining the Off-Road and Agricultural Equipment Project Categories: Staff proposes to combine the Off-Road and Agriculture Equipment demonstration project categories given the similarities in advanced emission control technologies between the categories.

Project Solicitation

Staff proposes that the project solicitation specifications approved by the Board last year remain unchanged. Local air districts and other public agencies would continue to be eligible to apply for demonstration project funding through a competitive solicitation process. Public entities are encouraged to partner with one or more technology demonstrators and end users in their regions. At least 50 percent of each demonstration project's funds must be provided from a non-AQIP source, and at least ten percent of this non-AQIP match must be in cash with the remainder allowed as in-kind contribution. The requirement of match funding leverages AQIP funds while encouraging grantees to be invested in successful completion of the projects. Staff proposes to continue that up to ten percent of the total project budget be available for project administration.

Future Trends in Funding Needs

ARB is committed to supporting the advancement of new, cleaner technologies with the potential for commercialization in the California marketplace; the AQIP provides ARB with a rare opportunity to fund such projects. Future funding for this category is anticipated as part of the FY 2011-12 Funding Plan.

C. Funding Contingencies

The proposed Funding Plan incorporates contingency provisions establishing decision points for which the Board grants the Executive Officer authority to make mid course adjustments in the event circumstances change between Board approval of the Funding Plan and the time solicitations are issued or funds awarded. As evidenced last year, these provisions are necessary in the event revenues are lower than the appropriation amount. Contingencies are refined in this year's plan based on lessons learned from last year. The proposed Funding Plan is based on the $40 million budget appropriation, but includes the following proposed contingencies:

(1) Establish minimum allocations for each category based on approximately $30 million in projected revenues (reflective of actual FY 2009-10 revenues). Establishing minimum targets for each category based on a conservative funding scenario reduces the risk of over-obligating funds beyond available revenues, and avoids disproportionally affecting projects that start later in the fiscal year if revenue projections are lowered. These allocations are presented in Table II-6 which presents the proposed minimum and maximum allocations for each project category under a conservative funding scenario and the full allocation. If revenues come in between the $30 million minimum allocation and the $40 million appropriated amount, funding for each project category would be scaled according to the targets in Table II-6.

(2) Establish decision points for making funding allocation decisions for specific project categories (e.g., HVIP, CVRP and the Agricultural UTV Rebate Project). As discussed in each of these sections, project-specific contingencies address excess or insufficient demand and describe the conditions or circumstances which would trigger each contingency provision.

Table II-6. Contingency Plan for Addressing Reduced Revenue Availability

Project Category	Minimum Allocation[1] ($millions)	Increase in Allocation Based on $40M AQIP Budget
Hybrid Truck and Bus Voucher Incentive Project	19	Add up to $6M
Clean Vehicle Rebate Project	5	No additional funds
Lawn and Garden Equipment Replacement Project	1	No additional funds
Zero-Emission Agricultural Utility Terrain Vehicle Rebate Project	0.5	No additional funds
Off-Road Hybrid Technology Pilot	2	Add up to $1M
Advanced Demonstration Projects	3	Add up to $2.5M

[1] Based on a $30.5 million budget which approximates actual FY 2009-10 revenues for AQIP projects.
[2] Allocations will be finalized when the FY 2010-11 State Budget is final.

Staff proposes a transparent process in which minor changes to a project category will be publicly vetted through the work group process. Minor changes would be within the Funding Plan parameters approved by the Board. Any major allocation adjustments outside those specifically prescribed in the proposed Funding Plan would require Board approval.

III. Future Actions

The proposed FY 2010-11 Funding Plan specifies all policy-related details regarding the proposed projects, including eligible applicants, the criteria ARB will use to evaluate applications, eligible vehicles/ equipment, maximum incentive amounts, and other grantee requirements. This chapter describes the next steps ARB will take to implement the AQIP upon Board approval of the proposed FY 2010-11 Funding Plan including project solicitations and development of next year's Funding Plan.

A. FY 2010-11 Project Solicitations

Following Board approval of the proposed FY 2010-11 Funding Plan and after the final State Budget is signed, staff will release solicitations for each of the project categories in order to select a grantee to implement the projects in FY 2010-11. The solicitations will include all the programmatic details potential grantees need to apply for funds, in addition to the criteria upon which the applications will be evaluated and scored.

In accordance with the AQIP Guidelines, ARB will begin issuing project solicitations no later than 90 days after the funds are appropriated in the State Budget. The stakeholder work groups established last year for each project category will continue to be the primary avenue for seeking input and feedback on solicitations and Implementation Manuals. Staff will monitor and evaluate AQIP projects over the course of the fiscal year and share project data with the work groups.

B. Report to the Board and Legislation on AQIP Implementation

The AB 118 enabling statute (HSC § 44274[d]) and AQIP Guidelines requires ARB staff to submit a report to the Board and California Legislature beginning in 2010, and at least biennially thereafter. One report will be used to fulfill both requirements. Staff plans to complete the first report to the Board and Legislature in December 2010. The report will include:

- A list of projects which were awarded funding pursuant to Funding Plans in the previous fiscal years.
- The expected benefits of the previous fiscal year's Funding Plan in promoting clean, alternative fuels and advanced vehicle technologies.
- Improvements in air quality and public health and greenhouse gas emission reductions.
- Documenting that all of the ARB projects funded under AB 118 comply with the Air Quality Guidelines.
- Recommendations for future actions.

