

**State of California
Air Resources Board**

**STAFF REPORT:
INITIAL STATEMENT OF REASONS FOR RULEMAKING**

**PROPOSED AB 32 COST OF IMPLEMENTATION FEE REGULATION
AND
PROPOSED AMENDMENT TO THE REGULATION FOR THE MANDATORY
REPORTING OF GREENHOUSE GAS EMISSIONS**

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Reporting of Greenhouse Gas Emissions**

Initial Statement of Reasons

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Executive Summary

Introduction

The California Global Warming Solutions Act of 2006, Assembly Bill 32 (Nuñez, Chapter 488, Statutes of 2006) requires California to reduce its greenhouse gas emissions to 1990 levels by 2020. On December 11, 2008, the Air Resources Board (ARB) approved a Scoping Plan (Plan), which is California's plan for meeting the greenhouse gas emissions reductions required by AB 32. The administration, implementation and enforcement of the Plan's measures that were designed to achieve the emissions reduction goals will require a stable and continuing source of funding.

AB 32 also authorizes ARB to adopt a schedule of fees to be paid by sources of greenhouse gas emissions to support the costs of carrying out AB 32. The AB 32 Cost of Implementation Fee (the Fee) is included in the Scoping Plan, and is authorized in Health and Safety Code Section (HSC) 38597, which states,

“The state board may adopt by regulation, after a public workshop, a schedule of fees to be paid by the sources of greenhouse gas emissions regulated pursuant to this division, consistent with Section 57001. The revenues collected pursuant to this section, shall be deposited into the Air Pollution Control Fund and are available upon appropriation, by the Legislature, for purposes of carrying out this division.”

Using this section as the basis for its authority, ARB proposes to establish a fee schedule to support implementation of AB 32 by ARB and other state agencies.

This Proposed Regulatory Order combines two regulatory actions: adoption of a Proposed AB 32 Cost of Implementation regulation, and adoption of an amendment to the existing Regulation for the Mandatory Reporting of Greenhouse Gas Emissions (Mandatory Reporting Regulations).

Cost of Implementation Fee

This staff report summarizes the development of the regulation, discusses the Fee structure and the affected entities and includes a justification for the proposed Fee regulation. It also describes ARB's approach used to determine the necessary revenue requirements to support State agency implementation of AB 32. It presents staff's proposed approach to balance the goals of applying the fee to greenhouse gas emissions as broadly as possible while minimizing the administrative burden of the regulation.

A design principle for this regulation has been to assess the fee “upstream” whenever possible in order to minimize the number of entities subject to the fee and reduce the complexity and the administrative burden of the regulation. For the purposes of this regulation, “upstream” is the point in California's economy where fuel delivery or production is intended for eventual delivery to consumers. This leads

to subsequent combustion or use and results in greenhouse gas emissions. When it is not feasible to assess fees “upstream”, fees are assessed on entities that consume or produce fuels in California.

Staff designed this proposed Fee to cover greenhouse gas emissions as broadly as possible to spread the cost burden over the majority of emission sources. This fee would cover three different groups of emissions sources that together comprise approximately 85 percent of California’s total greenhouse gas emissions. First, it will be assessed on fossil fuels that are combusted in California, including fuels used for transportation, and electricity generation, by industry, and in residences and commercial buildings. Second, it will cover the major sources of industrial process greenhouse gas emissions. Finally, in a manner consistent with AB 32 emissions accounting provisions, the Fee will cover imported electricity, based on the fuels used for its generation.

The revenues from the assessed fees would be used to pay the ongoing AB 32 program costs incurred by ARB and other state agencies, beginning in the 2009-2010 fiscal year, currently estimated at approximately \$36.2 million per year. During the first four years, the revenues would also be used to repay loans included in the adopted State Budget. These loans were used to pay a significant portion of the AB 32 implementation costs of ARB and the California Environmental Protection Agency (Cal/EPA) for the 2007/2008 and 2008/2009 fiscal years. This staff report also includes a discussion of ongoing revenue requirements for ARB, Cal/EPA and other state agency AB 32 implementation activities in Appendix C.

It is important to note that California’s AB 32 program is still under development. As the program continues to mature, staff intends to periodically re-evaluate the sources covered by this fee to determine whether the additional sources of greenhouse gas emissions should also be included in the Fee regulation. Staff will also continue to evaluate how the state’s AB 32 program can best be funded. For example, if a cap-and-trade program were adopted that generated revenue and covered a sufficiently broad range of the state’s greenhouse gas emissions, it would be appropriate to evaluate funding the State’s implementation of AB 32 from that revenue instead of this fee.

Mandatory Greenhouse Gas Emissions Reporting

On December 6, 2007, ARB adopted the Mandatory Reporting Regulation as required by AB 32. The regulation requires major sources of greenhouse emissions, such as operators of power plants, cogeneration facilities, cement plants, refineries, hydrogen plants, retail providers and marketers of electricity, and general stationary combustion facilities emitting 25,000 metric tons of carbon dioxide in a calendar year to report those emissions to the State of California annually beginning in 2009. To facilitate reporting, ARB contracted for the development of the California Greenhouse Gas Reporting Tool (Reporting Tool) that was completed in spring of 2009. Technical assistance and guidance is available on ARB’s internet website.

The use of the Reporting Tool has been voluntary. The proposed amendment to the regulation would make use of the Reporting Tool mandatory.

Economic Impacts Associated with the Proposed Regulatory Order

In developing the Fee regulation, ARB evaluated the potential economic impacts on representative private persons or businesses and consumers. ARB staff believes that if such a pass through occurs, the cost impacts from the proposed regulatory action would result in average product price increases of less than one-tenth of one percent. ARB has determined that representative private persons would be affected by the cost impacts from the proposed regulatory action at an estimated cumulative cost of \$ 4.00 per household per year when the marginally increased utility and fuel costs are passed through to the consumer.

I. Introduction and Background

This report presents ARB staff's proposed Cost of Implementation Fee (Fee) Regulation pursuant to the California Global Warming Solutions Act of 2006, Assembly Bill 32 (Nuñez, Chapter 488, Statutes of 2006). The broad scope of AB 32 requires an extensive effort to reduce the state's greenhouse gas emissions, and provides ARB with the authority to adopt a fee to be paid by sources of greenhouse gas emissions to cover the costs of carrying out AB 32.

On December 11, 2008, ARB approved a Scoping Plan¹ that provides a blueprint for California to meet the greenhouse gas emissions reductions required by AB 32. The Scoping Plan indicates that administration, implementation and enforcement of the emissions reduction measures will require a stable and continuing source of funding. The Fee is authorized in Health and Safety Code Section (HSC) 38597, which states,

“The state board may adopt by regulation, after a public workshop, a schedule of fees to be paid by the sources of greenhouse gas emissions regulated pursuant to this division, consistent with Section 57001. The revenues collected pursuant to this section, shall be deposited into the Air Pollution Control Fund and are available upon appropriation, by the Legislature, for purposes of carrying out this division.”

Using this section as the basis for its authority, ARB proposes to establish a fee schedule to support implementation of AB 32 by ARB and other state agencies. Funds collected would be deposited in the Air Pollution Control Fund and would be available upon appropriation by the Legislature.

Because greenhouse gas emissions and their subsequent impacts on global warming affect all Californians, staff has developed the Fee so that state government costs to implement the AB 32 program are streamlined and these costs are equitably distributed among a broad range of greenhouse gas sources. This approach will also minimize the burden the Fee may place on individual entities or sectors of the economy. This proposed regulation was developed through an extensive public process involving a broad range of stakeholders.

Staff expects the regulation to take effect before January 1, 2010. Entities will report to ARB the quantity of fuels and emissions subject to the Fee by January 2, 2010 for calendar year 2008 using ARB's Reporting Tool. ARB is also proposing to amend the Regulation for the Mandatory Reporting of Greenhouse Gas Emissions (Mandatory Reporting Regulation) to require use of the reporting tool for data submittal. Beginning in January 2010, ARB will determine the fee amounts for each entity based on the reported quantities of fuel or emissions, using the fee calculation methodology described in this staff report and the proposed regulation. ARB would

¹ California Air Resources Board, Climate Change Scoping Plan: A Framework for Change, released October, 2008

notify the fee paying entities by February 1, 2010. The fee paying entities would be required to submit payment within 60 days after receipt of the notification.

This fee is intended to cover two areas of costs for implementing AB 32:

- Staff related expenditures for the start-up and ongoing implementation of the AB 32 program that have been approved through budget change proposals (BCPs) after AB 32 was signed into law (September 2006).
- Other post AB 32 BCPs approved costs directly related to the administration of AB 32 programs to reduce greenhouse gas emissions, such as contracts, administrative overhead, and research directly related to the implementation of the AB 32 program.

II. Description of Proposed Regulation

The proposed regulation assesses fees on sources of greenhouse gas emissions from the most widely used fossil fuels, including gasoline, diesel, coal, refinery gases and natural gas. The Fee would also be assessed on non-combustion greenhouse gas process emissions from refineries and cement manufacturers. Finally, the Fee would be imposed on the greenhouse gas emissions associated with the generation of imported electricity. Together, emissions from fuel combustion, refining and manufacturing process emissions, and imported electricity account for over 85 percent of California's greenhouse gas emissions.

ARB is also proposing to amend the Mandatory Reporting Regulation by requiring the use of the Reporting Tool. The Mandatory Reporting Regulation was approved by ARB in December, 2007.

A. Fee Regulation Development

ARB staff engaged in an extensive outreach process during development of the proposed regulation. In accordance with HSC section 38561, ARB staff consulted with other state agencies that have jurisdiction over sources of greenhouse gas emissions. ARB consulted with the Public Utilities Commission, the State Energy Resources Conservation and Development Commission, and other departments and agencies. Staff held public workshops on January 27, 2009, February 25, 2009, and April 20, 2009 to obtain stakeholder input, and provided concept papers and draft regulations for stakeholder comment. Staff met with stakeholders from each sector covered by the proposed regulation on numerous occasions and considered comments received during this process.

In addition, ARB is proposing to amend the Mandatory Reporting Regulations to require the use of the reporting tool to report data.

B. Approach to Regulation

Generally, the proposed Fee regulation pursues an "upstream" approach. The regulated entity would be assessed a fee for the greenhouse gas emissions from fuel an entity introduces into commerce in California, or the direct greenhouse gas emissions as a result of an industrial process. The upstream approach minimizes the administrative burdens associated with the regulation since it decreases the number of entities that must pay fees, and simplifies the reporting needed to determine the fees.

ARB staff reviewed each category of sources of greenhouse gas emissions and evaluated whether or not it was technically and economically feasible to include them under the proposed regulation. Sources that are not included in the proposed regulation could potentially be included in the future.

One major goal of the proposed regulation is to equitably impose fees on the widest possible spectrum of greenhouse gas sources in an administratively feasible manner. This cannot be done unless some type of administrative mechanism is used to impose a fee on upstream entities, which can then pass on the cost of the fee by increasing the cost of the fuel supplied to downstream entities. An important question was just how far upstream to impose such a fee. ARB has chosen an approach that reaches as far upstream as possible. This approach both minimizes the number of individual entities that must be billed and helps ensure that almost all of the greenhouse gas emissions resulting from the consumption of gasoline, diesel, and natural gas in California are subject to the Fee. There are other possible collection points for fees. The various fee collection options, and ARB's reasons for rejecting them, are discussed in the "Alternatives" section of this Initial Statement of Reasons.

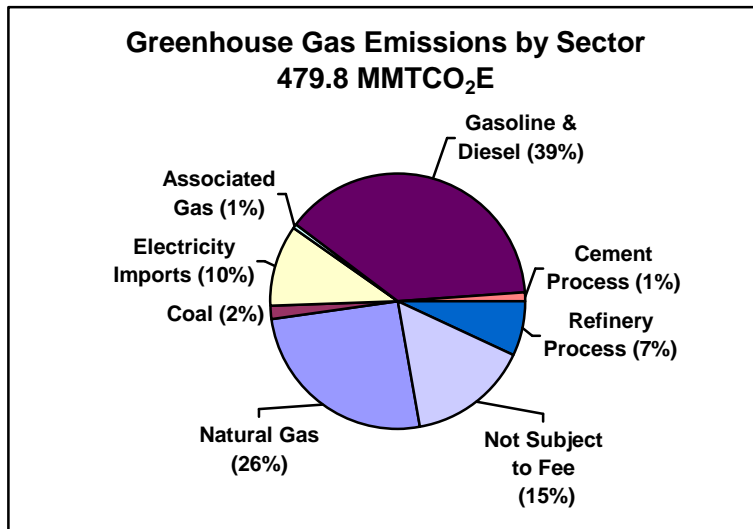
C. Emission Sources Subject to the Proposed Fee

The 2006 Greenhouse Gas Emission Inventory estimates total greenhouse gas emissions in California at 479.8 million metric tons (MMT) of CO₂E. Figure 1 below illustrates the sources of greenhouse gas emissions in California and their respective proportions of emissions. Most greenhouse gas emissions in California result from the combustion of gasoline and diesel (39 percent) and natural gas (26 percent). These emissions are associated with fuel use activities ranging from transportation, manufacturing and refining processes to electricity generation to heating buildings. Two percent of the in-state emissions are from combustion of coal. Thus, 67 percent of the state's total greenhouse gas emissions are from the four major fuels that are subject to the proposed regulation. Approximately 10 percent of the state's total emissions are associated with imported electricity, which ARB proposes to include in this regulation, and is discussed in the next section of this ISOR. Cement and refinery processes account for more than eight percent of greenhouse gas emissions in California, but 95 percent of the state's industrial greenhouse gas process emissions.²

At this time, ARB proposes not to assess fees on the remaining 15 percent of greenhouse gas emissions in the emissions inventory in the Fee regulation. These emissions include emissions from high global warming potential gases (which are anticipated to be covered by a separate fee currently under development), some agricultural sources (such as dairy methane), emissions from the forest sector, select fuels which are used in small quantities such as aviation gas, jet fuel, kerosene, biodiesel, and fuels exported out of state.

² ARB Greenhouse Gas Inventory Database

Figure 1. TOTAL STATEWIDE GREENHOUSE GAS EMISSIONS BY SECTOR



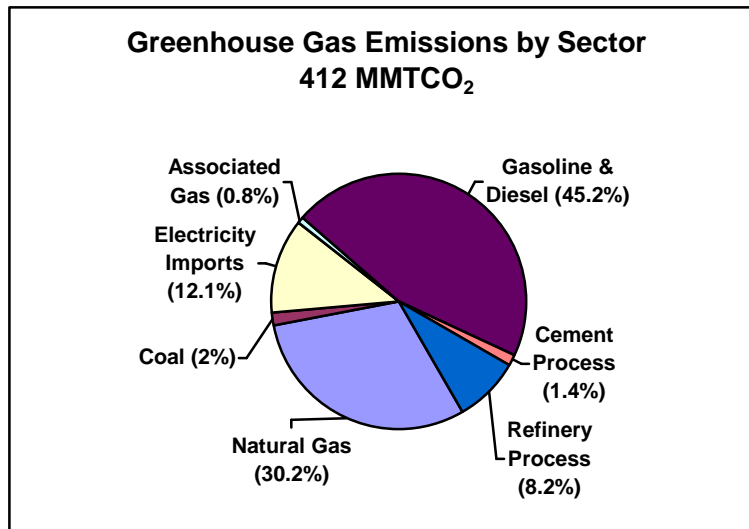
Source: 2006 Greenhouse Gas Inventory

The proposed Fee would apply to six sectors of sources that account for approximately 85 percent of California’s total greenhouse gas emissions, or 412 MMTCO₂³.

Figure 2 below illustrates the sectors covered under the Fee regulation and their respective proportions of emissions compared to each sector to which a fee will be applied. The majority of greenhouse gas emissions under the Fee regulation are from the combustion of gasoline and diesel (45 percent) and natural gas (31 percent, including associated gas). Approximately 12 percent of the emissions covered under the Fee are associated with imported electricity. Emissions from coal combusted in the state account for approximately two percent of the emissions covered under the fee. Finally, industrial process emissions due to processes other than combustion of natural gas or coal at refineries and cement manufacturers account for approximately eight percent and 1.5 percent, respectively, of emissions covered under the Fee regulation.

³The proposed Fee regulation focuses on CO₂ instead on CO₂E.

Figure 2. GREENHOUSE GAS EMISSIONS COVERED BY FEE



Source: 2006 Greenhouse Gas Inventory

A discussion of how the proposed Fee would be assessed for each emission category follows⁴:

Combustion of Natural Gas

Combustion of natural gas accounts for approximately 26 percent of the overall greenhouse gas emissions in California, and 30 percent of the emissions covered in the Fee regulation. Affected entities in the natural gas sector subject to this regulation include the following:

- Public utility gas corporations that deliver natural gas to end users;
- Interstate and intrastate pipelines delivering natural gas directly to end users;
- Natural gas producers consuming gas produced onsite, and are subject to ARB Mandatory Reporting Regulation; and
- Producers of “associated gas” that consume associated gas produced onsite and are subject to ARB’s mandatory reporting regulations.

Although natural gas is widely consumed in the California economy, supply is physically constrained by pipelines, making identifying upstream operators relatively straightforward. This is why the fee is applied at the pipeline for all natural gas consumers on that pipeline.

⁴The proposed points of regulation for this Fee and the assumptions and methods used in calculating the fee for fuels, process emissions and imported electricity, would be applicable only to this regulation and are not intended establish a precedent for how sources of emissions would be treated under any future regulation, including a cap and trade regulation.

ARB's research indicates that approximately 80 percent of the natural gas used in the State is eventually transmitted over public utility gas corporation pipelines owned by Pacific Gas and Electric, Southern California (SoCal) Gas, and San Diego Gas and Electric. A portion of the natural gas transmitted by these public utility corporations in their pipelines is not owned by the utilities, but is simply transmitted for a fee to end users. Since a transmission fee is applied by those entities, the companies transmitting natural gas, the utilities, would be the most appropriate upstream source to which the Fee should be attached. Public utility gas corporations would annually report the therms of natural gas delivered to end users in California via their pipelines.

About 10 percent of the natural gas used in the state is purchased directly from interstate pipelines, never touching the in-state public utility corporation pipelines. There are eight interstate pipelines that deliver natural gas into the state, and distribute natural gas directly to end users. The interstate pipeline owners or operators would annually report the therms of natural gas as measured at the meter directly delivered to end users in California.

The final 10 percent of the natural gas produced and consumed in California is never transported via public utility corporation pipelines or interstate pipelines. Two distinct processes need to be addressed to incorporate this remaining natural gas: direct deliveries from intrastate pipelines and natural gas and associated gas produced and used at the production site.

Direct Delivery:

A small number of large customers receive natural gas directly from intrastate companies that include Pacific Gas and Electric, SoCal Gas, and San Diego Gas and Electric. Gas transported directly to end users over intrastate pipelines would be subject to the Fee. The pipeline operator is the most appropriate upstream source to which to apply the Fee. Owners or operators of intrastate pipelines that deliver natural gas directly to end users would annually report the therms delivered at the end users' meter, similar to the public utility gas corporations.

Producers consuming a portion of the natural gas they produce directly onsite would also be subject to the Fee. ARB's research indicates that fewer than 20 facilities emit the majority of the CO₂ emissions in this category and that these facilities are already subject to ARB's Mandatory Reporting Regulation. These sources would report the therms of natural gas produced and subsequently consumed on-site.

Associated Gas:

Finally, a by-product of the oil production process is associated gas, which consists mostly of natural gas. This by-product is used for some combustion equipment. Oil production facilities that use associated gas produced on-site and that are subject to the Mandatory Reporting

Regulation would be subject to the Fee. Unlike other entities that would be charged a fee per therm of natural gas reported, the Fee for associated gas would be based on the reported greenhouse gas emissions resulting from consumption of associated gas and would be assessed on oil production facilities.

Producers and Importers of Gasoline and Diesel Fuels

Emissions from combustion of gasoline and diesel fuel accounts for 39 percent of the state's total greenhouse gas emissions. These emissions occur when on-road vehicles (passenger cars, light duty trucks, heavy-duty vehicles, and motorcycles), off-road vehicles (bulldozers, lawn mowers, marine craft) and other sources combust gasoline and diesel fuel.

Staff is proposing to apply the fee to producers and importers of:

- California gasoline;
- California Reformulated Gasoline Blendstock (CARBOB), which is blended with an oxygenate to create California gasoline; and
- California diesel.

California has 21 refineries located in the San Francisco Bay area, the Los Angeles area, and the Bakersfield area. California used about 4 billion gallons of diesel and 15.7 billion gallons of gasoline in 2007.⁵

Producers and importers of gasoline and diesel would report the quantity of fuels supplied for use in the State. To ensure that ARB only compares quantities of finished gasoline, ARB will adjust for the total quantity of finished fuel made from CARBOB. The reported quantity of CARBOB would be multiplied by a factor that adjusts for the gallons of final product (gasoline). For example, one gallon of CARBOB formulated for blending with five percent ethanol would be adjusted as follows:

$1.0 * (\text{CARBOB}) + ((0.05 / (1.0 - 0.05)) * (\text{ethanol})) = \text{approximately } 1.0526$
gallons finished gasoline, with the Fee assessed on the gallons of finished California gasoline.

Under the proposed regulation, the fee would apply to the intrinsic greenhouse gas emissions from ethanol that is blended with CARBOB to produce gasoline. As ARB implements the recently approved Low Carbon Fuel Standard to reduce the carbon content of transportation fuel, ARB will revisit how the emissions from transportation fuels are calculated.

⁵ Air Resources Board, 2006 Greenhouse Gas Emissions Inventory

Industrial Emissions from Refineries and Cement Manufacturers

Emissions from these sources account for over eight percent of California's greenhouse gas emissions – over seven percent from the refinery process, and approximately 1.5 percent from the cement manufacturing process.

Refineries:

The Fee on emissions associated with the refinery processes would be determined in two parts: first, the emissions from the combustion of products of the refinery process other than gasoline and diesel (petroleum coke, catalyst coke and refinery gas), and second, the direct emissions from the refinery process itself.

Emissions from combustion of petroleum coke, catalyst coke and refinery gas produced by each refinery would be reported to ARB consistent with information reported to the California Energy Commission under the Petroleum Industry Information Reporting Act (PIIRA). PIIRA requires that refineries report data on the production of these products, as well as the amount exported out of the state. Since the Fee will not be applied to emissions from the combustion of these products outside of California, each refinery will report the individual quantities of catalyst coke, petroleum coke, and refinery gas produced annually, less the quantities exported out of the state.

The Fee would be applied to the refinery responsible for the creation of the refining process by-product, which is the furthest upstream point in this process. Staff expects that the Fee would be passed through if the by-product is sold and ultimately combusted by another party. Additionally, emissions from the consumption of feedstock other than natural gas used in the steam methane reforming process (hydrogen production), as reported under ARB's Mandatory Reporting Regulation, would be subject to this fee. Any use of natural gas is accounted for in the natural gas sector as described above.

Cement Manufacturing:

Emissions from the cement manufacturing process originate from two sources: fuel combustion and by-products from the clinker production process.

Approximately half of the emissions come from fuel combustion, and the Fee would be applied to the applicable fuel (e.g. coal, natural gas) combusted. The remaining half of the emissions are a by-product of the clinker production process. Limestone (CaCO_3) and other chemicals are heated and undergo a chemical reaction that directly emits CO_2 . Cement manufacturers are subject to mandatory reporting, with emissions from the clinker production process reported as a separate line item. Staff proposes to assess a fee to the manufacturer based on the emissions of CO_2 from this process.

Imported Electricity

To provide context for the discussion of the application of the Fee to imported electricity, this section begins with a brief, general discussion of California electricity.

The electricity generation sector, including both in-state generation and electricity imported into the State, accounts for 23 percent of California's total greenhouse gas emissions. Sources of California's electricity include non-emitting generation such as hydropower, nuclear, and renewable energy (including solar, wind, geothermal, small hydropower, and biomass) as well as fossil fuel generation (primarily natural gas and coal). Non-emitting sources typically supply about 40 percent of California's electricity annually.

Natural gas supplies over 40 percent of total electricity consumed in California, and comprises the majority of in-state fossil fuel generation⁶. In-state generation from fossil fuels includes both power plants that deliver electricity to the grid, and cogeneration facilities that may use power onsite and/or sell power to the grid. Hydropower, nuclear power and renewables are also important in-state electricity sources. Very little of the electricity generated in-state is from coal.

AB 32 includes in its definition of "statewide greenhouse gas emissions" all emissions of greenhouse gases from the generation of electricity "delivered to and consumed in California, accounting for transmission and distribution losses, whether the electricity is generated in the state or imported" (HSC section 39505). Thus, AB 32 specifically requires ARB to consider imported electricity in the implementation of the statute.

California imports electricity from other western states, British Columbia and Northern Mexico. Most imported electricity is generated at facilities that burn coal or natural gas or at hydroelectric or nuclear facilities. The amount of electricity consumed, as well as the amount available from each source type, varies year to year, depending on the amount of water available and on variation in weather conditions.

Imported electricity typically supplies between 20 and 30 percent of the electricity consumed in California. However, because it includes a sizable percentage of high emission coal generation, it is responsible for about 50 percent of the greenhouse gas emissions associated with electricity generation, or 10 to 13 percent of total California greenhouse gas emissions. This proposed Fee would be imposed on imported electricity in order to reflect this significant source of California's greenhouse gas emissions.

To assess the Fee in an equivalent manner on both imported electricity and electricity generated in California, staff propose to apply, in both cases, the same

⁶ Source: CEC, 2007 Net System Power Report. See also System Power tables for 2002-2007 available at: http://energyalmanac.ca.gov/electricity/total_system_power.html

cost per metric ton of CO₂ emitted due to electricity generation. However, because California cannot apply the Fee to upstream suppliers of fuel to out of state generation facilities (as ARB proposes to do with in-state facilities), two different, but equivalent approaches are needed.

The discussion of Fee calculations below shows how the fee is applied to fuels used to generate electricity in-state, and to imported electricity. Although the units (therms of natural gas, short tons of coal, MWh of electricity) to which the Fee is applied may vary, the impact of the fee is equivalent for electricity generated in-state or out-of-state, because it is based on CO₂ emitted in the generation of electricity.

For electricity generated in-state, fees would be paid by entities that deliver natural gas for electricity generation, and facilities that consume coal for electricity generation. For imported electricity, it is not feasible for fees to be applied to suppliers of fuels, or to use the generation facility located out of state as the point of regulation, because California does not have jurisdiction over these entities. Instead, the fee would be applied to imported electricity when it is first delivered into California. The basis for calculating the Fee, the CO₂ emissions, is the same. However, the mechanism for collection and the entities subject to the Fee would be distinct.

Fees would be paid by entities that import electricity into California. These are retail providers of electricity and marketers, as defined in the regulation. There are approximately 70 retail providers and 60 marketers that could be subject to this regulation.

Electricity imported into California falls into two classes: electricity generated from specified sources (either a generation facility or an asset-owning or asset-controlling supplier for which emissions and electrical generation can be tracked), and electricity from unspecified sources (the facility where the electricity is generated is unknown). Quantities of imported electricity of both types are required to be reported under ARB's Mandatory Reporting Regulation.

The fee rate per MWh of electricity imported from specified sources would be calculated as the source's emission factor multiplied by the cost per MTCO₂ emitted (defined below as the Common Carbon Cost.) The next section on calculation methodologies shows, in detail, how emission factors are calculated for various kinds of specified sources. The calculations would use data that has been reported by the source either to ARB under the Mandatory Reporting Regulation, or to Federal agencies.⁷

⁷ Data reported to Federal agencies includes that reported to the U.S. Environmental Protection Agency pursuant to 40 CFR Part 75, downloadable at: <http://frwebgate3.access.gpo.gov/cgi-bin/PDFgate.cgi?WAISdocID=56534622613+1+2+0&WAIAction=retrieve>; and monthly and annual data on generation and fuel consumption at power plant and prime mover level reported to

For imported electricity from unspecified sources, staff would use a default emission factor of 0.499 MTCO₂ (1,100 pounds) per MWh of CO₂ per MWh. This default value was recommended by the CPUC and the CEC in CPUC Decision 07-09-017 as an interim regional default emission factor for electricity imported from unspecified sources for use in tracking and verification of greenhouse gas emissions⁸. As discussed in the decision, this value is close to the regional average for the western states, and also approximates an emission factor for marginal electricity generation available in the market (generated at a natural gas facility). Appendix D provides further detail on the default emissions factor for unspecified imports.

Coal

Coal combustion is responsible for approximately two percent of California's total greenhouse gas inventory. Owners and operators of power plants, cogeneration facilities and other facilities that use coal as a fuel and that are subject to ARB Mandatory Reporting Regulation are subject to the fee. The affected entities would report tons of coal and the associated grade of coal combusted.

D. Fee Calculation Methodology

ARB will annually calculate a cost per unit CO₂ under this regulation, based on the Total Revenue Requirement, the quantities of reported fuels, imported electricity, and process emissions and the fuel and imported electricity emissions factors.

Each year ARB would determine the annual revenue requirement. The Total Revenue Required would be the sum of legislatively approved AB 32 program expenditures and, in the first four years, an additional amount needed to repay the start up loans for ARB and Cal/EPA. The Total Required Revenue will also be adjusted for any excess or shortfall in collections from the previous year. The intended use of the Fee is to fund the administrative costs of activities to carry out AB 32, and not those related to adaptation or other climate activities. Additional detail is included in Appendix C.

the Energy Information Administration, and available online at:
http://www.eia.doe.gov/cneaf/electricity/page/eia906_920.html

⁸ CPUC (California Public Utilities Commission), 2007. Decision 07-09-017: Interim Opinion on Reporting and Verification of Greenhouse Gas Emissions in the Electricity Sector.
http://docs.cpuc.ca.gov/word_pdf/FINAL_DECISION/72513.pdf

Assigning a common cost to the emissions of greenhouse gases is a critical component to this regulation. This is known in the regulation as the Common Carbon Cost, or CCC and is defined as follows:

$$CCC = \frac{TRR}{(Q_c \times EF_c) + (Q_{ng} \times EF_{ng}) + (Q_g \times EF_g) + (Q_d \times EF_d) + (Q_{ie} \times EF_{ie}) + TE_I}$$

Where

TRR = Total Required Revenues in accordance with proposed section 95203(a)

$(Q_c \times EF_c)$ = Statewide total quantity of emissions from coal calculated as the sum of:

$(Q_b \times EF_b)$ = Quantity of bituminous coal x emission factor for bituminous coal;

$(Q_l \times EF_l)$ = Quantity of lignite coal x the emission factor for lignite coal;

$(Q_a \times EF_a)$ = Quantity of anthracite coal x the emission factor for anthracite coal;

$(Q_{sb} \times EF_{sb})$ = Quantity of subbituminous coal x the emission factor for subbituminous coal;

Q_{ng} = Statewide quantity in therms of natural gas supplied during the reporting period

EF_{ng} = Emission Factor of $MTCO_2$ for each supplied therm of natural gas

Q_g = Statewide quantity of California gasoline supplied during the reporting period. This is the volumetric sum of California gasoline produced or imported into California and the amount of finished CARBOB product produced or imported into California. The finished gasoline product is calculated as the volume of CARBOB multiplied by one plus the maximum amount of oxygenate designated for each volume of CARBOB.

EF_g = Emission Factor of $MTCO_2$ for each supplied gallon of California gasoline

- $Q_d =$ Quantity of California diesel fuel supplied during the reporting period
- $EF_d =$ Emission Factor of $MTCO_2$ for each supplied gallon of diesel fuel
- $(Q_{ie} \times EF_{ie}) =$ Total CO_2 emissions from total imported electricity as the sum of:
- $(Q_{sp} \times EF_{sp}) =$ Quantity of MWh of electricity imported from each specified source “sp” x emission factor for that specified source
- $(Q_{usp} \times EF_{usp}) =$ Statewide quantity of MWh of electricity imported from unspecified sources x emission factor for unspecified source.
- $TE_i =$ Total state process emissions for cement manufacturers and refineries, and emissions from the combustion of associated gas.

Once ARB calculates the CCC, the basic calculation methodology for the Fee applied to each sector is similar. Generally, the Fee is determined by multiplying the CCC by the total emissions for each entity. For entities reporting quantities of fuels or imported electricity, an intermediate step is necessary to calculate fee rates based on emissions per unit of fuel or electricity. For each fuel, Fuel Fee Rates are calculated based on the emissions associated with fuel combustion. Electricity fee rates are calculated for imported electricity based on the emissions from the generation of the electricity.

Calculation of Fuel Fee Rates for entities reporting quantity of fuel: For natural gas (not including associated gas), gasoline and diesel, and coal, the Fuel Fee Rate for each unit of fuel reported is the product of the CCC multiplied by the appropriate emission factor, as follows:

$$FR_i = CCC \times EF_i$$

Where:

- $FR_i =$ The Fuel Fee Rate for the fuel
 $CCC =$ Common Carbon Cost
 $EF_i =$ Emission Factor of $MTCO_2$ for each unit of fuel supplied or consumed.

Fuel units are therms, gallons and short tons for natural gas, gasoline and diesel, and coal, respectively. Emissions factors for each fuel are shown in Table 1 below.

Table 1: Emission Factors by Fuel Type

Fuel Type	CO ₂ Emission Factor	Emission Factor Units
Coal		
Anthracite	2,597.94	kg CO ₂ / short ton
Bituminous	2,328.35	kg CO ₂ / short ton
Sub-bituminous	1,673.64	kg CO ₂ / short ton
Lignite	1,369.32	kg CO ₂ / short ton
Natural Gas	5.302	kg CO ₂ / therm
Diesel	9.96	kg CO ₂ / gallon
Gasoline	8.55	kg CO ₂ / gallon

The fuel emission factors are those specified in Appendix A of the “Regulation for the Mandatory Reporting of Greenhouse Gas Emissions”, *ARB Compendium of Emission Factors and Methods to Support Mandatory Reporting of Greenhouse Gas Emissions*.

Fee for entities reporting quantities of fuel: For California diesel, California gasoline and the adjusted quantity of CARBOB, each gallon reported would be multiplied by the Fuel Fee Rate for each fuel to determine the annual fee. The Fee for each entity reporting fuel delivery or use is calculated as follows:

$$\text{Fee} = \text{FR}_i \times \text{QF}_i$$

Where:

QF_i = Quantity of fuel

FR_i = The Fuel Fee Rate for the fuel

Calculation of Imported Electricity Fee Rates: An Imported Electricity Fee Rate (EFR) will be calculated for each specified source, including asset-owning and asset-controlling suppliers, and the default emission factor previously discussed will be used to calculate an Imported Electricity Fee Rate for imported electricity from unspecified sources. Greenhouse gas emissions from the facilities that generate electricity depend on the quantities and types of fuels used, facility emissions, and on the efficiency with which the facility converts the energy in fuels to electrical energy. For any generating source or group of sources, a CO₂ emissions factor (MTCO₂ per MWh) can be calculated by dividing the total facility emissions by the total electricity output of the facility or group of facilities. Imported Electric Fee Rates will be calculated as follows:

$$\begin{aligned} EFR_{sp} &= CCC \times EF_{sp} \\ EFR_{asp} &= CCC \times EF_{asp} \\ EFR_{usp} &= CCC \times EF_{usp} \end{aligned}$$

Where:

“sp” denotes a specified source that is a generating facility or unit

“asp” denotes an asset-owning or asset-controlling supplier

“usp” denotes an unspecified source

CCC = Common Carbon Cost

EFR_{sp} = The Imported Electricity Fee Rate for the specified source

EFR_{asp} = The Imported Electricity Fee Rate for the asset-owning and asset-controlling suppliers

EF_{sp} = Emission Factor for specified source in $MTCO_2$ per MWh

EF_{asp} = Emission Factor for asset-owning and asset-controlling suppliers in $MTCO_2$ per MWh

EFR_{usp} = The Imported Electricity Fee Rate for unspecified sources

EF_{usp} = 0.499 $MTCO_2$ per MWh, the default Emission Factor for unspecified sources

Emission Factors for Imported Electricity

ARB will calculate emission factors for imported electricity from specified sources (including generation facilities, asset-owning and asset-controlling suppliers) by dividing the source’s CO_2 emissions by electric generation output as detailed in the equations below. The resulting emission factor for each specified source, in $MTCO_2$ per MWh, is applicable to any quantity of electricity imported from the source. Calculations are as follows:

For specified sources that are generating units or facilities:

$$EF_{sp} = \frac{E_{sp}}{EG}$$

Where:

EF_{sp} = Emission Factor for specified source in $MTCO_2$ per MWh

E_{sp} = CO₂ emissions from electricity generation for a specified electric generating facility/unit for the report year (MTCO₂)

EG = Net generation from a specified electric generating facility/unit for the report year (MWh)

(1) For specified electric generating facilities/units whose operators are subject to reporting or who voluntarily report under the Mandatory Reporting Regulation, E_{sp} shall be equal to the sum of CO₂ emissions directly associated with electricity generation as reported to ARB. Similarly, EG shall be the net generation reported to ARB.

(2) For specified electric generating facilities/units whose operators are not subject to Mandatory Reporting Regulation but who are subject to the Acid Rain Program (40 CFR Part 75), E_{sp} shall be equal to the amount of CO₂ emissions reported to U.S. EPA pursuant to 40 CFR Part 75 for the facility in metric tons for the report year. EG shall be data reported to EIA and published in the EIA 923 Excel file for the reporting year available at http://www.eia.doe.gov/cneaf/electricity/page/eia906_920.html (the EIA data).

(3) For specified electric generating facilities/units whose operators do not report to ARB under the Mandatory Reporting Regulation and do not report to U.S. EPA under the Acid Rain Program, EG shall be taken from the EIA data for the reporting year. E_{sp} shall be calculated using EIA data as shown below.

$$E_{sp} = 1000 \times \sum(Q_{fuel} \times EF_{fuel})$$

Where:

Q_{fuel} = Heat of combustion for each specified fuel type from the specified electric generating facility for the report year (MMBtu)

EF_{fuel} = CO₂ emission factor for the specified fuel type as described in the Mandatory Reporting Regulation, Appendix A (kgCO₂/MMBtu).

For asset-owning and asset-controlling suppliers:

$$EF_{asp} = \frac{\sum E_{asp} + \sum (PE_{sp} * EF_{sp}) + (PE_{usp} * EF_{usp}) - \sum (SE_{sp} * EF_{sp})}{\sum EG_{asp} + \sum PE_{sp} + PE_{usp} - \sum SE_{sp}}$$

EF_{asp} = Emission Factor for asset-owning and asset-controlling suppliers “asp,” in MTCO₂ per MWh

$\sum E_{asp}$ = the sum of CO₂ emissions from electricity generation for each specified electric generating facility/unit in the asset owning/controlling supplier's fleet, as reported to ARB under the Mandatory Reporting Regulation (MTCO₂)

$\sum EG_{asp}$ = the sum of net generation for each specified electric generating facility in the asset owning/controlling supplier's fleet for the report year as reported to ARB under the Mandatory Reporting Regulation (MWh)

$\sum PE_{sp}$ = Sum of electricity purchased from specified sources by the asset-owning or asset-controlling supplier for the year as reported to ARB under the Mandatory Reporting Regulation (MWh)

PE_{usp} = Amount of electricity purchased from unspecified sources by the asset-owning or asset-controlling supplier for the year as reported to ARB under the Mandatory Reporting Regulation (MWh)

$\sum SE_{sp}$ = Amount of wholesale electricity sold from a specified source by the asset-owning or asset-controlling supplier for the year as reported to ARB under the Mandatory Reporting Regulation (MWh)

EF_{sp} = CO₂ emission factor as defined for generating units and facilities.

EF_{usp} = CO₂ default emission factor for unspecified sources (0.499 MTCO₂ per MWh).

For unspecified sources:

The default emission factor for unspecified sources shall be the default emission factor of 0.499 MTCO₂ per MWh.

ARB will use the default emissions factor of 0.499 MTCO₂ per MWh to calculate emissions for electricity imported from all unspecified sources. Further detail on ARB's choice of this default emissions factor is provided in Appendix D. Sources of data used for calculating emissions from imported electricity include:

- data provided by marketers and retail providers (including asset owning and asset controlling suppliers) under ARB's mandatory reporting regulation
- data reported to the U.S. Environmental Protection Agency pursuant to 40 CFR Part 75
- data on generation facilities reported to the Energy Information Administration, including fuel use, fuel heat content, and net electricity generation

Fee for Entities Reporting Imported Electricity

For each retail provider or marketer the Fee is based on the quantity of electricity imported from each specified source and from unspecified sources as reported:

$$\text{Fee} = \text{EFR}_i \times \text{QM}_{ei}$$

Where:

EFR_i = The Electricity Fee Rate for the specified source or unspecified source.

QM_{ei} = Quantity of electricity imported

E. Administration and Enforcement

The first year of implementation differs with respect to the submittal of reports to ARB. All affected entities would be required to report their 2008 emissions, or quantities of therms or fuels by January 2010 utilizing the Mandatory Greenhouse Gas Emissions Reporting Tool (Tool), in accordance with section 95104(e) of the Mandatory Reporting of Greenhouse Gas Emissions Regulation. ARB would send out Fee Notices to the affected entities by February 1, 2010, and payment would be due in April, 2010.

In subsequent years, affected entities would report their prior calendar year's emissions in June using the Tool. For those entities subject to ARB's Mandatory Reporting Regulation, changes made to the reported data as a result of the verification process must be concluded by December 1 of each year. Fee Notices would be sent out in January, the following year, and Fee payment would be in March, the same year the Fee Notice is sent.

ARB will modify the Reporting Tool so the affected entities not subject to the Mandatory Reporting Regulation can also report their information using the Tool.

The proposed Fee regulation includes enforcement provisions. Any violation of the proposed regulation is subject to the penalty provisions set forth in Health and Safety Code section 38580. Failure to submit any required report, submittal of incorrect statements, or to pay the Fee would constitute a violation. The proposed regulation also includes audit provisions, whereby ARB may contract with outside entities to obtain data or services needed to audit the returns provided by Fee payers. ARB may use Fee revenues collected to fund auditing and collection procedures.

F. Expenditures to be Supported by AB 32 Cost of Implementation Fee

The purpose of this proposed regulation is to repay loans that were used to fund ARB and the California Environmental Protection Agency's (Cal/EPA) implementation of AB 32 in fiscal years 2007/2008 and 2008/2009 and to create

a stable and steady funding source for state agencies to carry out AB 32 in future years. This section describes the loans, as well as how ARB proposes to determine the Required Revenue to carry out AB 32 in fiscal year 2009/2010 and future budget years.

This fee would cover expenditures for implementing AB 32, including:

1. 2007/2008 fiscal year loan repayment for ARB and Cal/EPA
2. 2008/2009 fiscal year loan repayment for ARB and Cal/EPA
3. 2009/2010 fiscal year and future year costs for ARB, Cal/EPA and other California state agencies.

The amount of revenue collected through the fees is the Required Revenue, which is the total amount of funds necessary to recover the costs of implementing the AB 32 program, plus loan repayment. The Required Revenue is based on the number of personnel positions, including salaries and benefits, and other expenses (contracts, equipment, etc.), approved in the California Budget Act for that fiscal year. The Total Required Revenue is the Required Revenue adjusted for excess or under collection from the previous fiscal year.

Repayment of Loans

For the 2007/2008 fiscal year, a portion of the expenditures by ARB and Cal/EPA to implement AB 32 were supported by loans. ARB is proposing that only loan-related budgeted costs be recouped. ARB received a loan of approximately \$15.2 million from the Motor Vehicle Account (MVA) and was budgeted for approximately \$8.5 million from the Air Pollution Control Fund (APCF).⁹ Cal/EPA also received a loan of approximately \$300,000 from the MVA.

For the 2008/2009 fiscal year, most of the budgeted resources needed to implement the AB 32 program for ARB and Cal/EPA were provided through a \$32 million loan from the Beverage Container Recycling Fund (BCRF). The loan was approved, with loan repayments spelled out in the Budget Act (AB 1781, Chapter 268, statutes of 2008). Table 2 illustrates the loan breakdown by fiscal year for ARB and Cal/EPA.

⁹ The funding from the Air Pollution Control Fund came from ARB and will not be repaid.

Table 2: ARB and Cal/EPA Loans to Carry Out AB 32

Fiscal Year	Loans (Approximate, in Millions \$)
FY 2007/2008	(MVA loan, ARB) \$15.2 (MVA loan, Cal/EPA) \$0.3
FY 2008/2009	(BCRF loan) \$32.0
Total	\$47.5

ARB proposes to repay these loans over four years, beginning in the 2009/2010 fiscal year. Repayment of the three loans will include accrued interest. This proposed repayment schedule meets the statutory obligation for repayment, and is described in greater detail in Appendix C. Table 3 shows the proposed loan repayment schedule. If ARB expends funds from the loan approved by the legislature for fiscal year 2009/2010A, this repayment schedule will be modified to incorporate repayment of that loan.

Table 3: Proposed Loan Repayment Schedule

Payment Date	Approximate Repayment Amount¹ Including Interest (Million \$)
June 30, 2010	\$13.7
June 30, 2011	\$14.0
June 30, 2012	\$13.8
June 30, 2013	\$13.2
Total	\$54.6

¹Does not add due to rounding.

ARB Expenses for Fiscal Years 2007/2008 and 2008/2009

In order to confirm that the funds loaned to ARB were expended on AB 32 related activities for fiscal years 2007/2008 and 2008/2009, staff reviewed the person years and other expenditures related to AB 32 in each fiscal year. This included the program staff workload associated with AB 32 work products, such as the Scoping Plan, various Early Action Measures, and additional regulatory measures. ARB utilized existing program staff, management oversight and program support staff, as needed, in order to complete the considerable workload within the statutory timeline.

Based on our initial evaluation of fiscal year 2007/2008 expenses, ARB expended resources in excess of the loan amount. Fiscal year 2008/2009 is still in progress, so the expenditures are preliminary, but similarly they show that ARB has expended resources in excess of the loan amount. With the proposed Fee regulation, ARB is proposing that only loan-related budgeted costs shown in Table 2 be recouped for prior fiscal years.

A summary of ARB's AB 32 expenditures for fiscal years 2007/2008 and 2008/2009 is provided in Tables 4 and 5 below. Additional detail is provided in Appendix C.

**Table 4: Estimated ARB Expenditures for the AB 32 Program
Fiscal Year 2007/2008**

	Costs (Million \$)*
Staff Related Costs	
• Salary	\$10.75
• Benefits	\$3.77
• Operating Costs	\$4.21
Program Oversight ¹	\$2.00
Contracts ²	\$4.65
Equipment	\$0.05
Total	\$25.43

¹Program Oversight includes Chairman's Office, Executive Office, administrative services and computer support expenses in proportion to the staffing for the AB 32 program.

²Estimated expenditures in the 2007/2008 fiscal year.

*Numbers do not add due to rounding

**Table 5: Estimated ARB Expenditures for the AB 32 Program
Fiscal Year 2008/2009 - Preliminary**

	Costs (Million \$)
Staff Related Costs	
• Salary	\$16.10
• Benefits	\$5.64
• Operating Cost	\$7.54
Program Oversight ¹	\$1.96
Contracts ²	\$5.92
Equipment	\$1.83
Total	\$38.99

¹Program Oversight includes Chairman's Office, Executive Office, administrative services and computer support expenses in proportion to the staffing for the AB 32 program.