C. FY 2011-12 Funding Plan

The Funding Plan is updated and presented to the Board for its consideration each year. Public workshops will begin later this year to seek early input on development of the FY 2011-12 Funding Plan, which will be presented to the Board in the spring of 2011. As part of funding plan development, staff will evaluate existing projects and determine whether continued funding should be proposed and at what funding level. Staff will also evaluate how projects are being implemented and determine if modifications are necessary and new project categories should be considered. Opportunities to coordinate with the Energy Commission's AB 118 program and other incentives programs will continue to be examined.

CALIFORNIA AIR RESOURCES BOARD

NOTICE OF PUBLIC MEETING TO HEAR A REPORT ON TARGET SETTING EFFORTS UNDER SENATE BILL 375

The Air Resources Board (ARB or Board) will conduct a public meeting at the time and place noted below to hear a status report on target setting efforts under Senate Bill 375.

DATE: June 24, 2010

TIME: 9:00 a.m.

PLACE: California Environmental Protection Agency
Air Resources Board
Byron Sher Auditorium
1001 I Street
Sacramento, California 95814

This item may be considered at a two-day meeting of the Board, which will commence at 9:00 a.m., June, 24, 2010, and may continue at 8:30 a.m., on June 25, 2010. This item may not be considered until June 25, 2010. Please consult the agenda for the meeting, which will be available at least 10 days before June 24, 2010, to determine the day on which this item will be considered.

In 2008, the Legislature enacted Senate Bill 375 (SB 375; Chapter 728, Statues of 2008), requires ARB to set regional targets for the purpose of reducing greenhouse gas emissions from passenger vehicles, for 2020 and 2035. If regions develop integrated land use, housing and transportation plans that meet the SB 375 targets, new projects in these regions can be relieved of certain review requirements of the California Environmental Quality Act. The targets will apply to the regions in the State covered by the 18 metropolitan planning organizations (MPO).

Per SB 375, ARB must propose draft targets by June 30, 2010, and adopt final targets by September 30, 2010. ARB staff will present a status update on target setting efforts at the meeting. Staff will also present draft targets at the meeting, and release a written report following this meeting. Board action on the targets will not occur until September. The staff presentation will include comments by a panel of MPO directors.

Interested members of the public may present comments orally or in writing at the meeting and may be submitted by postal mail or by electronic submittal before the meeting. To be considered by the Board, written comments submissions not physically submitted at the meeting must be received **no later than 12:00 noon, June 23, 2010,** and addressed to the following:

Postal mail: Clerk of the Board, Air Resources Board
1001 I Street, Sacramento, California 95814

Electronic submittal: http://www.arb.ca.gov/lispub/comm/bclist.php

Please note that under the California Public Records Act (Government Code section 6250 et seq.), your written and oral comments, attachments, and associated contact information (e.g., your address, phone, email, etc.) become part of the public record and can be released to the public upon request. Additionally, this information may become available via Google, Yahoo, and any other search engines.

The Board requests, but does not require 20 copies of any written submission. Also, ARB requests that written and e-mail statements be filed at least 10 days prior to the meeting so that ARB staff and Board members have time to fully consider each comment. Further inquiries regarding this matter should be directed to Ms. Lezlie Kimura Szeto, Air Pollution Specialist, at 916-322-1504, or Mr. Douglas Ito, Manager of the Local Government Strategies Section, at 916-324-0356.

SPECIAL ACCOMMODATION REQUEST

Special accommodation or language needs can be provided for any of the following:

- An interpreter to be available at the hearing;
- Documents made available in an alternate format (i.e., Braille, large print, etc.) or another language;
- A disability-related reasonable accommodation.

To request these special accommodations or language needs, please contact the Clerk of the Board at (916) 322-5594 or by facsimile at 916) 322-3928 as soon as possible, but no later than 10 business days before the scheduled Board hearing. TTY/TDD/Speech to Speech users may dial 711 for the California Relay Service.

Comodidad especial o necesidad de otro idioma puede ser proveído para alguna de las siguientes:

- Un intérprete que esté disponible en la audiencia
- Documentos disponibles en un formato alterno (por decir, sistema Braille, o en impresión grande) u otro idioma.
- Una acomodación razonable relacionados con una incapacidad.

Para solicitar estas comodidades especiales o necesidades de otro idioma, por favor llame a la oficina del Consejo al (916) 322-5594 o envíe un fax a (916) 322-3928 lo más pronto posible, pero no menos de 10 días de trabajo antes del día programado para la audiencia del Consejo. TTY/TDD/Personas que necesiten este servicio pueden marcar el 711 para el Servicio de Retransmisión de Mensajes de California.

CALIFORNIA AIR RESOURCES BOARD

Date: June 8, 2010

James N. Goldstene
Executive Officer