²Preliminary estimate of expenditures in the 2008/2009 fiscal year.

Cal/EPA Expenses for Fiscal Years 2007/2008 and 2008/2009

Cal/EPA and ARB undertook a similar process to confirm that the Cal/EPA loans were expended on AB 32 related activities for fiscal years 2007/2008 and 2008/2009, reviewing the person years and other expenditures related to AB 32. Based on an initial evaluation of fiscal year 2007/2008 expenses, Cal/EPA expended resources in excess of the loan amount. Fiscal year 2008/2009 is still in progress, so the expenditures are preliminary estimates. However, combined with ARB's preliminary 2008/2009 expenditures, they show that the two agencies have expended resources in excess of the loan amount.

Like ARB, only funds loaned to Cal/EPA will be recouped by the fee for fiscal years 2007/2008 and 2008/2009. A summary of the expenditures is provided in Tables 7 and 8 below.

**Table 7: Estimated Cal/EPA Expenditures for the AB 32 Program
Fiscal Year 2007/2008**

	Costs¹ (Million \$)
Staff Related Costs	
• Salary	\$0.15
• Benefits	\$0.08
• Operating Cost	\$0.12
Contracts	0
Equipment	0
Total	\$0.34

¹Does not add due to rounding.

**Table 8: Estimated Cal/EPA Expenditures for the AB 32 Program
Fiscal Year 2008/2009 - Preliminary**

	Costs (Million \$)
Staff Related Costs	
• Salary	\$0.34
• Benefits	\$0.15
• Operating Cost	\$0.30
Contracts	0
Equipment	0
Total	\$0.79

Fiscal Year 2009/2010 Budget

In February 2009, the Legislature passed and the Governor signed the fiscal year 2009/2010 budget. This budget included a continuation of funding for ARB and Cal/EPA to carry out AB 32. For the 2009/2010 fiscal year, the Budget Act (SBX3 1, Chapter 1, Statutes of 2009) includes a \$35 million loan from the BCRF for ARB and Cal/EPA expenditures related to AB 32. ARB will consider this fee regulation in June 2009, and if approved, fee collection for the 2009/2010 fiscal year will begin in spring 2010. Timely implementation of this fee regulation could eliminate the need for some or all of the loan for the 2009/2010 fiscal year. If ARB and Cal/EPA do rely on the loan for some or all of their 2009/2010 expenditures, the fee will be used to repay the loan with interest. These loan repayments would be added to the repayment schedule shown in Table 3, and extend final payment by one year.

Funding Criteria

AB 32 provides ARB with the authority to adopt fees for the broad purpose of “carrying out this division.” For the 2009/2010 fiscal year and future fiscal years, ARB proposes to use the following criteria to determine which expenses would be funded from this fee.

- Staff related expenditures for the start-up and ongoing implementation of the AB 32 program that have been approved through budget change proposals (BCPs) after AB 32 was signed into law (September 2006).
- Other post AB 32 BCPs approved costs directly related to the administration of AB 32 programs to reduce greenhouse gas emissions, such as contracts, administrative overhead, and research directly related to the implementation of the AB 32 program.

For the 2009/2010 fiscal year and future fiscal years, ARB proposes that the following types of activities *not* be funded through AB 32 fees:

- Redirected staff positions working on AB 32 that were not approved in the formal budget process with an approved BCP;
- Costs incurred by non-state agencies such as air quality/pollution districts, other special districts, etc;
- Activities which are currently funding a part of an agency’s principal responsibilities (water conservation, waste reduction, traffic planning, etc.) that achieve greenhouse gas emission reductions as a co-benefit;
- Specific greenhouse gas emission mitigation activities that started prior to the passage of AB 32 or were covered by earlier budget requests;
- Activities related to adaptation to climate change, including adaptation-related research;

- Activities related to compliance with the California Environmental Quality Act (CEQA) requirements for state agencies related to climate change/greenhouse gas emissions; and,
- Compliance with existing and future programs, regulations or other initiatives for state agencies which reduce their own greenhouse gas emissions.

Funding for AB 32 Implementation in Fiscal Year 2009/2010 Budget

Several other state agencies have been working with Cal/EPA and ARB on AB 32 implementation, including work on the Climate Change Scoping Plan that ARB adopted in December 2008. The Scoping Plan describes a broad range of measures, including many measures that are the primary responsibility of other state agencies. These agencies, which all meet the funding criteria described above, include: the Department of Food and Agriculture, Energy Commission, Department of General Services, and Integrated Waste Management Board.

Table 8 below provides a preliminary summary of anticipated state agency expenses, including staffing levels, for the AB 32 program for the 2009/2010 fiscal year. Note that the numbers contained in the table are preliminary and subject to change due to potential changes to the adopted 2009/2010 budget during the May revise. A final determination of the required revenue for fiscal year 2009/2010 will be made once final budget information becomes available. Additional detail is provided in Appendix C.

Table 8: Preliminary Summary of AB 32 Program Funding for FY 2009/2010

State Agency	PYs	Total Costs (in Million \$)
Air Resources Board	155	\$ 33.1
Integrated Waste Management Board	6	\$ 1.3
Energy Commission	5	\$ 0.6
Environmental Protection Agency	4	\$ 0.7
Department of General Services	2	\$0.2
California Department of Food and Agriculture	2	\$ 0.3
TOTAL	174	\$ 36.2

G. Ensuring Consistency with AB 32 Fee Authority

California law requires that a “nexus” must exist between a fee and the program funded by the Fee. If an adequate nexus does not exist, this Fee could be determined to be a tax. Health and Safety Code section 38597 specifically states that fees may be assessed on sources of greenhouse gas emissions regulated

pursuant to the division and consistent with Health and Safety Code section 57001.

Health and Safety Code section 38597 provides that ARB may adopt a regulation imposing fees on “sources of greenhouse gas emissions” regulated pursuant to AB 32. The proposed regulation imposes fees on upstream suppliers of natural gas and transportation fuels. Some stakeholders have argued that these upstream suppliers are not “sources” of greenhouse gas emissions within the meaning of section 38597, but that “sources” are the end users who actually burn the natural gas and transportation fuel (e.g., individual business, households, motorists, etc), and thereby directly emit greenhouse gases into the atmosphere.

ARB staff does not agree with this argument. Staff believes that the proposed regulation is consistent with section 38597 for the following reasons. First, some of the entities on which fees are imposed are clearly “sources” of greenhouse gas that are directly emitted into the atmosphere. These entities include refineries and cement producers (who generate process emissions from their operations) and facilities that burn coal. Stakeholders have not suggested otherwise.

Second, to address emissions from natural gas and transportation fuels, the proposed regulation is simply an administrative mechanism for efficiently collecting fees on downstream “sources” of greenhouse gas emissions based on the assumption that the costs of the fees will be passed on to downstream end users who actually combust the natural gas and transportation fuel.¹⁰

Gasoline and diesel fuels are burned by millions of individual motorists, as well as millions of individuals who operate small combustion sources such as construction and farm equipment, water pumps, lawn mowers, chainsaws, stoves and water heaters in homes, boats, off-highway all-terrain vehicles, snowmobiles and many others. Equipment that burns natural gas, gasoline, or diesel fuel is owned and operated by virtually every household and business in California. It would be inefficient, impractical and overly burdensome to impose fees on all of the individuals who own or operate such equipment. To do this, a fee would need to be imposed on essentially every person who resides in California.

H. Amendment to Mandatory Reporting Regulations

Additionally, this regulatory package proposes to amend the Mandatory Reporting Regulation. The Mandatory Reporting Regulation provides for reporting of GHG emissions electronically. The proposed amendment requires entities subject to the Mandatory Reporting Regulation to submit data via ARB’s GHG Reporting Tool for ease of use and consistency in reporting.

¹⁰ Upstream suppliers of transportation fuels and natural gas are also “sources” of greenhouse gas emissions in the sense that they are in the business of placing a commodity into the stream of commerce that will ultimately result in greenhouse gas emissions.

III. Recommended Action and Alternatives to the Proposed Regulations

Recommended Action

To provide the funding authorized by Health and Safety Code section 38597, the staff recommends that the Board adopt the proposed AB 32 Cost of Implementation Fee Regulation. This would be put into effect by adopting new sections 95200 through 95207, title 17, CCR, as contained in Appendix A.

Evaluation of Regulatory Alternatives

California Government Code section 11346.2 requires ARB to consider and evaluate reasonable alternatives to the proposed regulation and provide reasons for rejecting those alternatives. This section discusses alternatives evaluated and provides the reasons why they were not included in the proposed rulemaking. No alternative considered by the agency would be more effective in carrying out the purpose for which the regulation is proposed or would be as effective or less burdensome to affected private parties than the proposed regulation.

A. No Action on AB 32 Cost of Implementation Fee

A “no action” alternative means that no fee would be assessed on sources of greenhouse gas emissions to cover the costs of carrying out the requirements of AB 32. Taking the “no action” approach would require that alternative funding sources be secured. It is unclear what these funding sources would be at this time. It is possible that in obtaining another source of funding, other projects would not be able to obtain funding, and/or the AB 32 climate change program would have to be diminished. This alternative was rejected as it is inconsistent with AB 32 and recent legislative intent.

B. No Action on Amendment to Mandatory Reporting of Greenhouse Gas Emissions Regulation

A “no action” alternative for amending the Mandatory Reporting of Greenhouse Gas Emissions Regulation means that the Mandatory Reporting Regulation would not be amended to require the use of the California Greenhouse Gas Reporting Tool (Tool) for data collection for the AB 32 Cost of Implementation Fee. Without the use of the Tool, the level of quality control and quality assurance that are possible with the Tool would be difficult to match. The Tool provides for automatic data check, and data security. Additionally, due to the ease of administration, the Tool reduces costs. Use of this “no action” alternative would result in a loss of these benefits.

C. Alternatives to this Broad-Based Fee Regulation

Staff considered analyzing each greenhouse gas-related regulation as it is developed, with the intent of adding a fee component to each regulation to cover costs required to carry out the goals of AB 32. However, this alternative would mean that ARB would not have the funds to start up each program and would need to borrow money to develop the regulation. Once the regulations were adopted, the Fee could cover the costs of carrying out the implementation of the regulation, but the borrowed money, including interest, would need to be repaid. This would increase costs, considering that each regulation would require borrowing money and repaying those loans with interest.

In addition, the complexity required for implementation of a regulation may not be proportional to the amount of emissions reductions achieved by that regulation. This could create an equity issue, in that some regulations may only decrease a small amount of greenhouse gas emissions but require a large number of resources to develop and carry out the reduction of those emissions, while other regulations may achieve a relatively large amount of emissions reductions, but have lower costs due to a lower level of complexity. In addition, every regulation would have an increased level of complexity due to the need to include the analysis to determine the appropriate fee levels required from each entity to cover the costs of carrying out the regulation. This would increase the cost of carrying out each regulation, thereby compounding total costs to affected entities, compared to the costs associated with the staff's proposed approach.

Furthermore, because California's greenhouse gas emission reduction program, as described in the Scoping Plan, includes regulatory measures that are not intended to be adopted by ARB, as well as non-regulatory measures, pursuing a regulation-by-regulation approach would mean that some sectors or source categories may not be subject to Fees while ARB-regulated sectors would have associated fees which would create inequity among the sectors.

D. Downstream Alternative

ARB staff considered assessing the Fee on the ultimate consumer of products that emit greenhouse gases. Under this alternative, ARB would assess fees on residential, commercial, and industrial users of natural gas; the owners or operators of cars, trucks and other equipment that combust gasoline and diesel fuel; and the end-users of electricity. This general approach was rejected as being administratively infeasible.

For natural gas, the Fee would be assessed on residential, commercial and industrial users. Although the largest industrial users of natural gas are already reporting their greenhouse gas emissions under the Mandatory Reporting Regulation, this alternative would dramatically increase the number of points of assessment by including residential and commercial customers, increasing

record-keeping and collection costs. In addition, because the largest industrial users of natural gas would already be billed for their greenhouse gas emissions through the Mandatory Reporting Regulation, this downstream alternative adds a layer of complexity in that a method would need to be developed to extract their natural gas combustion quantities from the aggregate amount of natural gas reported by the public utility gas corporations. Without this extraction of data, the largest industrial users of natural gas would be billed twice for the same natural gas.

For gasoline, the Fee could be assessed at the pump but because the amount of the fee that is required to implement AB 32 is less than one-tenth of a cent per gallon, the purchase of ten gallons would generate a fee of only a penny, excessively increasing administrative costs. ARB also considered assessing the Fee at the “rack,” formally known as the terminal rack. The rack is the location in the fuel distribution system where fuel is blended with oxygenates and other additives and then distributed to gas stations. Fuels that are imported into the state can be transported directly to racks and are therefore not accounted for at the refinery level. A fee at the rack would increase administrative burden by doubling the number of collection points – increasing the administrative burden while still being upstream of the end user.

For electricity, the Fee would be assessed at the consumer-level and would necessarily apply to all electricity consumed, whether generated in-state or out-of-state. This approach would apply the Fee to consumers of electricity without regard to whether that electricity was a source of greenhouse gas emissions or not, thereby adding an undue burden on some consumers. In addition, this option would tremendously increase the number of regulated entities, increasing administrative burden, and therefore administrative costs.

ARB chose not to pursue the downstream alternative due to the increase in administrative burden, increased record-keeping and fee collection costs, which would increase the overall cost of carrying out AB 32 mandates.

E. Alternatives Considered for Imported Electricity

ARB staff considered three alternatives to assessing a fee on imported electricity: no fee on imported electricity, assessing the fee on the suppliers of the electricity-generation fuels for out-of-state generation facilities, and assessing the fee on in-state electric retail providers.

No Fee on Imported Electricity – Staff considered the option of not applying the fee to imported electricity. However, this option was rejected because this would mean that sources of approximately 10 to 13 percent of California’s greenhouse gas emissions would not be covered by the Fee, which would make the Fee regulation less equitable, increasing costs on remaining fee payers. Additionally,

at workshops held by ARB several stakeholders asked ARB to include imported electricity if at all possible.

Assessing the Fees on the Suppliers of the Electricity Generation Fuels for Out-of-State Generation Facilities – ARB considered applying the Fee to fuel suppliers for out-of-state generation facilities, as is proposed for in-state generation facilities. However, it is not possible for fees to be applied to out-of-state suppliers of electricity generation fuels, or to use the generation facility located out of state as the point of regulation, because California does not have jurisdiction over these entities.

Assessing a Fee Solely on In-State Electric Retail Providers – Assessing a fee solely on in-state electric retail providers, based on the imported electricity they use, would require that the retail provider identify the generating facilities that are the sources of the electricity. Each generation source has a distinct emissions factor. When the source is identified, ARB can then calculate a source emissions factor and accurately determine a fee rate. However, retail providers may not be able to identify the sources of electricity purchased from marketers, even though the marketers may have that information. In such cases, the emissions factor would be unknown, and a fee could not be accurately calculated. Therefore, by solely assessing fees on retail providers, some information would be lost, reducing the accuracy of the application of the Fee. Assessing the Fee on both the retail providers and the marketers results in fewer unspecified sources of electrical generation. The recommendation by the CEC and CPUC is to obtain such information from the first deliverer, which includes the marketers.

F. Expanding Coverage of Fee to Additional Sources

ARB staff considered expanding the Fee to cover the remaining 15 percent of greenhouse gas emissions. Staff rejected this alternative for three primary reasons. First, some of the greenhouse gas emissions that are not proposed to be covered under the Fee are fugitive emissions (such as methane emissions from dairy operations and landfills) that are difficult to accurately measure in order to assess an equitable fee. Second, some types of emission sources (such as jet fuel and kerosene) contribute a small proportion of greenhouse gas emissions, so the administrative burden of including those emissions outweighs the potential increase in revenue. Third, staff opted not to pursue a fee on high GWP gases because there is already a regulation planned to assess mitigation fees on high GWP gases, which is expected to be considered by the Board within the next year. Some portion of the high GWP fee will be dedicated to program implementation costs, and the high GWP mitigation program will be administratively self-supporting.

IV. Impacts Analysis

The California Environmental Act (CEQA) and ARB policy require an analysis of the potential adverse environmental impacts of proposed regulations. The Secretary of Resources has certified ARB's program for the adoption of regulations. Public Resources Code, Section 21080.5, allows public agencies with regulatory programs to prepare a plan or other written document in lieu of an environmental impact report, once the Secretary for Resources has determined that ARB meets the criteria for a Certified State Regulatory Program (Title 14, California Code of Regulations (CCR) section 15251 (d)). This certification allows ARB to include an environmental analysis in the Initial Statement of Reasons for the adoption of regulations, instead of preparing Negative Declarations or Environmental Impact Reports (EIRs). In addition, ARB will respond in writing to all significant comments that pertain to potential environmental impacts raised by the public during the public review period or at the Board hearing. These responses will be contained in the Final Statement of Reasons for the regulation.

ARB's basis for analysis originates from the CEQA Guidelines' Initial Study Checklist. The following environmental impact areas were considered in making the determination of whether the adoption and implementation of the proposed regulation would result in a potential adverse impact:

A. Impacts to Air Quality and Other Environmental Impact Areas

Staff evaluated the potential environmental impacts from the proposed Fee regulation and the proposed amendment to the Mandatory Reporting Regulation and determined that no potential significant adverse environmental impacts to air quality or any other environmental impact area would result from the proposed regulations. The proposed Fee regulation simply assesses fees on various entities. The proposed amendment to the Mandatory Reporting Regulation would require the use of ARB's reporting tool. Neither would cause a physical change to the environment, directly or indirectly. It would not result in the disturbance or conversion of land, cultural, biological or water resources, increase energy demand, affect populations or increase the need for housing. It will not result in a change in existing transportation or in traffic, solid waste or affect the aesthetics of the State.

B. Environmental Justice

State law defines environmental justice as the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies (Senate Bill 115, Solis; Statutes of 1999, CH. 690; Government Code section 65040.12 (c)). On December 13, 2001, the Board approved

Environmental Justice Policies and Actions that establish a framework for incorporating environmental justice into ARB's programs, and that would be consistent with the directives of State law. The policies subsequently developed apply to all communities in California. Staff has determined that the proposed regulation and the proposed amendment would not result in an adverse impact to air quality, thus would not result in an increase in exposure to pollutants.

Adoption and implementation of this regulation will have no adverse environmental impacts on environmental justice communities. Staff believe the economic impacts will be extremely minor. The cost per person would be approximately \$1.00 to \$1.50 per year, or \$4.00 per household per year, assuming that the fee payers pass all their costs through to their customers.

V. Economic Impact Analysis

A. AB 32 Cost of Implementation Fee Regulation

In this section, ARB provides estimates of the costs to businesses of compliance with the staff's proposed fee regulation. ARB expects the regulation to directly affect approximately 230 businesses in the state. While staff has quantified economic impacts to the extent feasible, the cost estimates are based on historical data of industry-level emissions, fuel use, and commodity prices that are all highly variable. In addition, all calculations are based on current budget levels that may be changed by the Legislature. Consequently, the staff acknowledges that individual companies may experience different impacts than those depicted for each industry in this analysis.

The analysis begins with an explanation of how fee rates are based on reported emissions and annual budget levels. ARB will use its annual budgeted revenue requirement and emissions reported by fee payers to calculate a Common Carbon Cost per ton of emissions on a CO₂ equivalent basis (MTCO₂E). Each company's fee obligation is based on the Common Carbon Cost and the company's reported emissions and fuel distributions.

The analysis then examines the estimated distribution of the fee payments by industry. These payments represent the direct impacts on businesses. The analysis then assesses how the directly impacted businesses may try to recover the costs through output price increases.

B. Annual Cost of the AB 32 Cost of Implementation Fee Regulation

Assuming the Legislature continues to authorize AB 32 activities at fiscal year 2009/2010 budget levels, the regulation is expected to raise approximately \$51.2 million annually over the first three years of its operation, and about \$50.2 million in its fourth year. This level would cover \$36.2 million in annual program costs at fiscal year 2009/2010 budgeted levels and repayment of loans from special funds to support implementation of climate change programs by ARB and Cal/EPA in previous years. After the loans are repaid, the regulation would raise approximately \$36.2 million annually unless modified by the Legislature.

The Common Carbon Cost is determined by dividing the Total Revenue Requirement by total covered emissions, which includes the carbon content of covered fuels. The fees charged to each source will equal the Common Carbon Cost multiplied by the amount of the business' emissions. Table 9 demonstrates the calculation using emissions inventory data for 2006. Had the fee regulation been in effect in 2006, the emissions covered by the fee would have been about 412 million metric tons, in CO₂ equivalent. In this case, the Common Carbon

Cost per ton of emissions to cover only the \$36.2 million annual ongoing cost would be about \$0.09 per MTCO₂. The Common Carbon Cost per ton of emissions to cover the annual ongoing cost plus loan repayment would be about \$0.12 per MTCO₂E. The Common Carbon Cost would be recalculated each year based on budgeted revenue requirements and the amount of covered emissions.

Table 9: Sample Calculation of Common Carbon Cost Based on Fiscal Year 2009/2010 Estimated Expenditures			
Units		Annual Ongoing Costs Only	Annual Ongoing Costs Plus Loan Repayments
Revenue Requirement	Million \$	\$36.2	\$51.2
Covered Emissions (2006)	MMT	412	412
Common Carbon Cost	\$/MTCO ₂	\$0.0880	\$0.1244
Source: ARB calculations.			

C. Affected Industries by Sector

Table 10 presents estimates of the fee payments by sector. The first two columns contain the entities directly paying the Fee and their respective emission quantities in 2006. The fourth column presents the costs over the first four years of the program based on the assumption that all ARB and Cal/EPA loans are paid over that period. After the loans are repaid, the payments are based on the annual ongoing budgeted cost of \$36.2 million per year, as presented in column three. The estimated fee payment by source sector is calculated by multiplying the quantity of emissions subject to the fee by the Common Carbon Cost given in the last row of Table 10. The fifth column contains the estimated share of total revenue for each source sector.

Table 10: Affected Industries By Sector
 Example using 2006 Emissions Data and
 Fiscal Year 2009/2010 Estimated Expenditures

Sector	Estimated Fee Payments			Share of Costs by Emissions Source
	2006 Emissions	Annual Ongoing Costs Only	Annual Ongoing Costs Plus Loan Repayments	
	Million MTCO ₂	Million \$	Million \$	
Refinery Process Emissions	33.92	\$2.98	\$4.22	8.2
Gasoline	143.38	\$12.61	\$17.84	34.8
Diesel	42.84	\$3.77	\$5.33	10.4
Natural Gas	124.53	\$10.95	\$15.49	30.2
Associated Gas	3.24	\$0.28	\$0.40	0.8
Cement	8.39	\$0.74	\$1.04	2.0
Non-Cement Coal Use	5.74	\$0.50	\$0.71	1.4
Electricity Imports	49.64	\$4.37	\$6.17	12.1
Total	411.67	\$36.21	\$51.21	100.0
Common Carbon Cost	\$/MTCO ₂	\$0.0880	\$0.1244	

Note: Emissions data from 2006 ARB Emissions Inventory, all other entries based on ARB calculations.

Table 11 presents estimates of the number of businesses in each of the sectors expected to pay the proposed Fee. Businesses may operate more than one facility. Column three contains the average Fee payment for businesses by source for the first four years of the Fee, when the payment rates cover loan repayments. Column four contains the average payment for subsequent years after the loan repayment is complete. All annual cost figures assume a constant ongoing budget requirement of \$36.2 million per year.

Table 11: Estimated First Year and Ongoing Costs Per Business			
Source	Estimated Number of Businesses	Estimated Average Annual Cost for First Four Years	Estimated Average Annual Ongoing Costs
	Number	Million \$	Million \$
Cement	5	\$0.21	\$0.15
Refineries	21	\$1.32	\$0.94
Associated Gas	11	\$0.04	\$0.03
Electricity Imports	130	\$0.05	\$0.03
Non-Cement Coal	14	\$0.05	\$0.04
Natural Gas Direct Use and Distribution	50	\$0.31	\$0.22
Total	231		
Source: ARB estimates Assumes Fiscal Year 2009/2010 Expenditures are constant			

The estimate in Table 11 of the number of businesses in the electricity imports category is based on the number of businesses defined as retail providers and marketers of imported electricity that are active in California. This number could change from year to year.

The estimates in Table 11 are based on emissions inventory data for 2006. Since the regulation is designed to raise a fixed amount of budgeted revenue, a decrease in industry output and consequent emissions due to the current recession would have the effect of raising the Common Carbon Cost. This, in turn, would raise the cost of the Fee per unit of output. Similarly, prices in most of the sectors paying the Fee are highly variable, and ARB recognizes the fee impacts are sensitive to changes in those prices.

D. Mandatory Use of Greenhouse Gas Reporting Tool

The proposed regulation would also require entities subject to the Fee to use ARB's Greenhouse Gas Reporting Tool when reporting emissions or other information used for calculating the Fees. The Reporting Tool is a web-based platform designed to facilitate reporting and ease the administrative burden on respondents and ARB. A comprehensive users' guide, sector-specific reporting guidance, and other training aids will be provided. The use of the tool reduces the need for entities to develop their own reporting methods for this regulation, and lessening the possibility of reporting errors.

Entities already subject to the Mandatory Reporting of Greenhouse gas Emissions Regulation would not incur significant costs to use the Reporting Tool for compliance with this fee regulation. These entities include cement producers,

facilities combusting coal, oil producers combusting associated gas, refineries, electric utilities and marketers importing electricity, and natural gas producers and pipeline owners and operators. Some entities complying with the Reporting regulation for their direct emissions would have to augment their reports for the fee regulation with data on fuel distribution, but this should not represent a significant additional cost. These entities include refineries and natural gas pipeline owners and operators.

There would be some entities not currently required to comply with the Reporting Regulation that would be required to pay fees and use the Reporting Tool for reporting their data for fee calculation purposes. These would include interstate pipeline owners and operators, non-public utility gas corporation intrastate pipeline owners and operators, and transportation fuel importers without direct emissions above the Reporting threshold. These entities would only need to report their fuel throughput and any direct emissions, which should only involve insignificant costs

E. Economic Impact of AB 32 Fees

ARB expects that most businesses paying the Fee have the ability to pass the Fee costs through to consumers. The demand for gasoline and diesel is inelastic and the carbon-content portion of the Fee is also assessed on imported fuel, so the refiners should have the ability to pass on Fee costs. Although imported transportation fuels do not bear the cost of process emission fees, these are a small percent of the total. Because the Fee will affect providers of gasoline and diesel fuel in substantially the same way, ARB believes that the Fee will likely be passed on to customers.

Electricity importers, cogeneration facilities, and natural gas-fired power plants should be able to pass the Fee cost on to the load-serving entities. The load-serving entities can then recover the passed-through Fee costs as a price increase over all of their deliveries. ARB believes that imposition of the Fee is too small to affect wholesale market dispatch.

Charging the Fee on the burning of associated gas in petroleum production would raise the cost of producing petroleum in California. In 2006, California produced about 249 million barrels of oil. If the 2006 emissions and oil production rates prevail when the Fee is applied the fee would amount to about \$0.002 per barrel, equal to less than 0.1% of recent prices. ARB does not know if all petroleum producers burn associated gas or whether each company's combustion is proportional to its oil output. If companies do not combust associated gas in the same relation to output then the Fee cost per barrel for some of those paying the Fee would be higher than ARB's estimate.

California both produces and imports oil. The presence of imports may limit the ability of the oil producers to pass the full Fee costs on to the refineries. In

addition, ARB cannot determine the covered emissions for entities combusting associated gas, so ARB is unable to determine the financial impact of the regulation on individual companies expected to pay the Fee. However, the average Fee cost per barrel produced appears to be very low at the industry level, and ARB does not consider it likely to have a significant adverse economic impact on oil producers.

The amount by which cement producers would need to raise their prices is very small, estimated to be about \$0.10 per ton, or less than 0.2% of recent prices. The ability of cement manufacturers to pass on the Fee costs may also be limited by the availability of imports. Unlike transportation fuels, natural gas, and electricity, the Fee would not be assessed on imported cement and cement products. The presence of significant import supply on which the Fee is not assessed could limit the ability of California cement manufacturers to pass on the entire Fee cost to consumers of cement.

ARB has evaluated the impact of the Fee on cement manufacturing companies' profitability assuming that the cement companies are not able to pass on any of the Fee costs. Generally, ARB uses the return on equity (ROE) as a measure of a company's profitability. ARB has determined that even if cement manufacturers are unable to pass on any of the Fee cost, the reduction in their profitability would be less than a 1 percent decrease in ROE. ARB believes the parent companies of California plants are sufficiently large so that the costs will not significantly affect profitability, even in the unlikely case that cement plants cannot pass on any of their Fee costs.

Businesses not directly paying the Fee would face higher costs as producers directly paying the Fee pass on the fee costs. However, as shown in Table 12, these price increases to be very small. ARB has determined that these indirect cost increases will not have a significant adverse economic impact on businesses and individuals.

F. Potential Impact on Consumers

ARB expects that businesses paying the Fee will recover most of the cost of the fee by raising output prices. Table 12 presents estimates of the increase in output prices needed for businesses to completely recover the fee over the first four years of the regulation, when previous loans are repaid. Column five presents the Fee cost per unit of output. In some cases, the businesses producing products listed in Table 12 pay fees on more than one of the sources listed in Table 10. For example, the combined fees assessed on electrical generation and delivery, including coal for cogeneration, natural gas, and imported electricity totals about \$0.05 for each MWh consumed in California. Electricity load-serving entities would need to raise their average retail price by that amount to recover the combined fee, equal to about 0.04% of the 2006 retail price of \$120 per MWh.

Table 12: Estimated Change in Output Prices Needed to Recover Fee Payments						
Product	Units	Product Price	Number of Units (2006)	Fee Cost per Unit of Output	Percent Change in Product Price	Revenue
		\$/Unit	Units	\$/Unit	%	Million \$
Electricity	MWh	\$120.00	269,271,000	\$0.0495	0.04	\$13.32
Gasoline	Gallons	\$2.20	15,974Billion	\$0.0013	0.06	\$21.50
Diesel	Gallons	\$2.20	4,182 Billion	\$0.0015	0.07	\$6.29
Non-Electricity Natural Gas	Therms	\$1.24	130,600,000	\$0.0007	0.05	\$9.06
Cement	MT	\$75.00	11,500,000	\$0.0907	0.12	\$1.04
Total						\$51.21
NOTES						
1. Electricity and natural gas data from California Energy Commission.						
2. Cement data based on industry estimates.						
3. Gasoline and diesel quantities based on data reported to ARB.						
4. Coal is incorporated in electricity and cement products.						

In the same manner, the cost estimates for gasoline and diesel include the fees assessed on their carbon content as well as fees assessed in their production, such as associated gas and process emissions. Note that the associated gas fee is levied at the point of production, but for the purposes of estimating the potential impact on consumers the calculations in Table 12 the assumption is made that the Fee is passed on to the refinery as part of the cost of petroleum production. The Fee costs on associated gas are then reflected in the price of gasoline or diesel. The cost estimates for cement include both coal combustion and process (clinker) emissions. The cost estimate for natural gas combustion in Table 12 covers only non-electricity uses.

VI. Summary and Rationale for Proposed Regulations

The proposed AB 32 Cost of Implementation Fee Regulation would assess fees on approximately 85 percent of the sources of greenhouse gas to support implementation of the Global Warming Solutions Act of 2006, Assembly Bill 32, Chapter 488, Statutes of 2006 (AB 32). The fees would be assessed on sources of greenhouse gas, with each fee being calculated separately for each source. This section discusses the requirements and rationale for each provision of the proposed regulations.

The proposed amendment to the Mandatory Reporting of Greenhouse Gas Emissions regulation requires operators and verifiers subject to the Mandatory Reporting regulation to use ARB's reporting tool.

A. Proposed AB 32 Cost of Implementation Fee Regulation

Section 95200. Purpose.

Summary of Proposed Regulation.

This section states the purpose of the regulations. Specifically, pursuant to Health & Safety Code section 38597, the Board is adopting this Fee schedule to collect fees to carry out AB 32.

Rationale for Proposed Regulation.

This section is needed to ensure the regulated public understands that fees generated from these regulations will be used for implementation of programs pertinent to AB 32.

Section 95201. Applicability.

Summary of Section 95201(a).

Subsection (a) of the proposed regulation outlines that the fees will be imposed on the category of sources stated in subsections (a)(1) through (a)(6).

Rationale for Section 95201(a).

This section is required in order to identify the entities to which this regulation would apply.

Summary of Section 95201(a)(1), Natural Gas Utilities and Users.

Subsection (a)(1) addresses natural gas utilities and users. A fee is assessed on each therm of natural gas: (1) delivered to any end user in California by a public utility gas corporation (defined in section 95202 subsection (a)(70)), (2) owners and operators of interstate and intrastate pipelines that distribute natural gas directly to end users in California, (3) all owners or operators consuming natural gas or associated gas produced on-site that are subject to the Mandatory Reporting Requirements of Title 17, California Code of Regulations sections 95100 *et seq.* ("Mandatory Reporting Requirements."), and (4) owners and operators that consume associated gas that is produced on-site and are subject to the Mandatory Reporting Regulation.

Rationale for Section 95201(a)(1).

This section is necessary for two reasons: the first is to include natural gas utilities, users and pipeline owners and operators that distribute natural gas for use in California because combustion of natural gas is responsible for 26 percent of greenhouse emissions in California. The second reason is that it is necessary to define where in the chain of commerce the Fee will be assessed and address each and every natural gas producer or consumer at the most upstream point possible for natural gas utilities, users and pipeline owners and operators that distribute natural gas for use in California. As explained elsewhere in this report, ARB considered several alternative methods of assessing the Fee. Assessing the Fee at the most upstream point possible was determined to be the most economically feasible, while the costs of the Fee could be passed through to the ultimate consumer of natural gas.

Summary of Section 95201(a)(2), Producers and Importers of Gasoline and Diesel Fuels.

Subsection (a)(2) outlines that the Fee would be assessed on: (1) all producers and importers of California gasoline or California diesel, based on the number of gallons of gasoline or diesel fuel, and (2) all producers and importers of CARBOB, based on each gallon of CARBOB plus the designated oxygenate amount.

Rationale for Section 95201(a)(2).

It is necessary to include transportation fuels such as gasoline and diesel fuel because emissions from combustion of transportation fuels contribute 38 percent of the greenhouse gas emissions in California. This section is necessary to define the scope of the Fees assessed on producers and importers of gasoline and diesel. Each subsection is necessary to address a separate sector of transportation fuel producers and importers

Summary of Section 95201(a)(3), Refineries.

Subsection (a)(3) proposes to impose a fee on all owners or operators of refineries that emit process emissions, including refineries that produce or consume catalyst coke, petroleum coke, refinery gas or produce emissions that result from the steam methane reforming process. The Fee will be based on reported emissions.

Rationale for Section 95201(a)(3).

It is necessary to include these refineries because the process emissions produced are sources of greenhouse gases and must be included in the Fee base to ensure the widest possible base of Fee payers.

Summary of Section 95201(a)(4), Cement Manufacturers.

Subsection (a)(4) proposes to impose a Fee on cement manufacturing facilities that emit greenhouse gases. The Fee will be based on reported emissions.

Rationale for Section 95201(a)(4).

It is necessary to include these refineries because the process emissions produced are sources of greenhouse gases and must be included in the Fee base to ensure the widest possible base of fee payers.

Summary of Section 95201(a)(5), Retail Providers and Marketers of Imported Electricity.

Subsection (a) (3) proposes to impose a Fee on retail providers or marketers of imported electricity. The Fee will be paid based on the greenhouse gas emissions associated with each Megawatt-hour of imported electricity.

Rationale of Section 95201(a)(5)

It is necessary to include importers of electricity because the out-of-state generation of electricity to supply California consumers results in greenhouse gas emissions. These emissions must be included in the Fee base to ensure the widest possible base of fee payers. This method will result in a fee that is equitable to that proposed to be assessed on in-state electricity, however the method is different because ARB does not have the authority to regulate providers of fuel to electricity generators located out-of-state

Summary of Section 95201(a)(6), Facilities that Combust Coal.

Subsection (a)(5) proposes to impose a Fee on the combustion of coal in California if the owner or operator of the combusting facility is subject to the Mandatory Reporting Requirements. The Fee will be based on reported emissions.

Rationale for Section 95201(a)(6).

It is necessary to include these facilities that combust coal because the emissions produced are sources of greenhouse gases and must be included in the fee base to ensure the widest possible base of fee payers.

Summary of Section 95201(b)(1) through (9).

Subsection (b) proposes to exclude greenhouse gas emissions caused by combustion of certain fuels (aviation gasoline, jet fuel, kerosene, liquefied petroleum gas, biodiesel, renewable diesel, residual fuel oil, propane and fuel exported for use outside California) from the Fee.

Rationale for Section 95201(b)(1) through (9).

These fuels are excluded because the total greenhouse gases emitted by these sources is too small a portion of the greenhouse gas inventory to capture and the points of regulation are too numerous (potentially in the tens of thousands) to administer in a cost effective manner.

Section 95202. Definitions.

Summary of Section 95202

This section proposes definitions to the terms used in this regulation.

Rationale for Section 95202.

It is necessary that ARB defines its terms as they apply to the AB 32 Cost of Implementation Fee Regulation. Most of these terms are used in other Articles and Titles in the California Code of Regulations, Government Code sections or statutes, and it is necessary that ARB be consistent with existing definitions to the extent that they apply to this regulation.

Section 95203. Calculation of Fees.

Summary of Section 95203(a), Total Required Revenue (TRR).

This subsection proposes to define the elements that will compose the annual Total Required Revenue. The Total Required Revenue (TRR) shall include Required Revenue plus any shortfalls or excesses from the previous fiscal year. The Required Revenue will be based on the number of personnel positions and contracts approved in the California budget for each fiscal year for all agencies implementing AB 32. The TRR must also include payments required to be made by ARB for loans obtained in implementing AB 32 within ARB for the 2007/2008 and 2008/2009 fiscal years. Repayment of the loan for 2008/2009 is required by Assembly Bill 1781, Chapter 268, Stats. 2008, page 309.

Rationale for Section 95203(a).

This section is needed to define the total amount of money that ARB will collect on an annual basis, and so the regulated public will be able to accurately compute the cost of the efforts of state agencies implementing AB 32. Inclusion of the debt is necessary because it is required by AB 1781 as a debt to be repaid. ARB has no other means of raising funds to pay down the debt, as required by law.

Summary of Section 95203(b), Common Carbon Cost (CCC).

This section proposes a formula to calculate the fees that will be paid by the entities defined in Section 95201. First, a “common carbon cost” or “CCC” will be calculated, which will be a unit cost of each metric ton of carbon dioxide (MTCO₂). This cost will be determined dividing the TRR by the proportion of greenhouse gas emissions

Rationale for Section 95203(b).

This section is necessary to calculate the cost of each MTCO₂. The CCC is the basis for the calculation of Fee rates which allow the Fee to be applied equitably to all sources of emissions subject to this regulation.

Summary of Section 95203(c), Fuel Fee Rate.

This section proposes to calculate a Fuel Fee Rate for emissions from combustion of natural gas, motor vehicle fuels and coal. The Fuel Fee Rate is multiplied by the CCC calculated in section 95203(b) and the emission factor of each fuel.

Rationale for Section 95203(c).

This section is necessary to describe how to calculate a fee for each fuel instead of using the same fee for each fuel. Each fuel has a different emission factor because each fuel has different carbon dioxide emissions, and so the Fuel Fee Rate must be calculated separately.

Summary of Section 95203(d), Fuel Emission Factors.

This section describes the source of the emission factors to be used for calculating the CCC as required in section 95203 (b), and the Fuel Fee Rate as required in section 95203 (c).

Rationale for Section 95203(d).

This section is necessary to describe the specific emission factors to be used for purpose of the fee calculation described in this regulation

Summary of Section 95203(e), Imported Electricity Fee Rate.

This section proposes to calculate an Imported Electricity Fee Rate for specified and unspecified sources of electricity imported into California. The Electricity Fee Rate for each specified source is calculated by multiplying the CCC by the emission factor of the specified source. For unspecified sources, the Electricity Fee Rate is calculated by multiplying the CCC by the default emission factor for unspecified sources.

Rationale for Section 95203(e).

This section is necessary to calculate the Electricity Fee Rate per MWh of imported electricity based on the emissions associated with combustion of fuels to generate the imported electricity. This “two pronged” approach is necessary to ensure that each source of imported electricity pays its portion of the Fee, while also accounting for the different types of electricity imported into California. Additionally, ARB needs to assess the Fee on as many contributors of greenhouse gas emissions as possible. Through this methodology, the impact of the Fee on imported electricity is equivalent to the impact of the Fee on in-state electricity generation, because in both cases, the Fee is based on the quantity of emissions from combustion of fuels used for generation. For in-state generation, the Fee is assessed upstream directly on the fuel used to generate the electricity, and the cost of the Fee is expected to be passed on to the generator, and ultimately to the consumers of electricity.

Summary of Section 95203(f), Emissions Factors for Generating Units or Facilities of Imported Electricity

This section proposes to calculate emission factors for specified sources of imported electricity that are generating units or facilities. Emission factors are calculated by dividing the source’s CO₂ emissions by the source’s electricity generation output.

Rationale for Section 95203(f).

This section is necessary to calculate the emission factors that are used to calculate Electricity Fee Rates for imported electricity from specified sources that are generating units or facilities. Specified sources have emissions factors that can be easily calculated by using data that they report either to ARB, under the Mandatory Reporting Regulation, to the U.S. Environmental Protection Agency, or to the federal Energy Information Administration

Summary of Section 95203(g), Emissions Factors for Asset Owning/Controlling Suppliers

This section proposes to calculate emission factors for specified sources that are asset-owning or asset-controlling suppliers, and to assign an emission factor for

unspecified sources of imported electricity. Emission factors for asset-owning and asset-controlling suppliers are calculated as total emissions from generation of electricity that makes up the supplier's portfolio of electricity supply, divided by the total quantity of electricity in MWh. This section assigns the default emission factor of 0.499 MTCO₂ per MWh to electricity imported from unspecified sources.

Rationale for Section 95203(g).

This section is necessary to calculate the emission factors that are used to calculate Electricity Fee Rates for imported electricity from asset-owning and asset-controlling suppliers, and to assign a default emission factor for imported electricity from unspecified sources. The suppliers emission factors can be calculated by using data that they report either to ARB, under the Mandatory Reporting Regulation, to the U.S. EPA, or to the federal EIA. However, unspecified sources, which cannot be matched to a particular generating facility or group of facilities, also contribute a portion of California's electricity whose generation results in greenhouse gas emissions. These sources can only be captured by assigning an emission factor. The assigned emission factor is that recommended by the CPUC and the CEC for use in the reporting and verification of greenhouse gas emissions.

Summary of Section 95203(h), Fee for Fuels.

This section proposes to calculate the Fee for fuels supplied, consumed or produced based on the quantity of fuel supplied, consumed or produced. The Fee charged will be the fuel rate, (calculated in section 95203(c)) multiplied by the quantity of fuel supplied, consumed or produced based on the reporting requirements of section 95204.

Rationale for Section 95203(h).

This section is necessary to calculate an individual entity's Fee for the fuels supplied, consumed or produced. To this point, ARB has calculated the cost of each MTCO₂, then the cost per MTCO₂ for each fuel source of greenhouse gas emissions. This final calculation for fuels will be the basis of ARB's recovery of funds allowed by HSC 38597.

Summary of Section 95203(i), Fee for Imported Electricity.

This section proposes to calculate the Fee for retail providers and marketers that import electricity based on the amount of electricity imported from each specified or unspecified source. The Fee charged will be the Electricity Fee Rate (calculated in section 95203(e)) multiplied the quantity of electricity imported, for electricity that a retail provider or marketer imports from each specified or unspecified source.

Rationale for Section 95203(i).

This section is necessary to calculate the Fee for each retail provider and marketer that imports electricity. To this point, ARB has calculated the cost of each MTCO₂, and the Electricity Fee Rate per MWh of imported electricity. This final calculation will be the basis of ARB's recovery of funds.

Summary of Section 95203(j), Fee for Entities.

This section proposes to calculate the Fee for stationary sources based on the total number of MTCO₂ emitted and reported on an annual basis. Specifically, the CCC is multiplied by the total amount of process emissions associated with the stationary source.

Rationale for Section 95203(j).

This section is necessary to calculate the Fee for the stationary sources that emit process emissions that are greenhouse gases. The process emissions of each source are already reported pursuant to the Mandatory Reporting Requirements. The process emissions of each source are already reported pursuant to the Mandatory Reporting regulation or other requirements. It cannot be calculated in the same manner as the fuel calculation because process emissions are an additional source of greenhouse gases but are emitted in a different manner. Additionally, process emissions may be sold elsewhere as a fuel, which would result in overcharging an entity.

Section 95204. Reporting and Recordkeeping Requirements.

Summary of Section 95204(a) and (b), Reporting Format.

This section requires all reports to be submitted to ARB by using ARB's Greenhouse Gas Reporting Tool. It also specifies the information each entity is required to report.

Rationale for Section 95204(a) and (b).

The information must be submitted to ARB so that ARB may calculate the appropriate fees, as required by Health and Safety Code section 38597 and other provisions of these regulations.

Summary of Section 95204(c), Timeline for Reporting.

This section stipulates the date entities must annually report to ARB.

Rationale for Section 95204(c)

This information must be submitted to ARB by the reporting date so that ARB is able to calculate the appropriate fees by January 30th of the following calendar

year and so it is consistent the with the reporting date in the Mandatory Reporting Regulation.

Summary of Section 95204(d) through (i)

These subsections require the various entities included in these regulations to report information to ARB. Specifically, the regulated natural gas entities report the quantity of therms of natural gas transported, purchased or consumed, as applicable. These reporting requirements are consistent with requirements in Article 2, title 17 of the California Code of Regulations. Producers and importers of motor vehicle fuels must report the total amount of each variety of fuel sold for use in California, entities subject to the Mandatory Reporting Requirements which combust coal must report the total number of tons and the grade of coal combusted, marketers and retail providers that import electricity must report MWh of imported electricity, refineries must report the quantities of process emissions produced, oil field operators that produce associated gas must report quantities of emissions from onsite combustion of the associated gas, and cement manufacturers must report the total process emissions resulting from their operations. Wherever possible, entities that already report information to another agency or pursuant to the Mandatory Reporting Requirements only need to submit the same information to ARB.

Rationale for Sections 95204(d) through (i).

This information is necessary for ARB to accurately calculate the Common Carbon Cost and subsequently collect the Fee required by Health and Safety Code section 38597.

Summary of Section 95204(j), Records Retention.

This section requires entities to maintain copies of the information provided pursuant to this article, and to make this information available to representatives of ARB within 5 business days upon request.

Rationale for Section 95204(j)

This requirement is necessary in case any discrepancies or questions arise following report submittal.

Section 95205. Payment and Collection.

This section proposes the payment schedule of fees assessed by these regulations. Fees will be assessed annually, based on the calendar year. Within 30 days of the end of the calendar year, ARB's Executive Officer will calculate the fee owed by each affected entity and provide the fee calculation in writing to the affected entity. This Fee will be based on reports submitted pursuant to section 95204. Each entity will have 60 days from the receipt of the Fee Determination Notice to remit the fees to ARB. If an entity fails to send the payment to ARB within the required 60 days, late fees will be assessed. Fees

recovered shall only be used for recovering costs of implementing the provisions of AB 32 and repaying the debt incurred for previous fiscal years.

Rationale for Section 95205.

This section is necessary to describe how payments will be made. Specifically, it has been ARB's experience that ARB needs 30 days from the end of the calendar year to calculate the fee to be assessed. Additionally, absent the 60 day remittance time, ARB would possibly run out of money to implement AB 32 programs.

Section 95206. Enforcement.

This section proposes the penalties and consequences of not complying with these regulations. These provisions include penalties pursuant to Health and Safety Code section 98580. The failure to submit a required report or pay the fee assessed constitutes a single and separate violation for each day the report is not submitted or the fee is not filed. This section also gives ARB authority to contract with other state agencies or third parties to obtain data or audit information submitted by regulated entities. This section allows ARB to designate other parties to enforce the regulation.

Rationale for Section 95206.

Section 95206 (a) and (b) merely restate existing law. This is necessary to inform the public what the penalties will be for noncompliance with the regulation and to direct the public to the appropriate statutes to determine the penalties. Subsections (c) and (d) are authorized pursuant to Health and Safety Code section 38580(b)(3) and necessary in this instance to ensure compliance with the regulation, as well as to deter misrepresentation of data submitted. Additionally, subsections (c) and (d) encourage the correction of mistakes as soon as possible. Subsections (e) and (f) are necessary because ARB needs to be allowed to contract with third parties in certain circumstances due to ARB's limited resources for auditing and enforcement purposes.

Section 95207. Severability.

This section ensures that if one provision of the regulations is declared invalid by a court or other authority, the remaining provisions will remain in full force and effect.

Rationale for Section 95207.

This section is necessary to ensure that if ARB has enacted a provision in the proposed regulatory article that is illegal or unconstitutional the remaining regulatory provisions remain intact.

B. Proposed Amendment to the Regulation for the Mandatory Reporting of Greenhouse Gas Emissions

Section 95104(e). Greenhouse Gas Emissions Data Report.

This section requires that all operators and verifiers, subject to the Mandatory Reporting Regulation, use ARB's Greenhouse Gas Reporting Tool to report the data specified in sections 95103 through 95133 to ARB.

Rationale for Section 94104(e).

This section is needed to ensure that all operators and verifiers use the Greenhouse Gas Reporting Tool to report emissions data to ARB which will help lessen the possibility of reporting errors.

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Appendix A

Proposed Regulation for the AB 32 Cost of Implementation Fee and Proposed Amendments to the Mandatory Reporting of Greenhouse Gas Emissions Regulations

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AB 32 COST OF IMPLEMENTATION FEE

Adopt new article 3, sections 95200 to 95207, title 17, California Code of Regulations, to read as follows:

(Note: All of the following is new language to be added to the California Code of Regulations.)

Article 3: Fees for Sources of Greenhouse Gas Emissions

95200. Purpose.

The purpose of this article is to collect fees to be used to carry out the California Global Warming Solutions Act of 2006 (Stats. 2006; Ch. 488; Health and Safety Code sections 38500 *et seq.*), as provided in Health and Safety Code section 38597.

NOTE: Authority cited: Sections 38510, 38597, 39600 and 39601, Health and Safety Code. Reference: Sections 38530 and 39600, Health and Safety Code.

95201. Applicability.

- (a) This article applies to the following entities. The terms used below are defined in section 95202.
- (1) *Natural Gas Utilities, Users, and Pipeline Owners and Operators that distribute or use natural gas in California.*
- (A) All public utility gas corporations operating in California. Fees shall be paid for each therm of natural gas delivered to any end user in California.
- (B) All owners or operators of interstate and intrastate pipelines, not included in subsection (a)(1)(A), that distribute natural gas directly to end users in California. Fees shall be paid for each therm of natural gas directly distributed by interstate or intrastate pipelines.
- (C) All California owners or operators that consume natural gas produced on-site and that are subject to Mandatory Reporting Regulation. Fees shall be paid for each therm of natural gas consumed of the natural gas produced on-site.
- (D) All California owners or operators that consume associated gas that is produced on-site and that are subject to the

Mandatory Reporting Regulation. Fees shall be paid on the amount of emissions resulting from the combustion of these fuels.

(2) *Producers and Importers of Gasoline and Diesel Fuels.*

(A) All producers and importers of California gasoline or California diesel for use in California. Fees shall be paid for each gallon of gasoline or diesel fuel distributed.

(B) All producers or importers of CARBOB. Fees shall be paid for each gallon of CARBOB plus the designated amount of oxygenate.

(3) *Refineries.*

Fees shall be paid on the amount of emissions by the owner or operator of any refinery that emits process emissions resulting from the steam methane reforming process, or the production or consumption of:

(A) Catalyst coke;

(B) Petroleum coke; or

(C) Refinery gas.

(4) *Cement Manufacturers.*

All entities or operators of cement manufacturing facilities that emit greenhouse gases through the clinker manufacturing process. Fees shall be paid on reported quantities of emissions.

(5) *Retail Providers and Marketers of Imported Electricity.*

Any retail provider or marketer that is the purchasing/selling entity at the first point of delivery in California of imported electricity. Fees shall be paid for each megawatt-hour of imported electricity.

(6) *Facilities that Combust Coal.*

Any owner or operator of a facility that combusts coal in California and is subject to the Mandatory Reporting Regulation. Fees shall be paid on the reported emissions.

- (b) This article does not apply to any of the following fuels, or to emissions resulting from combustion of any of the following fuels:
- (1) aviation gasoline;
 - (2) jet fuel;
 - (3) kerosene;
 - (4) liquefied petroleum gas;
 - (5) biodiesel;
 - (6) renewable diesel;
 - (7) residual fuel oil;
 - (8) propane; or
 - (9) any fuel exported for use outside of California.

NOTE: Authority: Sections 38510, 38597, 39600 and 39601, Health and Safety Code.
Reference: Sections 38501, 38505 and 39300, Health and Safety Code.

95202. Definitions.

- (a) For the purposes of this article, the following definitions shall apply:
- (1) “AB 32” means the California Global Warming Solutions Act of 2006, Assembly Bill 32, Chapter 488, Statutes of 2006, as codified at Health and Safety Code section 38500 *et seq.*
 - (2) “Annual” means with a frequency of once a year; unless otherwise noted, annual events such as the fee payment and liability will be based on the calendar year.
 - (3) “ARB” or “Board” means the California Air Resources Board.
 - (4) “Asset-controlling supplier” means any entity that operates electricity generating facilities or serves as an exclusive marketer for certain generating facilities even though it does not own them, and assigned a supplier-specific identification number for its fleet of generating facilities under the provisions of article 2, title 17 of the California Code of Regulations.
 - (5) “Asset-owning supplier” means any entity that owns electricity generating facilities that deliver electricity to a transmission or

distribution line, and is assigned a supplier-specific identification number for its fleet of generating facilities under the provisions of article 2, title 17 of the California Code of Regulations.

- (6) “Associated gas” means hydrocarbon-based gaseous fuel produced in association with crude oil from any oil well and subsequently burned in the field as a fuel.
- (7) “Biodiesel” means a diesel fuel substitute produced from nonpetroleum renewable resources that meet the registration requirements for fuels and fuel additives established by the Environmental Protection Agency under section 211 of the Clean Air Act. It includes biodiesel meeting all of the following:
 - (A) Registered as a motor vehicle fuel or fuel additive under title 40, Code of Federal Regulations, part 70;
 - (B) A mono-alkyl ester;
 - (C) Meets American Society for Testing and Material designation ASTM D 6751-08 (*Standard Specification for Biodiesel Fuel Blendstock (B100) for Middle Distillate Fuels*);
 - (D) Intended for use in engines that are designated to run on conventional diesel fuel; and
 - (E) Derived from nonpetroleum renewable resources.
- (8) “Calendar year” means the time period from January 1 through December 31.
- (9) “California gasoline” has the same meaning as defined in title 13 of the California Code of Regulations, section 2260(a).

For California gasoline,

- (A) “Produce” for California gasoline has the same meaning as defined in title 13 of the California Code of Regulations, section 2260(a).
- (B) “Producer” for California gasoline has the same meaning as defined in title 13 of the California Code of Regulations, section 2260(a).
- (C) “Supply” for California gasoline has the same meaning as defined in title 13 of the California Code of Regulations, section 2260(a).

- (D) "Importer" for California gasoline means the majority owner of the California gasoline when it first enters the state of California. For rail cars, cargo tanks, and pipelines it is the point where the product first crosses the California state border. For imports by marine vessel it is the point where the fuel leaves the vessel.
 - (E) "Import" for California gasoline means movement of California gasoline into the state of California. For rail cars, cargo tanks, and pipelines it is when the product first crosses the California state border. For imports by marine vessel it is the point where the fuel leaves the vessel.
- (10) "California reformulated gasoline blendstock for oxygenate blending, or "CARBOB," has the same meaning as defined in title 13 of the California Code of Regulations, section 2260(a).

For CARBOB,

- (A) "Produce" for CARBOB has the same meaning as defined in title 13 of the California Code of Regulations, section 2260(a).
- (B) "Producer" for CARBOB has the same meaning as defined in title 13 of the California Code of Regulations, section 2260(a).
- (C) "Supply" for CARBOB has the same meaning as defined in title 13 of the California Code of Regulations, section 2260(a).
- (D) "Importer" for CARBOB means the majority owner of the CARBOB when it first enters the state of California. For rail cars, cargo tanks, and pipelines it is the point where the product first crosses the California state border. For imports by marine vessel it is the point where the fuel leaves the vessel.
- (E) "Import" for CARBOB means movement of CARBOB into the state of California. For rail cars, cargo tanks, and pipelines it is when the product first crosses the California state border. For imports by marine vessel it is the point where the fuel leaves the vessel.

- (11) "California diesel fuel" has the same meaning as "Vehicular Diesel Fuel" as defined in title 13 California Code of Regulations, section 2282(b).

For California diesel fuel,

- (A) "Produce" for California diesel fuel has the same meaning as "Vehicular Diesel Fuel" as defined in title 13 of the California Code of Regulations, section 2282(b).
- (B) "Producer" for California diesel fuel has the same meaning as "Vehicular Diesel Fuel" as defined in title 13 of the California Code of Regulations, section 2282(b).
- (C) "Supply" for California diesel fuel has the same meaning as defined in title 13 of the California Code of Regulations, section 2282(b).
- (D) "Importer" for California diesel fuel means the majority owner of the California diesel fuel when it first enters the state of California. For rail cars, cargo tanks, and pipelines it is the point where the product first crosses the California state border. For imports by marine vessel it is the point where the fuel leaves the vessel.
- (E) "Import" for California diesel fuel means movement of product into the state of California. For rail cars, cargo tanks, and pipelines it is when the product first crosses the California state border. For imports by marine vessel it is the point where the fuel leaves the vessel.
- (12) "Carbon dioxide" or "CO₂" means the most common of the six primary greenhouse gases, consisting on a molecular level of a single carbon atom and two oxygen atoms.
- (13) "Carbon dioxide equivalent" or "CO₂E" or "CO₂ equivalent" means a measure for comparing carbon dioxide with other greenhouse gases, based on the quantity of those gases multiplied by the appropriate global warming potential factor and commonly expressed as metric tons of carbon dioxide equivalents (MTCO₂E).
- (14) "Catalyst" means a substance added to a chemical reaction, which facilitates or causes the reaction, and is not consumed by the reaction.
- (15) "Catalyst coke" means carbon that is deposited on a catalyst, thus deactivating the catalyst.

- (16) "Cement" means a building material that is produced by heating mixtures of limestone and other minerals or additives at high temperatures in a rotary kiln to form clinker, followed by cooling and grinding with blended additives. Finished cement is a powder used with water, sand and gravel to make concrete and mortar.
- (17) "Cement manufacturer" means an owner or operator of a cement plant.
- (18) "Cement plant" means an industrial structure, installation, plant or building primarily engaged in manufacturing Portland, natural, masonry, pozzolanic, and other hydraulic cements, and typically identified by North American Industry Classification System Code 327310.
- (19) "Clinker" means the mass of fused material produced in a cement kiln from which finished cement is manufactured by milling and grinding.
- (20) "Coal" means all solid fuels classified as anthracite, bituminous, sub-bituminous, or lignite by the American Society for Testing and Material Designation ASTM D388-05 "Standard Classification of Coals by Rank."
- (21) "Combust" means the process of burning or setting fire to a fuel.
- (22) "Combustion emissions" means greenhouse gas emissions occurring during the exothermic reaction of a fuel with oxygen.
- (23) "Cracking" means the process of breaking down larger molecules into smaller molecules, utilizing catalysts and/or elevated temperatures and pressures.
- (24) "Debt" means those loans obtained by the Board and required by the Legislature to be repaid to carry out AB 32 for fiscal years 2007/08, 2008/09, and any loans necessary for the 2009/10 fiscal year.
- (25) "Electricity Fee Rate" means the rate charged per MWh of imported electricity generated at a specified source or an unspecified source based on source-specific emissions factors, or a default emissions factor for unspecified sources.
- (26) "Emissions" means the release of greenhouse gases into the atmosphere from sources and processes in a facility.

- (27) “Emissions data report” or “greenhouse gas emissions data report” or “report” means the report prepared by an operator each year and submitted by electronic means to ARB to comply with this article.
- (28) “Emissions factor” means a unique value for determining an amount of a greenhouse gas emitted for a given quantity of activity (e.g., metric tons of carbon dioxide emitted per gallon of gasoline burned).
- (29) “End user” means either:
- (A) the point to which natural gas is delivered for consumption, or
 - (B) a publicly-owned natural gas utility that further distributes natural gas for consumption.
- (30) “Entity” means a person, firm, association, organization, partnership, business trust, corporation, limited liability company, company, government agency, or public district.
- (31) “Exclusive marketer” means a marketer that has exclusive rights to market electricity for a generating facility or group of generating facilities.
- (32) “Executive Officer” means the Executive Officer of ARB or his or her delegate.
- (33) “Facility” means any property, plant, building, structure, stationary source, stationary equipment or grouping of stationary equipment or stationary sources located on one or more contiguous or adjacent properties, in actual physical contact or separated solely by a public roadway or other public right-of-way, and under common operational control, that emits or may emit any greenhouse gas. Operators of military installations may classify such installations as more than a single facility based on distinct and independent functional groupings within contiguous military properties.
- (34) “Fee determination notice” means the notice provided by ARB to entities regulated by this article stating the dollar amount due for the current calendar year.
- (35) “Feedstock” means the raw material supplied to a process.
- (36) “Fiscal year” means the time period from July 1 to June 30.

- (37) "Fuel" means solid, liquid or gaseous combustible material.
- (38) "Fuel fee rate" means the rate charged per MTCO₂ produced by greenhouse gas sources specific to the fuel combusted and calculated by ARB.
- (39) "Gallon" means the United States gallon of 231 cubic inches or the volumetric gallon adjusted to 60 degrees Fahrenheit when the invoice and settlement is made on the temperature corrected gallonage.
- (40) "Generating facility" means an existing or planned location or site at which electricity is or will be produced.
- (41) "Generating unit" means any combination of physically connected generator(s), reactor(s), boiler(s), combustion turbine(s), or other prime mover(s) operated together to produce electric power.
- (42) "Global warming potential" or "GWP factor" means the radiative forcing impact of one mass-based unit of a given greenhouse gas relative to an equivalent unit of carbon dioxide over a given period of time.
- (43) "Government agency" means any agency as defined in Government Code section 11000.
- (44) "Greenhouse gas source" means any physical unit, process, or other use or activity that releases a greenhouse gas into the atmosphere.
- (45) "Imported electricity" means electricity that is generated outside of California and delivered into California. Imported electricity does not include power wheeled through California, which is power that is imported into California that terminates in a location outside of California.
- (46) "Importer" means the majority owner of the California gasoline, CARBOB, or California diesel fuel when it first enters the state of California. For rail cars, cargo tanks, and pipelines it is the point where the product first crosses the California state border. For imports by marine vessel it is the point where the fuel leaves the vessel.

- (47) "Interstate Pipeline" means any entity engaged in natural gas transportation subject to the jurisdiction of the Federal Energy Regulatory Commission (FERC) under the Natural Gas Act.
- (48) "Kerosene" means a light distillate fuel that includes No. 1-K and No. 2-K as well as other grades of range or stove oil that have properties similar to those of No. 1 fuel oil.
- (49) "Mandatory Reporting Regulation" means ARB's Regulation for the Mandatory Reporting of Greenhouse Gas Emissions, as set forth in title 17, California Code of Regulations, Chapter 1, Subchapter 10, article 2 (commencing with section 95100).
- (50) "Marketer" means a purchasing/selling entity that is not a retail provider, and that is the purchaser/seller at the first point of delivery in California for electric power imported into California, or the last point of receipt in California for power exported from California.
- (51) "Megawatt-hour" or "MWh" means the electrical energy unit of measure equal to one million watts of power supplied to, or taken from, an electric circuit steadily for one hour.
- (52) "Meter" means a device designed to measure, record or regulate the amount or volume of the flow of a gas.
- (53) "Metric ton" or "MT" or "tonne" means a common international measurement for the quantity of greenhouse gas emissions, equivalent to about 2204.6 pounds, or 1.1 short tons.
- (54) "Motor vehicle" has the same meaning as defined in section 415 of the Vehicle Code.
- (55) "Natural gas" means a naturally occurring mixture of hydrocarbons (e.g., methane, ethane, or propane) produced in geological formations beneath the Earth's surface that maintains a gaseous state at standard atmospheric temperature and pressure under ordinary conditions.
- (56) "Natural gas importer" means any entity that receives natural gas from a party that is not a public gas corporation, as defined in this article that consumes and/or distributes natural gas to consumers of natural gas.
- (57) "Operational control" for a facility subject to this article means the entity that has authority to introduce and implement operating, environmental, health and safety policies.

- (58) "Operator" means the entity having operational control of a facility.
- (59) "Owner" means the entity having title of the property or assets which are subject to the fee.
- (60) "Payment period" means 60 days from the receipt of the billing, as stated in section 95205 each calendar year.
- (61) "Petroleum coke" means a solid residue high in carbon content and low in hydrogen that is the final product of thermal decomposition in the condensation process in cracking.
- (62) "Petroleum refinery" or "refinery" means any facility engaged in producing gasoline, aromatics, kerosene, distillate fuel oils, residual fuel oils, lubricants, asphalt, or other products through distillation of petroleum or through redistillation, cracking, rearrangement or reforming of unfinished petroleum derivatives.
- (63) "Power" means electricity, except where the context makes clear that another meaning is intended.
- (64) "Process" means the intentional or unintentional reactions between substances or their transformation, including, but not limited to, the chemical or electrolytic reduction of metal ores, the thermal decomposition of substances, and the formation of substances for use as product or feedstock.
- (65) "Process emissions" means:
- (A) For cement manufacturing: The greenhouse gas process emissions produced through the chemical reactions of feedstock during pyroprocessing to produce cement clinker (which does not include greenhouse gas emissions which are the result of fuel combustion emissions).
 - (B) For refineries:
 1. the greenhouse gas emissions resulting from the on-site consumption of catalyst coke, and
 2. all greenhouse gas emissions both on- and off-site, resulting from the combustion of petroleum coke and refinery gas in California, and
 3. the greenhouse gas emissions resulting from the steam methane reforming process excluding those that occur as a result of the use of natural gas as a feedstock.

- (66) “Producer” means any person who owns, leases, operates, controls or supervises a California production facility.
- (67) “Production facility” means a facility in California at which gasoline or CARBOB is produced. Upon request of a producer, the Executive Officer may designate, as part of the producer’s production facility, a physically separate bulk storage facility which (A) is owned or leased by the producer, and (B) is operated by or at the direction of the producer, and (C) is not used to store or distribute gasoline or CARBOB that is not supplied from the production facility.
- (68) “Propane” means a normally straight chain hydrocarbon that boils at -3.67 degrees Fahrenheit and is represented by the chemical formula C_3H_8 .
- (69) “Publicly-owned utility” means a municipality or municipal corporation, a municipal utility district, a public utility district, or a joint powers authority that includes one or more of these agencies that furnishes natural gas services to end users.
- (70) “Public utility gas corporation” is a gas corporation defined in California Public Utilities Code section 222 that is also a public utility as defined in California Public Utilities Code section 216.
- (71) “Purchasing/selling entity” means an entity that is eligible to purchase or sell energy or capacity and reserve transmission services.
- (72) “Renewable diesel” means a motor vehicle or fuel additive which is all of the following:
- (A) Registered as a motor vehicle fuel or fuel additive under 40 CFR part 79;
 - (B) Not a mono-alkyl ester;
 - (C) Intended for use in engines that are designated to run on conventional diesel fuel; and
 - (D) Derived from nonpetroleum renewable resources.
- (73) “Report Year” means the calendar year for which emissions are being reported in the emissions data report.

- (74) “Retail provider” means an entity that provides electricity to retail end users in California and is an electric corporation as defined in Public Utilities Code section 218, electric service provider as defined in Public Utilities Code section 218.3, local publicly owned electric utility as defined in Public Utilities Code section 9604, community choice aggregator as defined in Public Utilities Code section 331.1, or the Western Area Power Administration.
- (75) “Source” means greenhouse gas source.
- (76) “Specified source” or “specified source of power” means a particular generating unit or facility for which electrical generation can be confidently tracked due to full or partial ownership or due to its identification in a power contract including any California eligible renewable resource, or an asset-owning or asset-controlling supplier.
- (77) “Stationary” means neither portable nor self propelled, and operated at a single facility.
- (78) “Steam methane reforming process” means a method in which high temperature steam is used to produce hydrogen from a methane source.
- (79) “Therm” means a unit of heat equal to 100,000 British thermal units (1.054×10^8 joules).
- (80) “Ton” means a short ton equal to 2000 pounds.
- (81) “Unspecified source of power” or “unspecified source” means electricity generation that cannot be matched to a particular generating facility.

NOTE: Authority cited: Section 38510, 38597, 39600 and 39601, Health and Safety Code.
Reference: Sections 38530, 39600 and 39601, Health and Safety Code.

95203. Calculation of Fees.

(a) Total Required Revenue (TRR).

- (1) The Required Revenue (RR) shall be the total amount of funds necessary to recover the costs of implementation of AB 32 program expenditures for each Fiscal Year, based on the number of personnel positions, including salaries and benefits and all other costs, as approved in the California Budget Act for that fiscal year.

- (2) For Fiscal Years 2009/2010, 2010/2011, 2011/2012, 2012/2013, and 2013/2014, the RR shall also include the payments required to be made by ARB on the Debt.
- (3) The RR shall also include any amounts required to be expended by ARB in defense of this article in court.
- (4) If there is any excess or shortfall in the actual revenue collected for any fiscal year, or if any collections are less than the Revenue Requirement, such shortfall or excess shall be carried over to the next year's calculation of the Total Revenue Requirement. The annual Total Revenue Requirement is equal to the annual RR adjusted for the previous fiscal year's excess or shortfall amount.

(b) *Common Carbon Cost (CCC).*

The Executive Officer shall calculate a Common Carbon Cost (CCC), which represents the cost per MTCO₂ emitted. The CCC shall be calculated in accordance with the following formula:

$$CCC = \frac{TRR}{(Q_c \times EF_c) + (Q_{ng} \times EF_{ng}) + (Q_g \times EF_g) + (Q_d \times EF_d) + (Q_{ie} \times EF_{ie}) + TE_l}$$

Where

TRR = Total Required Revenue, as specified in subsection 95203(a).

$(Q_c \times EF_c)$ = Statewide total quantity of emissions from coal calculated as the sum of:

$(Q_b \times EF_b)$ = Quantity of bituminous coal (Q_b) x emission factor for bituminous coal (EF_b);

$(Q_l \times EF_l)$ = Quantity of lignite coal (Q_l) x the emission factor (EF_l) for lignite coal;

$(Q_a \times EF_a)$ = Quantity of anthracite coal (Q_a) x the emission factor (EF_a) for anthracite coal;

$(Q_{sb} \times EF_{sb})$ = Quantity of subbituminous coal (Q_{sb}) x the emission factor (EF_{sb}) for subbituminous coal;

Q_{ng} = Statewide quantity in therms of natural gas supplied during the reporting period

$EF_{ng} =$ Emission Factor of $MTCO_2$ for each supplied therm of natural gas

$Q_g =$ Statewide quantity of gasoline supplied during the reporting period. This is the volumetric sum of California gasoline produced or imported into California and the amount of finished CARBOB product produced or imported into California. The finished CARBOB product is calculated as the volume sum of the CARBOB plus the maximum amount of oxygenate designated for each volume of CARBOB.

$EF_g =$ Emission Factor of $MTCO_2$ for each supplied gallon of California gasoline.

$Q_d =$ Quantity of California diesel fuel supplied during the reporting period

$EF_d =$ Emission Factor of $MTCO_2$ for each supplied gallon of diesel fuel

$(Q_{ie} \times EF_{ie}) =$ Total CO_2 emissions from total imported electricity as the sum of:

$(Q_{sp} \times EF_{sp}) =$ Quantity of MWh of electricity imported from each specified source x emission factor for that specified source

$(Q_{usp} \times EF_{usp}) =$ Statewide quantity of MWh of electricity imported from unspecified sources x emission factor for unspecified source.

$TE_I =$ Total state process emissions inventory for cement manufacturers and refineries, and emissions from the combustion of associated gas.

(c) *Fuel Fee Rate.*

For entities reporting pursuant to section 95204(d)(1-3), (e) and (f) the Executive Officer shall calculate a Fuel Fee Rate for each fuel included in subsection 95203(b) using the following formula:

$$FR_i = CCC \times EF_i$$

Where:

FR_i = The Fuel Fee Rate for the fuel

CCC = Common Carbon Cost

EF_i = Emission Factor of MTCO₂ for each unit of fuel supplied.

(d) *Fuel Emission Factors.*

For entities reporting pursuant to section 95204(d)(1-3), (e) and (f) the Executive Officer shall calculate the Common Carbon Cost and the Fuel Fee Rates using the following emissions factors:

Fuel Type	CO ₂ Emission Factor	Emission Factor Units
Coal		
Anthracite	2,597.94	kg CO ₂ / short ton
Bituminous	2,328.35	kg CO ₂ / short ton
Sub-bituminous	1,673.64	kg CO ₂ / short ton
Lignite	1,369.32	kg CO ₂ / short ton
Natural Gas	5.302	kg CO ₂ / therm
Diesel	9.96	kg CO ₂ / gallon
Gasoline	8.55	kg CO ₂ / gallon

(e) *Imported Electricity Fee Rate.*

The Executive Officer shall calculate an Imported Electricity Fee Rate for each affected entity pursuant to section 95204(f) using the following formulas:

$$EFR_{sp} = CCC \times EF_{sp}$$

$$EFR_{asp} = CCC \times EF_{asp}$$

$$EFR_{usp} = CCC \times EF_{usp}$$

Where:

“sp” denotes a specified source that is a generating facility or unit

“asp” denotes an asset-owning or asset-controlling supplier

“usp” denotes an unspecified source

CCC = Common Carbon Cost

EFR_{sp} = The Electricity Fee Rate for the specified source

EF_{asp} = The Electricity Fee Rate for the asset-owning and asset-controlling suppliers

EF_{usp} = The Electricity Fee Rate for unspecified sources

EF_{sp} = Emission Factor for specified source in $MTCO_2$ per MWh

EF_{asp} = Emission Factor for asset-owning and asset-controlling suppliers in $MTCO_2$ per MWh

EF_{usp} = 0.499 $MTCO_2$ per MWh, the default Emission Factor for unspecified sources.

(f) *Emissions Factors for Generating Units or Facilities of Imported Electricity.*

The Executive Officer shall calculate emissions factors for specified sources of imported electricity that are generating units or facilities using the following methodology:

$$EF_{sp} = \frac{E_{sp}}{EG}$$

Where:

EF_{sp} = Emission Factor for specified source "sp", in $MTCO_2$ per MWh

E_{sp} = CO_2 emissions from electricity generation for a specified electric generating facility/unit for the report year ($MTCO_2$)

EG = Net generation from a specified electric generating facility for the report year (MWh)

(1) For specified electric generating facilities/units whose operators are subject to reporting or who voluntarily report under the Mandatory Reporting Regulation, E_{sp} shall be equal to the sum of CO_2 emissions directly associated with electricity generation as reported to ARB. Similarly, EG shall be the net generation reported to ARB.

(2) For specified electric generating facilities/units whose operators are not subject to Mandatory Reporting Regulation but who are subject to the Acid Rain Program (40 CFR Part 75), E_{sp} shall be equal to the amount of CO_2 emissions reported to U.S. EPA pursuant to 40 CFR Part 75 for the facility in metric tons for the report year. EG shall be data reported to EIA and published in the

EIA 923 Excel file for the reporting year available at http://www.eia.doe.gov/cneaf/electricity/page/eia906_920.html (the EIA data).

(3) For specified electric generating facilities whose operators do not report to ARB under the Mandatory Reporting Regulation and do not report to U.S. EPA under the Acid Rain Program, EG shall be taken from the EIA data for the reporting year. E_{sp} shall be calculated using EIA data as shown below.

$$E_{sp} = 1000 \times \sum(Q_{fuel} \times EF_{fuel})$$

Where:

Q_{fuel} = Heat of combustion for each specified fuel type from the specified electric generating facility for the report year (MMBtu)

EF_{fuel} = CO₂ emission factor for the specified fuel type as taken from the title 17, California Code of Regulations, Chapter 1 Subchapter 9, Article 2, Appendix A (kgCO₂/MMBtu)

(g) *Emission Factors for Asset Owning/Controlling Suppliers.*

The Executive Officer shall calculate emissions factors for asset-owning or asset-controlling suppliers using the following methodology:

$$EF_{asp} = \frac{\sum E_{asp} + \sum (PE_{sp} * EF_{sp}) + (PE_{usp} * EF_{usp}) - \sum (SE_{sp} * EF_{sp})}{\sum EG_{asp} + \sum PE_{sp} + PE_{usp} - \sum SE_{sp}}$$

EF_{asp} = Emission Factor for asset-owning and asset-controlling suppliers in MTCO₂ per MWh

$\sum E_{asp}$ = the sum of CO₂ emissions from electricity generation for each specified electric generating facility/unit in the asset-owning/controlling supplier's fleet, as reported to ARB under the Mandatory Reporting Regulation (MTCO₂)

$\sum EG_{asp}$ = the sum of net generation for each specified electric generating facility/unit in the asset-owning/controlling supplier's fleet for the report year as reported to ARB under the Mandatory Reporting Regulation (MWh)

$\sum PE_{sp}$ = Sum of electricity purchased from specified sources by the asset-owning or asset-controlling supplier for the year as reported to ARB under the Mandatory Reporting Regulation (MWh)

PE_{usp} = Amount of electricity purchased from unspecified sources by the asset-owning or asset-controlling supplier for the year as reported to ARB under the Mandatory Reporting Regulation (MWh)

$\sum SE_{sp}$ = Amount of wholesale electricity sold from a specified source by the asset-owning or asset-controlling supplier for the year as reported to ARB under the Mandatory Reporting Regulation (MWh)

EF_{sp} = CO₂ emission factor as defined for generating units and facilities.

EF_{usp} = CO₂ default emission factor for unspecified sources.

(h) *Fee Liability for Fuels.*

The Executive Officer shall calculate the Fee Liability for each entity reporting pursuant to section 95204(d)(1-3), (e) and (f) based on the quantity of each fuel supplied, consumed or produced, as follows:

$$FS_i = (FR_i \times QF_i)$$

Where:

FS_i = The Fee Liability for each entity

QF_i = Quantity of fuel

(Note: The Fee Liability calculation formula for associated gas is addressed under section 95203(j))

(i) *Fee Liability for Imported Electricity.*

The Executive Officer shall calculate the fee liability for each entity reporting pursuant to section 95204(g) based on the quantity of electricity imported, as follows:

$$FS_i = (EFR_i \times QM_i)$$

Where:

FS_i = The Fee Liability for each entity

QM_i = Quantity of MWh of imported electricity from each specified source, asset-owning or asset-controlling supplier, or unspecified source, as appropriate

EFR_i = Electricity fee rate for each specified source, asset-owning or asset-controlling supplier, or unspecified source, as appropriate

(j) *Fee Liability for Entities.*

For entities reporting pursuant to section 95204(d)(4), (h) and (i), each entity shall be charged a Fee based on the total number of MTCO₂ emitted and reported annually. The fee shall be calculated as follows:

$$FS_i = CCC \times QE_i$$

Where:

FS_i = The Fee for the Entity

CCC = Common Carbon Cost

QE_i = the total amount of process emissions associated with the entity.

NOTE: Authority cited: Sections 38510, 38597, 39600 and 39601, Health and Safety Code.
Reference: 38501, 38510, 38597, 39600 and 39601, Health and Safety Code.

95204. Reporting and Recordkeeping Requirements.

(a) *Reporting Format.*

All reports required by this article must be submitted to ARB by using the California Air Resources Board's Greenhouse Gas Reporting Tool, as specified in title 17, California Code of Regulations section 95104(e), and is available on ARB's internet website at www.arb.ca.gov.

(b) All entities subject to this article must report the following:

(1) Report Information:

(A) Report Year

(B) Facility Information

(i) Facility name

(ii) Physical address

(iii) Mailing address

(iv) Description of facility geographic location

(2) Operator Information:

(A) Operator name

(B) Email address

(C) Telephone number

- (3) Operator Statement of Truth, Accuracy and Completeness. Operator signature and date stating: *This report has been prepared in accordance with subchapter 105, article 1, sections 95100 to 95133, title 17, California Code of Regulations. The statements and information contained in this emissions data report are true, accurate and complete.*

(c) *Timeline for Reporting.*

- (1) Reports for the 2008 calendar year must be submitted to ARB by January 2, 2010, or by the operative date of this article, whichever is later.
- (2) Reports for the 2009 and subsequent calendar years must be submitted to ARB by June 30 of each year. For those entities subject to ARB's Mandatory Reporting Regulation, changes made to reported data as a result of the verification process must be concluded by December 1 of each year.

(d) *Natural Gas Utilities, Users and Pipeline Owners and Operators.*

- (1) All public utility gas corporations operating in California must annually report the aggregate quantity of therms of natural gas delivered at the meter to end users.
- (2) All owners or operators of interstate and intrastate pipelines that distribute natural gas directly to end users must annually report the aggregate quantity of therms of natural gas directly distributed, at the metered to the end users.
- (3) All California owners or operators that consume natural gas produced on-site and are subject to the Mandatory Reporting Regulation must report the quantity of therms of natural gas consumed annually of natural gas produced on-site in addition to all information required under the Mandatory Reporting Regulation.
- (4) All California owners or operators that consume associated gas produced on-site and that are subject to the Mandatory Reporting Regulation must report all information required by the Mandatory Reporting Regulation, including the quantities of emissions resulting from the combustion of these fuels.

(e) *Producers and Importers of Gasoline and Diesel Fuels.*

All producers and importers of California gasoline, CARBOB or California diesel fuel must report the total amount of each variety of fuel sold or supplied for use in California. Producers and importers of CARBOB must report each volume of CARBOB and the associated designated volume/volumes of oxygenate.

(f) *Coal Combustion.*

All entities that are subject to the Mandatory Reporting Regulation and combust coal must report the number of tons and the grade of coal combusted for each calendar year.

(g) *Retail Providers and Marketers of Imported Electricity.*

(1) *Retail Providers of Electricity.* This information shall be the same information that is required to be submitted under the Mandatory Reporting Regulation, and include the total quantity of MWh of electricity imported from specified sources and unspecified sources with final point of delivery in California, and shall be reported on the schedule specified in the Mandatory Reporting Regulation.

(2) *Marketers.* All marketers of imported electricity must report all information required under the Mandatory Reporting Regulation, be consistent with section 95111 of the Mandatory Reporting Regulation, and include the total quantity of MWh of electricity imported from specified sources and unspecified sources with final point of delivery in California.

(h) *Refinery Process Emissions.*

Each refinery that produces process emissions must report all information required under the Mandatory Reporting Regulation, including individual quantities of those emissions. Each refinery must report the individual quantities of catalyst coke, petroleum coke, and refinery gas produced annually less the quantities exported out of the state. This information shall be derived from the information reported pursuant to the California Energy Commission's Petroleum Industry Information Reporting Act (PIIRA) codified in Public Resources Code sections 25350 *et seq.*, and the Mandatory Reporting Regulation.

(i) *Cement Manufacturers.*

All cement manufacturers must report all information required under the Mandatory Reporting Regulation, including the total amount of process emissions resulting from their operations, as defined in this article. This information shall be the same information as that required to be submitted under the Mandatory Reporting Regulation.

(j) *Records Retention.*

Entities subject to this article must maintain copies of the information reported pursuant to this article and provide them to an authorized representative of ARB within five business days upon request. Records must be kept at a location within the State of California for five years.

NOTE: Authority cited: Sections 38510, 38597, 39600 and 39601, Health and Safety Code.
Reference: 38501, 38510, 38597, 39600 and 39601, Health and Safety Code.

95205. Payment and Collection.

- (a) For 2010, the Executive Officer shall provide a written fee determination notice to each affected entity of the amount due by February 1, or 30 days after the operative date of this article, whichever is later.
- (b) Beginning in 2011, no later than 30 days after the end of each calendar year, the Executive Officer shall provide a written fee determination notice to each affected entity of the amount due for the current calendar year. The amount of the fee shall be based on the reports submitted pursuant to section 95204 and the fee calculation formulas set forth in section 95203.
- (c) *Payment Period.* Each entity that is notified by the Executive Officer that it must remit a specified dollar amount to ARB for the current fiscal year shall transmit that dollar amount to ARB for deposit into the Air Pollution Control Fund within 60 days of receipt of the fee determination notice.
- (d) *Late Fees.* The Executive Officer shall assess an additional fee on entities failing to pay the fee within 60 days of receipt of the fee determination notice. The Executive Officer shall set the late fee in an amount sufficient to pay ARB's additional expenses incurred by the entity's untimely payment. The late fee is in addition to any penalty that may be assessed as provided in section 95206.

- (e) *Expenditure of Fees.* The fees collected from the entities are to be expended by ARB only for the purposes of recovering the costs of carrying out the provisions of AB 32 and repaying the Debt.

NOTE: Authority: Sections 38510, 38597, 39600 and 39601, Health and Safety Code.
Reference: Sections 38501, 38505 and 39300, Health and Safety Code.

95206. Enforcement.

- (a) *Penalties.* Penalties may be assessed for any violation of this article pursuant to Health and Safety Code section 38580. Each day during any portion of which a violation occurs is a separate offense.
- (b) *Injunctions.* Any violation of this article may be enjoined pursuant to Health and Safety Code section 41513.
- (c) *Violations.* Each day or portion thereof that any report required by this article remains unsubmitted, is submitted late, or contains incomplete or inaccurate information, shall constitute a single, separate violation of this article. For the purposes of this section, “report” means any information required to be submitted by section 95204.
- (d) *Payment Violations.* The failure to pay the full amount of any fee required by this article shall constitute a single, separate violation of this article for each day or portion thereof that the fee has not been paid after the date the fee is due.
- (e) *Auditing.* The Executive Officer may contract with outside entities, including, but not limited to, the Board of Equalization, to obtain data or services needed to audit the returns provided by fee payers. The Executive Officer may use fee revenues collected under this article to fund auditing and collection procedures.
- (f) *Authorization to Enforce.* Enforcement of this article may be carried out by authorized representatives of ARB, including authorized representatives of air pollution control or air quality management districts.

NOTE: Authority: Sections 38510, 38597, 39600 and 39601, Health and Safety Code.
Reference: Sections 38501, 38505, 39300 and 41513, Health and Safety Code.

95207. Severability.

- (a) Each part of this article is deemed severable, and, in the event that any part of this article is held to be invalid, the remainder of this article shall continue in full force and effect.

NOTE: Authority: Sections 38510, 38597, 39600 and 39601, Health and Safety Code.
Reference: Sections 38501, 38505 and 39300, Health and Safety Code.

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Proposed Regulation Order

PROPOSED AMENDMENTS TO THE REGULATION FOR THE MANDATORY REPORTING OF GREENHOUSE GAS EMISSIONS

Amend section 95104, title 17, California Code of Regulations to read as follows:

(Note: The proposed amendments to the existing regulation are shown in underline to indicate proposed additions)

95104. Greenhouse Gas Emissions Data Report.

(No modifications are proposed to subsections (a) through (d) of section 95104.)

(e) The operator shall submit emissions data reports, and any revisions to the reports, through the California Air Resources Board's Greenhouse Gas Reporting Tool.

NOTE: Authority cited: Sections 38510, 38530, 39600, 39601, and 41511, Health and Safety Code. Reference: Sections 38530, 39600, and 41511, Health and Safety Code.

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Appendix B

Workshop Notices

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Workshop Notices



Linda S. Adams
Secretary for
Environmental Protection

Air Resources Board

Mary D. Nichols, Chairman
1001 I Street • P.O. Box 2815
Sacramento, California 95812 • www.arb.ca.gov



Arnold Schwarzenegger
Governor

January 9, 2009

TO: All Interested Parties

SUBJECT: Public Workshop on AB 32 Administrative Fee Regulation

The Air Resources Board (ARB) invites you to participate in a public workshop concerning the AB 32 Administrative Fee Regulation.

Health and Safety Code Section 38597 (AB 32, Nunez, Chapter 488, Statutes of 2006), added by the Global Warming Solutions Act of 2006, authorizes ARB to adopt by regulation a schedule of fees to be paid by sources of greenhouse gas emissions (GHG) to support the administrative costs of implementing AB 32. ARB recently adopted the Climate Change Scoping Plan which outlines California's framework for reducing GHGs. ARB is initiating a rulemaking for this fee, with the intent of bringing a proposed regulation to the Board for consideration in May 2009.

The public workshop will be held at the following location:

DATE: Tuesday, January 27, 2009
TIME: 1:00 p.m. to 4:00 pm
PLACE: Cal/EPA Headquarters Building
Coastal Hearing Room, 2nd Floor
1001 I Street
Sacramento, CA 95814

The workshop is intended to provide for stakeholders input into development of a fee structure that will support the administration of programs to implement in AB 32.

For those unable to attend in person, the workshop will be webcast. On the day of the workshop, the broadcast can be accessed at:

<http://www.calepa.ca.gov/broadcast/?BDO=1>

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: <http://www.arb.ca.gov>.

California Environmental Protection Agency

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All Interested Parties
January 9, 2009
Page 2

You can also submit your questions and comments during the workshop to ccworkshops@arb.ca.gov. ARB recommends that you do not run other programs while viewing the webcast, as it may interrupt or lower the quality of the signal. The agenda and staff presentation for the workshop will be posted at least five days prior to the workshop on ARB's website at: <http://www.arb.ca.gov/cc/adminfee/adminfee.htm>

If you require special accommodations or language needs, please contact Mary Farr at (916) 445-8290 or mfarr@arb.ca.gov as soon as possible, but no later than 7-10 business days before the scheduled event/meeting. TTY/TDD/Speech to Speech users may dial 7-1-1 for the California Relay Service.

If you have questions regarding the workshop or the Administrative Fee Regulation Development, please contact Jeannie Blakeslee at (916) 445-8286 or jblakesl@arb.ca.gov

Sincerely,

/s/

Jon Costantino, Manager
Climate Change Planning Section
Office of Climate Change

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09 draft workshop notice_1.doc



Linda S. Adams
Secretary for
Environmental Protection

Air Resources Board

Mary D. Nichols, Chairman
1001 I Street • P.O. Box 2815
Sacramento, California 95812 • www.arb.ca.gov



Arnold Schwarzenegger
Governor

AB 32 Administrative Fee Regulation Workshop Draft Regulatory Language

The Air Resources Board (ARB) invites you to participate in a public workshop to discuss the draft AB 32 Administrative Fee Regulation language.

Health and Safety Code Section 38597 (AB 32, Nunez, Chapter 488, Statutes of 2006), added by the Global Warming Solutions Act of 2006, authorizes ARB to adopt by regulation a schedule of fees to be paid by sources of greenhouse gas emissions (GHG) to support the administrative costs of implementing AB 32. ARB is in the process of developing a rulemaking for this fee, with the intent of bringing a proposed regulation to the Board for consideration in May 2009.

This workshop is intended to provide an opportunity for stakeholders' input on the draft regulatory language. The workshop will contain time for questions and detailed discussion after staff presentation.

Where and When is the Meeting?

This meeting will be held at Cal/EPA Headquarters in Sacramento and will also be webcast.

DATE: Wednesday, February 25, 2009
TIME: 1:00 p.m. to 5:00 pm
PLACE: Cal/EPA Headquarters Building
Coastal Hearing Room, 2nd Floor
1001 I Street
Sacramento, CA 95814

Meeting Topic Details

The purpose of the workshop is to introduce the draft regulatory language for the Administrative Fee Regulation.

Meeting Materials

Meeting materials and an agenda will be posted on February 19, 2009 at <http://www.arb.ca.gov/cc/adminfee/adminfee/htm>. At this website you may also join our electronic mailing list to receive further notices of ARB activities and public meetings related to the implementation of AB 32.

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: <http://www.arb.ca.gov>.

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Can't Make it to the Meeting?

This meeting will be webcast, and viewers can email written comments or questions during the session to cworkshops@arb.ca.gov. Webcast links are posted at <http://www.calepa.ca.gov/broadcast/?BDO=1>. ARB recommends that you do not run other programs while viewing the webcast, as it may interrupt or lower the quality of the signal.

Directions to Cal/EPA

There are many ways to arrive at the Cal/EPA Headquarters Building but we encourage you to take public transportation or drive low emission/high efficiency vehicles whenever possible. Use the following link for directions and information on public transit: <http://www.calepa.ca.gov/EPABldg/location.htm>.

Special Accommodations or Language Assistance

If you require special accommodations or language needs, please contact Mary Farr at (916) 445-8290 or mfarr@arb.ca.gov as soon as possible, but no later than 7 business days before the scheduled event/meeting. TTY/TDD/Speech to Speech users may dial 7-1-1 for the California Relay Service.

We Value Your Input

We welcome and encourage your participation in this important effort. If you have questions regarding the workshop or the Administrative Fee Regulation development, please contact Jeannie Blakeslee at (916) 445-8286 or jblakesl@arb.ca.gov.

Sincerely,

Charles M. Shulock
Assistant Executive Officer



Linda S. Adams
Secretary for
Environmental Protection

Air Resources Board

Mary D. Nichols, Chairman
1001 I Street • P.O. Box 2815
Sacramento, California 95812 • www.arb.ca.gov



Arnold Schwarzenegger
Governor

Draft AB 32 Cost of Implementation Fee Regulation

The Air Resources Board (ARB) invites you to participate in the 3rd public workshop to discuss the revised draft of the AB 32 Cost of Implementation Fee Regulation. In addition, ARB staff will discuss the newly proposed amendments to the mandatory reporting regulation in Title 17, California Code of Regulation, Section 95104.

Health and Safety Code Section 38597 (AB 32) authorizes ARB to adopt by regulation a schedule of fees to be paid by sources of greenhouse gas emissions (GHG) to support the administration costs of implementing AB 32.

Where and When is the Meeting?

The workshop will be held at the following location:

DATE: Monday, April 20, 2009
TIME: 1:00 p.m. to 5:00 pm
PLACE: Cal/EPA Headquarters Building
Sierra Hearing Room, 2nd Floor
1001 I Street
Sacramento, CA 95814

Meeting Topic Details

The purpose of this workshop is to discuss with stakeholders the current status of the development of the fee regulation; the required revenue for AB 32 implementation; and the newly proposed amendments to the mandatory reporting regulation.

Meeting Materials

The materials for this workshop will be posted prior to the workshop at ARB's website <http://www.arb.ca.gov/cc/adminfee/meetings/meetings.htm>. The materials will include an updated draft of the proposed regulation, information about the required revenue, and amendments to the mandatory reporting regulation.

At this website you may also join our electronic mailing list to receive further notices of ARB activities and public meetings related to the implementation of AB 32.

Can't Make it to the Meeting?

This meeting will be webcast, and viewers can email written comments or questions during the session to cworkshops@arb.ca.gov. Webcast links are posted at <http://www.calepa.ca.gov/broadcast/?BDO=1>. ARB recommends that you do not run other programs while viewing the webcast, as it may interrupt or lower the quality of the signal.

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: <http://www.arb.ca.gov>.

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We Value Your Input

We welcome and encourage your participation in this important effort. If you have questions regarding the workshop or the Administrative Fee Regulation development, please contact Jeannie Blakeslee at (916) 445-8286 or jblakesl@arb.ca.gov.

Sincerely,

Jon Costantino, Manager
Office of Climate Change

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Appendix C

Program Costs

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Program Costs

The purpose of this proposed regulation is to repay loans that were used to fund ARB and the California Environmental Protection Agency's (Cal/EPA) implementation of AB 32 in fiscal years 2007/2008 and 2008/2009 and to create a stable and steady funding source for state agencies to carry out AB 32 in future years. This section describes the loans, as well as how ARB proposes to determine the Required Revenue to carry out AB 32 in fiscal year 2009/2010 and future budget years.

This fee would cover expenditures for implementing AB 32, including:

1. 2007/2008 fiscal year loans for ARB and Cal/EPA
2. 2008/2009 fiscal year loan for ARB and Cal/EPA
3. 2009/2010 fiscal year and future year costs for ARB, Cal/EPA and other California state agencies.

The amount of revenue collected through the fees is the Required Revenue, which is the total amount of funds necessary to recover the costs of implementing the AB 32 program, plus loan repayment. The Required Revenue is based on the number of personnel positions, including salaries and benefits, and other expenses (contracts, equipment, etc.), approved in the California Budget Act for that fiscal year. The Total Required Revenue is the Required Revenue adjusted for excess or under collection from the previous fiscal year.

Loan Repayment for ARB and CalEPA

For the 2007/2008 fiscal year, expenditures for ARB and Cal/EPA to carry out AB 32 were supported by loans. ARB received a loan of approximately \$15.2 million from the Motor Vehicle Account (MVA) through legislation. The 2007/2008 Budget provided Cal/EPA a loan of approximately \$300,000 from MVA (SB 77, Chapter 171, Statutes of 2007, and SB 78, Chapter 172, Statutes of 2007). ARB also was budgeted approximately \$8.5 million from the Air Pollution Control Fund (APCF).

For the 2008/2009 fiscal year, the expenditures for ARB and Cal/EPA were covered through a \$32 million loan from the Beverage Container Recycling Fund (BCRF). The loan was approved with repayments spelled out within the Budget Act (AB 1781, Chapter 268, statutes of 2008) with budget bill language as follows:

“The transfer made by this item is a loan to the Air Pollution Control Fund and shall be fully repaid from revenues established by the State Air Resources Board pursuant to the California Global Warming Solutions Act of 2006. The loan shall be repaid by the earliest feasible date. At least one-third of the loan shall be repaid on or before June 30, 2011, and the

full amount shall be repaid on or before June 30, 2013. The loan shall be repaid with interest at the rate earned by the Pooled Money Investment Account at the time of the transfer.”

For the 2009/2010 fiscal year, the Budget Act (SBX3 1, Chapter 1, Statutes of 2009) approved a \$35 million loan (BCRF) for ARB and Cal/EPA expenditures. Timely implementation of this Fee regulation could eliminate the need for some or all of the loan for the 2009/2010 fiscal year. The budget provisions for this loan are as follows:

The transfer made by this item is a loan to the Air Pollution Control Fund and shall be fully repaid from revenues established by the State Air Resources Board pursuant to the California Global Warming Solutions Act of 2006 (Division 25.5 (commencing with Section 38500) of the Health and Safety Code). The loan shall be repaid by the earliest feasible date. At least one-third of the loan shall be repaid on or before June 30, 2012, and the full amount shall be repaid on or before June 30, 2014. The loan shall be repaid with interest at the rate earned by the Pooled Money Investment Account at the time of the transfer.

Table 1 shows the loans used to carry out AB 32 for the first two fiscal years.

Table 1: Fiscal Year 2007/2008 and 2008/2009 Loans To Carry Out AB 32

Fiscal Year	Approximate Program Costs (\$ Millions)
FY 2007/2008	(MVA loan, ARB) \$15.2 (MVA loan, Cal/EPA) \$0.3
FY 2008/2009	(BCRF loan) \$32.0
Total	\$47.5

Loan Repayment Plan

Pursuant to Budget Acts SBX3 1 (Chapter 1, Statutes of 2009) and AB 1781 (Chapter 268, Statutes of 2008), the BCRF loans must be fully repaid with interest with at least one-third paid back by the second year. ARB used the same methodology to determine the repayment schedule for the MVA loan, which did not come with legislative directives. Based on the interest rate for each loan, ARB calculated the amount due, including the accrued interest. The interest rate is determined by the rate of the Pooled Money Investment Account at the time the loans are transferred. Table 2 shows the repayment schedule for the two loans. As shown in the table, ARB will repay the loans over four years. If ARB requires funds from the 2009/2010 loan, this repayment schedule will be modified to incorporate repayment of that loan.

**Table 2: Repayment Schedule for
Fiscal Year 2007/2008 and 2008/2009 Loans**

Payment Due Date	Approximate Amount Due Including Interest (\$ million)*
June 30, 2010	\$13.7
June 30, 2011	\$14.0
June 30, 2012	\$13.8
June 30, 2013	\$13.2
Total	\$54.6

*Numbers do not add due to rounding

ARB Expenses for Fiscal Years 2007/2008 and 2008/2009

In order to confirm that the funds loaned to ARB were expended on AB 32 related activities for fiscal years 2007/2008 and 2008/2009, staff reviewed the person years and other expenditures related to AB 32 in each fiscal year. This included the program staff workload associated with AB 32 work products, such as the Scoping Plan, various Early Action Measures, and additional regulatory measures. ARB utilized existing program staff, management oversight and program support staff, as needed, in order to complete the considerable workload within the statutory timeline.

Staff related costs include salary, benefits and operating expenses such as facility costs, training and travel. Program support costs account for executive oversight as well as administrative and computer support. To calculate this cost, ARB determined that approximately 13 percent of our program-related positions are budgeted as climate change positions. Staff then attributed 13 percent of the total cost of the Chairman’s Office, the Executive Office, administrative services and computer services to the climate change program.

Based on our initial evaluation of fiscal year 2007/2008 expenses, ARB expended resources in excess of the loan amount. Fiscal year 2008/2009 is still in progress, so the expenditures are preliminary, but similarly they show that ARB has expended resources in excess of the loan amount. With the proposed Fee regulation, ARB is proposing that only loan-related budgeted costs shown in Table 2 be recouped for prior fiscal years.

A summary of ARB’s AB 32 expenditures for fiscal years 2007/2008 and 2008/2009 is provided in Tables 3 and 4 below. Tables 3a and 4a provide a more detailed breakdown of ARB’s expenditures for the first two years of the AB 32 program.

**Table 3: Estimated ARB Expenditures for the AB 32 Program
Fiscal Year 2007/2008**

	Costs (Million \$)*
Staff Related Costs	
• Salary	\$10.75
• Benefits	\$3.77
• Operating Costs	\$4.21
Program Support ¹	\$2.00
Contracts ²	\$4.65
Equipment	\$0.05
Total	\$25.43

¹Program Oversight includes Chairman's Office, Executive Office, administrative services and computer support expenses in proportion to the staffing for the AB 32 program.

²Estimated expenditures in the 2007/2008 fiscal year.

*Numbers do not add due to rounding.

**Table 3a: Estimated ARB Expenditures for the AB 32 Program
Fiscal Year 2007/2008 - Detail**

Personal Services and Operating Expenses:

Salaries for Program Staff		
Classification	Number of PYs	Annual Salaries
Air Pollution Spec	53.74	4,050,831.42
Air Resources Engr	19.70	1,577,282.27
Air Resources Supvr I	19.50	2,003,209.18
Air Resources Supvr II	7.47	857,309.28
Assoc Govtl Prog Analyst	1.60	91,066.20
Assoc Info Systems Analyst-Spec	0.03	1,945.08
Asst Div Chief	1.40	173,653.20
Auto Emission Test Spec II	0.30	13,062.60
Auto Emission Test Spec III	0.66	35,133.75
C.E.A. I	2.95	382,841.40
Environmental Program Manager I	0.25	22,725.00
Exec Asst	1.13	41,398.08
Instrument Techn	0.20	11,966.40
Library Tech Asst I	0.02	646.85
Office Techn-Typing	1.42	52,607.04
Special Consultant	0.16	8,100.48
Staff Air Pollution Spec	14.62	1,349,022.00
Staff Services Analyst-Gen	1.56	64,107.62
Staff Services Mgr I	0.20	13,159.20
Supervising Librarian II	0.05	3,839.40
Sub-Total	126.96	10,753,906.44

Benefits		
FICA	6.20%	666,742.20
Medicare	1.45%	155,931.64
Retirement	16.63%	1,788,374.64
Health	10.82%	1,163,572.68
Sub-Total	35.10%	3,774,621.16

Total Personal Services: 14,528,527.61

Operating Costs	Standard Avg Per Position Cost	
General Expense	14,378	1,825,430.88
Printing	766	97,251.36
Communications	2,533	321,589.68
Postage	600	76,176.00
Training	2,500	317,400.00
Travel-In-State	2,395	304,069.20
Facilities	10,000	1,269,600.00
Sub-Total	33,172	4,211,517.12

**Total Program Staff
Related Costs: 18,740,044.73**

Other Costs	
Contracts	4,652,429.00
Equipment	45,180.00
Program Support	1,998,871.68
Sub-Total	6,696,480.68
Total Costs: 25,436,525.41	

**Table 4: Estimated ARB Expenditures for the AB 32 Program
Fiscal Year 2008/2009 - Preliminary**

	Costs (Million \$)
Staff Related Costs	
• Salary	\$16.10
• Benefits	\$5.64
• Operating Cost	\$7.54
Program Support ¹	\$1.96
Contracts ²	\$5.92
Equipment	\$1.83
Total	\$38.99

¹Program Oversight includes Chairman's Office, Executive Office, administrative services and computer support expenses in proportion to the staffing for the AB 32 program.

²Preliminary estimate of expenditures in the 2008/2009 fiscal year.

**Table 4a: Detailed ARB Expenditures for the AB 32 Program
Fiscal Year 2008/2009 - Preliminary**

Personal Services and Operating Expenses:

Salaries for Program Staff		
Classification	Number of PYs	Actual Annual Salaries
Air Pollution Spec	85.05	6,959,829.69
Air Resources Engr	32.78	2,786,431.25
Air Resources Field Rep II	1.36	80,325.00
Air Resources Field Rep III	0.15	9,603.00
Air Resources Supvr I	26.00	2,686,079.95
Air Resources Supvr II	9.07	1,055,123.28
Assoc Govtl Prog Analyst	0.68	39,898.92
Assoc Info Systems Analyst-Spec	0.03	2,042.28
Asst Div Chief	1.35	160,402.19
Auto Emission Test Spec II	0.25	11,218.20
Auto Emission Test Spec III	0.00	0.00
C.E.A. I	1.97	255,819.84

Environmental Program Manager I	0.00	0.00
Exec Asst	0.95	39,182.40
Instrument Techn	0.20	11,966.40
Library Tech Asst I	0.02	646.85
Office Asst-Gen	0.70	18,557.28
Office Techn-Typing	2.20	77,635.20
Special Consultant	0.20	10,125.60
Staff Air Pollution Spec	17.76	1,798,343.54
Staff Services Analyst-Gen	1.81	78,612.58
Staff Services Mgr I	0.20	13,816.80
Supervising Librarian II	0.05	3,839.40
Sub-Total	182.77	16,099,499.64

Benefits		
FICA	6.20%	998,168.98
Medicare	1.45%	233,442.74
Retirement	16.57%	2,667,687.09
Health	10.82%	1,741,965.86
Sub-Total	35.04%	5,641,264.68

Total Personal Services: 21,740,764.32

Operating Costs		Standard Avg Per Position Cost	
General Expense	20,454		3,738,377.58
Printing	958		175,093.66
Communications	1,958		357,863.66
Postage	1,000		182,770.00
Training	2,000		365,540.00
Travel-In-State	2,874		525,280.98
Facilities	12,000		2,193,240.00
Sub-Total	41,244		7,538,165.88

Total Program Staff Related Costs: 29,278,930.20

Other Costs	
Contract	5,917,120.00
Equipment	1,830,564.00
Program Support	1,961,068.98
Sub-Total	9,691,632.98

Total Costs: 38,987,683.18

Cal/EPA Expenses for Fiscal Years 2007/2008 and 2008/2009

Cal/EPA and ARB undertook a similar process to confirm that the Cal/EPA loans were expended on AB 32 related activities for fiscal years 2007/2008 and 2008/2009, reviewing the person years and other expenditures related to AB 32. Based on an initial evaluation of fiscal year 2007/2008 expenses, Cal/EPA expended resources in excess of the loan amount. Fiscal year 2008/2009 is still in progress, so the expenditures are preliminary estimates. However, combined

with ARB's preliminary 2008/2009 expenditures, they show that the two agencies have expended resources in excess of the loan amount.

Like ARB, only funds loaned to Cal/EPA will be recouped by the fee for fiscal years 2007/2008 and 2008/2009. A summary of the expenditures is provided in Tables 5 and 6 below.

**Table 5: Estimated Cal/EPA Expenditures for the AB 32 Program
Fiscal Year 2007/2008**

	Costs¹ (Million \$)
Staff Related Costs	
• Salary	\$0.15
• Benefits	\$0.08
• Operating Cost	\$0.12
Contracts	0
Equipment	0
Total	\$0.34

¹ Does not add due to rounding.

**Table 6: Estimated Cal/EPA Expenditures for the AB 32 Program
Fiscal Year 2008/2009 - Preliminary**

	Costs
	(Million \$)
Staff Related Costs	
• Salary	\$0.34
• Benefits	\$0.15
• Operating Cost	\$0.30
Contracts	0
Equipment	0
Total	\$0.79

ARB's AB 32 Activities

In fiscal years 2007/2008 and 2008/2009, ARB engaged in, and is continuing to engage in, numerous activities to implement AB 32. The statute describes an aggressive timeline for ARB to inventory greenhouse gas emissions in the state, to identify a 2020 emissions goal, to identify and adopt Discrete Early Action Measures to reduce greenhouse gas emissions, to adopt a comprehensive Scoping Plan that describes how the state will meet the goal, and to develop, adopt and implement additional greenhouse gas reduction measures to meet the

2020 goal. The major milestones of AB 32 and their due dates, most of which are during fiscal years 2007/2008 and 2008/2009, are shown in Table 7.

Table 7: Major Milestones in AB 32

Status	Milestone
X	Publish a list of Discrete Early Actions (HSC §38550 (a))
X	Determine 1990 greenhouse gas emission level and set 2020 emissions target at that level (HSC §38550)
X	Adopt regulations to require reporting and verification of statewide greenhouse gas emissions (HSC §38530)
X	Approve a Scoping Plan (HSC §38561)
In Process	Adopt regulations to implement Discrete Early Action Measures to be enforceable no later than January 1, 2010 (HSC §38550 (b) and (d))
In Process	Adopt greenhouse gas emission limits and emission reduction measures to become operative January 1, 2012 (HSC §38562)

In order to support these activities, to meet other requirements of AB 32, and to lay the groundwork for meeting the long-term goal described in AB 32. ARB deployed numerous resources. Many of the activities described below will continue in fiscal year 2009/2010, or will require resources to transition from regulatory development and adoption to regulatory implementation.

A more detailed discussion of ARB's climate change activities in fiscal years 2007/2008 and 2008/2009, as well as anticipated activities for fiscal year 2009/2010, follows.

1. Greenhouse Gas Emission Inventory And Reporting

AB 32 describes specific tasks and milestones for developing a statewide greenhouse gas inventory.

A. Create Comprehensive Greenhouse Gas Inventory and Establish 2020 Limit

Section 38550 of the Health and Safety Code requires ARB to determine what the statewide greenhouse gas emissions level was in 1990, and approve, in a public hearing, a statewide greenhouse gas emissions limit that is equivalent to that level and which must be achieved by 2020.

Prior to the 2006 statute, ARB did not systematically collect greenhouse gas emissions data or have explicit authority or staff dedicated to collecting and storing greenhouse gas data and forecasting future emissions. Developing a California greenhouse gas emission inventory required establishing an

organizational unit to identify major sources and sinks of greenhouse gas emissions, develop methodologies for estimating greenhouse gas emissions, and identify sources of emissions information necessary to regularly update the statewide greenhouse gas emissions level. Based on the emissions data sources, ARB created a baseline for evaluating the success of emission reduction measures.

In the 2007/2008 fiscal year, staff undertook a comprehensive review of 1990 greenhouse gas emissions estimates using the best available scientific, technical, and economic information. ARB staff gathered data from state and federal agencies, international organizations, and California industries to estimate the total statewide 1990 greenhouse gas emissions level. These emissions estimates were developed through an extensive public process, which included technical workshops. ARB staff estimated the statewide 1990 emissions level to be 427 million metric tons of carbon dioxide equivalent (MMT_{CO₂E}). In December 2007, the Board determined the 1990 emissions level to be 427 MMT_{CO₂E} and approved this level as the statewide 2020 greenhouse gas emissions limit.

Work in this area continued in fiscal year 2008/2009 and will continue in fiscal year 2009/2010. Staff continue to refine the greenhouse inventory, and have developed a web-based interactive tool to identify all methods and data sources used to determine the greenhouse gas emissions in the California's greenhouse gas inventory by economic sector or activity. Inventory staff are also working closely with rulemaking staff to support development and adoption of the Scoping Plan measures.

B. Develop, Implement and Enforce Mandatory Reporting Regulation

Section 38530 of the Health and Safety Code requires ARB to adopt regulations, by January 1, 2008, to require the reporting and verification of statewide greenhouse gas emissions and to monitor and enforce compliance with the reporting program. In order to identify ways to reduce emissions, it was necessary to establish an effective program to collect data from specific greenhouse gas emissions sources, verifying the emissions, monitoring and annual reporting emissions, accounting for emissions from all electricity consumed in the state, including transmission and distribution line losses from electricity generated within the state or imported from outside the state.

In 2007, staff developed a regulation for the mandatory reporting and verification of greenhouse gas emissions from specified sources. In developing the regulation, staff focused on facilities within economic sectors accounting for the largest sources of greenhouse gas emissions. The Board adopted the regulation in December 2007. The mandatory reporting regulation is codified in subchapter 10, article 2, sections 95100 to 95133, title 17, California Code of Regulations.

Greenhouse gas emissions reporting begins in 2009 (for 2008 calendar year emissions.) In fiscal year 2008/2009, staff provided outreach to assist in the implementation of greenhouse gas mandatory emissions reporting. Staff has developed a comprehensive web-based greenhouse gas reporting tool to simplify and guide the reporting process. Staff conducted a series of training sessions to familiarize users with the reporting regulation and the Reporting Tool. Staff also developed a series of Reporting Tool user guides for the six economic sectors required to report greenhouse gas emissions. Staff will continue to implement the Mandatory Reporting Regulation in fiscal year 2009/2010.

Verifier Accreditation Program: The reporting regulation requires facilities to verify their greenhouse gas emissions estimates through a review by ARB-accredited third-party verifiers, consistent with international standards. Verification of emissions reports is required for all facilities subject to mandatory reporting beginning in 2010 (for their 2009 reported emissions). Verification is optional in 2009. In order to ensure an adequate number of third-party verifiers, ARB developed a greenhouse gas verifier training program that will provide accreditation for individuals interested in providing services for verification of greenhouse gas emission data reports. ARB staff also developed an accreditation application process and is presently screening.

In addition to verifier training and accreditation, ARB staff is responsible for determining the potential conflict of interest for proposed verifiers and overseeing verifier performance during emissions report reviews. Verification is also required to validate the emission reduction credits used to meet the requirements of greenhouse gas reduction regulations. This work will also continue in fiscal year 2009/2010.

2. AB 32 Program Planning

AB 32 identifies ARB as the state agency charged with monitoring and regulating sources of greenhouse gases that cause global warming in order to reduce their emissions. The addition of this new responsibility required ARB to create a new unit charged with overseeing the implementation of AB 32, including development of the Scoping Plan, coordinating ARB's internal climate change efforts, serving as a liaison with other state, local, national, and international agencies, and developing strategies for meeting California's goal of reducing greenhouse gas emissions.

Under AB 32, ARB must prepare and approve a Scoping Plan on or before January 1, 2009, outlining the State's strategy to reduce greenhouse gas emissions to 1990 levels by 2020. In 2007 and 2008, ARB engaged in an intensive effort to develop the Scoping Plan, approved at the December 11, 2008 Board meeting, which identifies the actions that will be taken to achieve the maximum technologically feasible and cost-effective reductions in greenhouse gas emissions. In developing the Scoping Plan, ARB staff had to develop expertise on emission reduction strategies for greenhouse gases and identify

direct emission reduction measures for potential implementation. Additionally, staff evaluated and recommended alternative compliance mechanisms, market-based compliance mechanisms, and potential monetary and non-monetary incentives.

As required by AB 32, staff also evaluated and considered all relevant information pertaining to the greenhouse gas emission reduction programs in other state, regions, and nations, and evaluated the total potential costs and economic and non-economic benefits of the Scoping Plan, including the impacts on small businesses. Staff additionally identified opportunities for emission reductions from voluntary actions, and conducted public workshops throughout the state with a portion being held in regions with the most significant exposure to air pollutants, including communities with minority and low income populations.

To ensure that the public and stakeholders were involved at every stage of the development and implementation of the Scoping Plan, including informal and formal rulemaking activities, staff worked with the Environmental Justice Advisory Committee, the Economic and Technology Advancement Advisory Committee, small businesses, labor unions, community and neighborhood organizations, local chambers of commerce, and faith-based communities.

The Scoping Plan lays out a number of measures that ARB has already adopted or is in the process of developing. Most of the Discrete Early Action Measures in the Scoping Plan have been adopted, and ARB is now working on additional emission reduction measures. Several of these measures are discussed below.

3. Greenhouse Gas Emission Reduction Measures

A. Develop and Implement Discrete Early Action Reduction Measures

Health and Safety Code section 38560.5(a) requires ARB to develop and publish a list of Discrete Early Action greenhouse gas emission reduction measures by June 30, 2007. Health and Safety Code section 38560.5(b) further requires ARB to adopt regulations to implement the measures identified on that list, and for those measures to be enforceable by January 1, 2010.

In June 2007, the Board approved an initial list of Discrete Early Action Measures, and in October 2007, the Board augmented that list. The nine Discrete Early Action measures and their status are described below:

Diesel Auxiliary Engines on Ocean-Going Vessels Regulation: This regulation will reduce emissions from diesel auxiliary engines on container ships, passenger ships, and refrigerated-cargo ships while berthing at a California port. The regulation provides vessel fleet operators visiting these ports to reduce at-berth emissions from auxiliary engines by connecting to another source of power, most likely grid-based shore power; or using alternative control technique(s) that

achieve equivalent emission reductions. The Board approved this regulation in December 2007.

Reduction Of High Global Warming Potential (GWP) Greenhouse Gases In Consumer Products: At the June 2008 Board hearing, ARB approved amendments to the California Consumer Products Regulation that included the first GWP standard for consumer products in California, the GWP limit for Pressurized Gas Duster products.

Heavy-Duty Vehicle Greenhouse Gas Emission Reduction Measure: This regulation will reduce greenhouse gas emissions produced by heavy-duty tractors by making them more fuel efficient. Fuel efficiency will be improved by requiring the use of aerodynamic tractors and trailers that are also equipped with low rolling resistance tires. The tractors and trailers subject to this regulation must either use United States Environmental Protection Agency Smartway (SmartWay) certified tractors and trailers, or retrofit their existing fleet with Smartway verified technologies. This regulation was approved in December 2008.

Regulation to Reduce Refrigerant Losses from Servicing of Motor Vehicle Air Conditioning: This regulation will reduce refrigerant emissions from servicing of automotive refrigerants by the do-it-yourselfer. The current automotive refrigerant (R-134a) is a potent greenhouse gas. This regulation will help prevent unnecessary releases of the refrigerant to the atmosphere and applies to automotive refrigerants with a GWP value greater than 150. The Board approved this regulation in January 2009.

Regulation to Reduce Greenhouse Gas Emissions from Semiconductor Operations: This regulation will reduce fluorinated gas emissions from the semiconductor industry. The Board approved this regulation in February 2009.

SF₆ Reductions from Non-Electric and Non-Semiconductor Applications: This regulation will reduce SF₆ emissions from uses such magnesium die-casting, fume vent hood testing, tracer gas use, and other niche uses. The Board approved this regulation in February 2009.

Regulation to Reduce Greenhouse Gas Emissions from Vehicles Operating with Underinflated Tires: This regulation will reduce greenhouse gas emissions from vehicles through properly inflated tires. The Board approved the regulation in March 2009.

The Low Carbon Fuel Standard (LCFS): The Low Carbon Fuel Standard (LCFS) reduces the carbon intensity of California's transportation fuels by at least 10 percent by 2020. The LCFS regulation is also designed to reduce California's dependence on petroleum, create a lasting market for clean transportation technology, and stimulate the production and use of alternative low-carbon and no-carbon fuels in California. The Board adopted the LCFS regulation in April 2009.

For the 2008/2009 fiscal year, ARB received additional resources to assist in the development and implementation of the LCFS. These resources are being used to establish and implement the LCFS program, to evaluate sustainability issues, to evaluate the impact of changes to California's fleet of vehicles, and to perform exhaust and evaporative tests of low carbon fuels.

Landfill Methane Capture: ARB staff, in collaboration with the California Integrated Waste Management Board staff, is developing a control measure to provide enhanced control of methane emissions from municipal solid waste (MSW) landfills. The control measure will reduce methane emissions from MSW landfills by requiring gas collection and control systems on landfills where these systems are not currently required and will establish statewide performance standards to maximize methane capture efficiencies. This regulation will be considered at the Board Meeting in June 2009.

B. Develop and Implement Additional Source-Specific Measures

AB 32 tasks ARB with developing and adopting, by January 1, 2011, all greenhouse gas emission limits and emission reduction measures necessary to achieve the maximum technologically feasible and cost-effective reductions. Staff have developed or are now developing a number of individual greenhouse gas emissions reduction measures affecting a wide range of sectors. For measures that have already been adopted, resources have transitioned to implementation of the programs. In addition, ARB is working with other members of the Western Climate Initiative to identify source-specific measures that would be appropriate to pursue regionally. Several source-specific measures are discussed below.

The Scoping Plan called on ARB to develop outreach, assistance and education programs that involve small businesses, local governments, communities, green technology, and economic and workforce development to help move California to a low carbon future. ARB has, and will continue to develop, programs to encourage the voluntary implementation of cost effective greenhouse gas emission reduction practices for individuals, small businesses, local and regional governments. ARB is also participating in the Green Collar Jobs Council which is coordinating California's economic development and job training efforts in the green jobs arena.

Reflective Glazing: The purpose of this strategy is to reduce the solar heat gain in a vehicle parked in the sun. A cooler interior would make drivers less likely to activate the air conditioner, which increases carbon dioxide emissions. At this time, ARB is focusing on solar reflective window glazing. The regulation will be considered at the Board Meeting in June 2009.

Medium and Heavy-Duty Hybridization: Hybrid-electric technology offers the potential to significantly reduce emissions and improve fuel efficiency, especially for medium- and heavy-duty trucks operating in urban environments. ARB will consider a regulation and/or incentive program that reduces greenhouse gas emissions of new medium- and heavy-duty trucks sold in California.

Low Friction Engine Oil: Engine oils can be formulated to reduce friction, thereby improving the overall efficiency of the vehicle.

Pavley II: In the Scoping Plan, ARB committed to strengthen vehicle greenhouse emission standards beginning with the 2017 model year. This measure is referred to as Pavley II. The new standards will build on the existing standards (Pavley I) that reach their maximum stringency in 2016.

Energy Efficiency and Co-Benefits Audits: This proposed regulation would require large facilities to conduct an energy efficiency audit of individual combustion and other direct sources of greenhouse gases to determine the potential for efficiency improvements that would result in greenhouse gas emission reductions, and possibly co-benefits from reduction of criteria pollutants and toxic air contaminant emissions. The regulation will be considered at the Board Meeting in October 2009.

Removal of Methane Exemption from Existing Refinery Regulations: Under this measure, existing fugitive methane exemptions would be removed from the regulations applicable to equipment and sources employed in California's refineries.

Refinery Flares: While flare systems protect the refinery and surrounding community from potential catastrophic overpressure in the process units, the combustion of gases in flares results in emissions of various greenhouse gases as well as other air pollutants. Staff will work with local air districts to develop a measure to improve the overall flare gas recovery in the flare systems of refineries.

Oil and Gas Extraction: This measure is intended to reduce fugitive emissions from oil and gas extraction processes. These emissions, mostly in the form of methane, are from well and process equipment venting and from separation and storage units. This measure is scheduled to be adopted in late 2009 or early 2010. Currently, staff is conducting studies to investigate greenhouse gas emissions from this sector to develop accurate greenhouse gas emission estimates.

Oil and Gas Transmission: This measure is intended to reduce greenhouse from the transmission and distribution of natural gas. Transmission-related emissions come primarily from fugitive sources and secondarily from combustion sources. This measure is scheduled to be adopted in 2010 or early 2010. Currently, staff

is conducting studies to investigate greenhouse gas emissions from this sector to develop accurate greenhouse gas emission estimates.

High GWP Gases: While CO₂ is the most widely recognized greenhouse gas of the Kyoto Protocol of gaseous contributors to the greenhouse effect, there are a number of other pollutants that also contribute to global warming. Kyoto gases, including SF₆, HFCs and PFCs, have global warming impact that is hundreds to thousands of times the climate impact of CO₂ and are therefore called High Global Warming Potential (GWP) gases. To mitigate the high-GWP gases from various sources, staff developed or are in the process of developing several measures, include:

- Regulation to Reduce High-Global Warming Potential Refrigerant Emissions from Stationary Refrigeration and Air Conditioning (R/AC) Equipment: This measure is scheduled to be considered by the Board in 2009.
- Specifications for Commercial and Industrial Refrigeration: This regulatory measure proposes new specifications for commercial and industrial refrigeration systems to both reduce emissions of high GWP refrigerant and to increase energy efficiency of the units.
- Foam Recovery and Destruction Program: This measure is scheduled to go to the Board in December 2010.
- Residential Refrigeration Program: This proposed program would address the over one million residential refrigerators, freezers, and air conditioners that are disposed of each year. This program could also include establishing a voluntary program to encourage the upgrade of pre-2000 residential refrigeration equipment.
- High GWP Reductions from Mobile Sources: The measure could take a variety of forms to reduce GWP emissions from mobile sources such as requiring low GWP refrigerants for new Motor Vehicle Air Conditioning (MVAC) systems, including A/C systems used for heavy-duty and off-road vehicle applications and in the refrigerated shipping container industry. Other strategies could include mitigation of refrigerant emissions at a vehicle's end of life.
- Reduction of High GWP Greenhouse Gases in Consumer Products: Staff is currently working on proposed amendments to the Consumer Product Regulation.
- Sulfur Hexafluoride (SF₆) Emission Reductions for the Electricity Sector and Particle Accelerators: SF₆ is a very potent greenhouse gas, with a

GWP approximately 23,000 times more powerful than CO₂. This measure is scheduled to be heard by the Board in December 2009.

- High GWP Gases Fee: ARB is proposing a regulation to reduce high GWP gases through a mitigation fee on the sale of the gases. This mitigation fee would serve to decrease greenhouse gas emissions by changing behavior by increasing price (e.g. improve leakage reduction efforts); inducing new lower GWP alternative products; or providing revenue that can be used to mitigate greenhouse gas emissions elsewhere within the sector.

Greenhouse Gas Emission Reductions from Land Use: In a collaborative effort with other state agencies, local and regional governments, and public stakeholders, ARB staff is developing approaches for addressing greenhouse gas emissions from the land use and transportation sectors. These approaches focus on strategies that incentivize changes in both land use allocations and the amount of passenger vehicle travel within the major metropolitan regions of the state. A key component of this effort is the development of regional greenhouse gas emission reduction targets that could be met using a wide variety of land use and transportation strategies, including but not limited to: higher density development, increased transit opportunities, and pricing mechanisms. Reducing greenhouse gas emission from land use and transportation is a long-term endeavor. ARB anticipates on-going involvement in the development, tracking, and updating of any targets set for these sectors.

Voluntary Emissions Reduction Protocols: Health and Safety Code Section 38571 requires ARB to adopt methodologies to quantify voluntary greenhouse gas emission reductions and to adopt regulations to verify and enforce any voluntary emission reductions. Staff are working in collaboration with other agencies and organizations, including the California Climate Action Registry, to develop and adopt greenhouse gas protocols to support AB 32 program. Protocols for Local Government Operations, Manure Management Digesters and Urban Forests were adopted by the Board in Fall 2008.

C. Evaluate and Develop Market-Based Compliance System

Health and Safety Code section 38570(a) authorizes ARB to include in its regulations the use of market-based compliance mechanisms. AB 32 requires that prior to the inclusion of any market-based compliance mechanism in the regulations, ARB must consider the potential for direct, indirect, and cumulative emission impacts from these mechanisms, including localized impacts in communities already adversely impacted by air pollution. In addition, ARB must design a market-based compliance mechanism that prevents any increase in the emissions of toxic air contaminants or criteria air pollutants; and maximize additional environmental and economic benefits for California.

ARB's Scoping Plan identifies a cap-and-trade regulation as one of the main strategies California will employ to reduce greenhouse gas emissions that contribute to climate change. This program will help put California on the path to meet its 2020 emission reduction goal, and ultimately achieving the more aggressive 2050 goal. Under a cap-and-trade regulation, an overall limit on greenhouse gas emissions from capped sectors will be established under the program, and facilities subject to the cap will be able to trade permits (allowances) to emit greenhouse gases.

To develop the cap-and-trade measure for the Scoping Plan that was adopted in December 2008 and to develop the cap-and-trade regulation for Board consideration in late 2010, staff have, and will continue to, engage in a number of activities including an extensive public outreach process. Staff have held numerous workshops to engage stakeholders in the development of a regulatory concept.

Staff are continuing to work with stakeholders to design a regional cap-and-trade program that is enforceable and meets the requirements of AB 32, including the need to consider any potential impacts on disproportionately impacted communities. Staff are also working closely with six other western states and four Canadian provinces through the Western Climate Initiative (WCI) to design a regional cap-and-trade program that can deliver greenhouse gas emission reductions within the region at costs lower than could be realized through a California-only program. To that end, ARB rule development schedule is being coordinated with the WCI timeline for development of a regional program.

4. Applied Studies and Scientific Analysis

AB 32 requires ARB to design cost-effective greenhouse gas emission reduction measures to meet a statewide limit. A diverse portfolio of applied studies is required to help ARB identify and implement the most cost-effective, technologically feasible mitigation strategies. Research to support the requirements of AB 32 also illuminates linkages between greenhouse gas emissions and air pollution, as well as the health and social impacts of global warming. This research adds to the considerable existing research on impacts to California, providing information to facilitate identification and prioritization of mitigation strategies that will not adversely impact regional or community exposures to air pollution.

The research also involves data gathering and ambient monitoring of greenhouse gases or other pollutants of relevance as well as the investigation of fundamental science on global warming, its impacts and associated atmospheric processes to facilitate the adoption of the most cost-effective mitigation strategies. ARB has engaged in intensive seasonal monitoring of ambient levels of greenhouse gases, and has incorporated greenhouse gas monitoring into the existing Toxics Network. ARB is working to coordinate a statewide methane monitoring network, and will begin mobile measurements of greenhouse gases in summer 2009.

ARB has also collaborated with NASA to collect aircraft measurements of greenhouse gas levels in urban, rural, and off-shore areas, and is collaborating with NOAA on a 2010 field study to examine the nexus between air quality and climate change.

Research studies have focused on the technical data needs to develop and adopt Discrete Early Action Measures and for regional resolution of global warming in California. To support greenhouse gas mitigation activities, applied studies are in place for collaborative research on N₂O emissions from nitrogen land application and technical assistance to a voluntary “cool communities” program for promoting near-term reduction of greenhouse gases. ARB has also initiated research to resolve the intensity, distribution, and atmospheric processes associated with particles’ climate forcing in California, with an emphasis on vehicular sources and biomass combustion.

Meeting near-term (2020) and long-term (2050) climate goals will require extensive changes in home energy and water use, business operations, and transportation patterns. Studies already underway will help ARB gauge the effectiveness of strategies designed to encourage voluntary residential reductions in energy consumption. ARB-supported research will also delineate the demographic and behavioral determinants of household consumption of energy, water, natural gas, and transportation resources.

5. Support and Administration

The expansion of ARB’s activities associated with AB32 also extends to enforcement, legislative activities, and legal support, as well as increased workload for processing personnel paperwork, contracts and other administrative functions and information technology support.

ARB expanded enforcement resources to address new greenhouse gas measures, and as measures are adopted, resources will continue to shift to ensure smooth implementation of the regulations. As the scope of issues to be addressed by ARB under AB 32 is expansive, ARB legislative scope has also expanded, encompassing issues that in the past have not required significant ARB involvement. ARB has expanded its legislative review and tracking efforts to include additional issues in new program areas including waste management, forestry, agriculture, and the utility sector. Because the implementation of AB 32 presents many novel and complex legal issues, ARB also expanded its legal resources so that legal staff can be in the conception, development, and implementation of programs, such as the mandatory reporting regulations, the Scoping Plan, fee regulations, market mechanisms, and direct reduction measures. In light of the precedent-setting nature of these programs, it is likely that opponents will raise myriad legal issues during program development and implementation.

In the 2007/2008 and 2008/2009 fiscal years, ARB expanded its staff by over 10 percent, increasing the workload of the administrative and information technology units. The administrative unit experienced an initial increase in workload associated with the hiring of new staff. This workload will continue as these staff will require routine administrative support including personnel transactions, travel reimbursement, processing of contracts, training, and other administrative functions. Similarly, the information technology unit experienced an increase in workload that will continue as these new staff require workstation support, as well as support for the increasingly computer-based outreach methods used by ARB such as webcasts.

California Environmental Protection Agency's AB 32 Program Activities

Existing law and Executive Orders direct the Secretary for Environmental Protection to coordinate all state activities related to climate change. To achieve the required emission reductions called for in AB 32, each of the state agencies that are on the Climate Action Team must develop and implement programs within their own jurisdiction and authority. Since 2006, the California Environmental Protection Agency (Cal/EPA) has coordinated all the CAT sub-groups and their AB 32 measures in the Scoping Plan. In addition, Cal/EPA also produces the Biennial CAT Report that contains the updated assessment of the impacts of climate change in California.

Cal/EPA must also prepare the overarching economic analyses, the multi-state registry framework and the public education program. Furthermore, the Secretary must manage the increased administrative workload associated with additional rulemakings, contracts and procurements, and other matters generated by the Cal/EPA organizations, particularly ARB.

Additionally, Cal/EPA is responsible for the Climate Change Report Card, as mandated in statute (SB 85, Chapter 178, statutes of 2007), and the AB 32 Five Year Plans (AB 1338, Chapter 760, statutes of 2008). The climate change unit is also involved in coordinating cross-cutting activities of the Western Climate Initiative as they relate to implementation of AB 32. These activities will continue in fiscal year 2009/2010.

Future AB 32 Expenditures

In February 2009, the Legislature passed and the Governor signed the fiscal year 2009/2010 budget. This budget included a continuation of funding for ARB and Cal/EPA to carry out AB 32. For the 2009/2010 fiscal year, the Budget Act (SBX3 1, Chapter 1, Statutes of 2009) includes a \$35 million loan from the BCRF for ARB and Cal/EPA expenditures related to AB 32. ARB will consider this fee regulation in June 2009, and, if approved, fee collection for the 2009/2010 fiscal year will begin in spring 2010. Timely implementation of this Fee regulation could eliminate the need for some or all of the loan for the 2009/2010 fiscal year.

If ARB and Cal/EPA do rely on the loan for some or all of their 2009/2010 expenditures, the fee will be used to repay the loan with interest. These loan repayments would be added to the repayment schedule, and extend final payment of the loans by one year.

Funding Criteria

AB 32 provides ARB with the authority to adopt fees for the broad purpose of “carrying out this division.” For the 2009/2010 fiscal year and future fiscal years, ARB proposes to use the following criteria to determine which expenses would be funded from this fee.

- Staff related expenditures for the start-up and ongoing implementation of the AB 32 program that have been approved through budget change proposals (BCPs) after AB 32 was signed into law (September 2006).
- Other post AB 32 BCPs approved costs directly related to the administration of AB 32 programs to reduce greenhouse gas emissions, such as contracts, administrative overhead, and research directly related to the implementation of the AB 32 program.

For the 2009/2010 fiscal year and future fiscal years, ARB proposes that the following types of activities *not* be funded through AB 32 fees:

- Redirected staff positions working on AB 32 that were not approved in the formal budget process with an approved BCP;
- Costs incurred by non-state agencies such as air quality/pollution districts, other special districts, etc;
- Activities which are currently funding a part of an agency’s principal responsibilities (water conservation, waste reduction, traffic planning, etc.) that achieve greenhouse gas emission reductions as a co-benefit;
- Specific greenhouse gas emission mitigation activities that started prior to the passage of AB 32 or were covered by earlier budget requests;
- Activities related to adaptation to climate change, including adaptation-related research;
- Activities related to compliance with the California Environmental Quality Act (CEQA) requirements for state agencies related to climate change/greenhouse gas emissions; and,
- Compliance with existing and future programs, regulations or other initiatives for state agencies which reduce their own greenhouse gas emissions.

Funding for AB 32 Implementation in Fiscal Year 2009/2010 Budget

Several other state agencies have been working with Cal/EPA and ARB on AB 32 implementation, including work on the Climate Change Scoping Plan that ARB adopted in December 2008. The Scoping Plan describes a broad range of measures, including many measures that are the primary responsibility of other state agencies. These agencies, which all meet the funding criteria described

above, include: the Department of Food and Agriculture, Energy Commission, Department of General Services, and Integrated Waste Management Board.

Table 8 below provides a preliminary summary of anticipated state agency expenses, including staffing levels, for the AB 32 program for the 2009/2010 fiscal year. Note that the numbers contained in the table are preliminary and subject to change due to potential changes to the adopted 2009/2010 budget during the May revise. A final determination of the required revenue for fiscal year 2009/2010 will be made once final budget information becomes available.

**Table 8: Preliminary Summary of
AB 32 Program Funding for FY 2009/2010**

State Agency	PYs	Total Costs (in Million \$)
Air Resources Board	155	\$ 33.1
Integrated Waste Management Board	6	\$ 1.3
Energy Commission	5	\$ 0.6
Environmental Protection Agency	4	\$ 0.7
Department of General Services	2	\$0.2
California Department of Food and Agriculture	2	\$ 0.3
TOTAL	174	\$ 36.2

A. Air Resources Board

The Air Resources Board's 2009/2010 activities are described above. A summary of ARB's budgeted costs for fiscal year 2009/2010 is shown in Table 9.

**Table 9: Summary of ARB's AB 32 Implementation Costs
Fiscal Year 2009/2010 (Preliminary)**

	Costs (Million \$)
Staff Related Costs (155 PY)	\$22.64
Contracts	\$9.50
Equipment	\$0.96
Total	\$33.10

B. California Environmental Protection Agency

The California Environmental Protection Agency's 2009/2010 activities are described above. A summary of Cal/EPA's budgeted costs for fiscal year 2009/2010 is shown in Table 10.

**Table 10: Summary of Cal/EPA's AB 32 Implementation Costs
Fiscal Year 2009/2010 (Preliminary)**

	Costs (Million \$)
Staff Related Costs (4 PY)	\$0.75
Contracts	0
Equipment	0
Total	\$0.75

C. California Energy Commission

Because energy use is so closely linked to greenhouse gas emissions, the electricity and natural gas sectors will play critical roles in reaching AB 32 goals. In 2008, the Energy Commission and California Public Utilities Commission (CPUC) adopted a comprehensive set of recommendations, which included both programmatic and market-based mechanisms covering a broad range of energy efficiency and renewable energy measures. The Energy Commission identified numerous measures in the Scoping Plan that will be implemented through voluntary programs, new regulations, and other efforts.

Implementing the energy measures and strategies outlined in the Scoping Plan will require developing new building and appliance energy efficiency standards, expanding the use of renewable energy, and tracking associated greenhouse gas emission reductions. The Energy Commission is also working on measures to increase tire efficiency, accelerate the use of alternative transportation fuels and technologies, and explore smarter land use strategies to reduce greenhouse gas emissions. Additionally, staff will analyze California's electricity supply and demand, as well as for the entire western region, as ARB explores a possible regional cap-and-trade program. The Energy Commission is expected to develop forecasts and conduct new analyses to determine potential consequences and greenhouse gas emission impacts from different resource mixes.

A summary of the Energy Commission's budgeted costs for fiscal year 2009/2010 is shown in Table 11.

**Table 11: Summary of Energy Commission’s AB 32 Implementation Costs
Fiscal Year 2009/2010 (Preliminary)**

	Costs (Million \$)
Staff Related Costs (5 PY)	\$0.59
Contracts	0
Equipment	0
Total	\$0.59

D. California Department of General Services

As the State's business manager, the Department of General Services (DGS) has a statewide policy role with respect to building design, construction, operation, and maintenance. Implementing the energy measures and strategies outlined in the Scoping Plan will require DGS to analyze the energy usage data of state facilities and develop new policies and initiatives in order to achieve the targeted greenhouse gas reductions.

DGS not only leads by example, it serves as a catalyst for the development of methods and strategies to lower greenhouse gas emissions associated with the operation of building occupancy. Energy efficiency initiatives led by DGS demonstrate to the utility companies and the private sector the technical feasibility of using advanced technologies in the design, construction, and management of buildings, as well as the commitment of state government to implement public policies in this area. This provides a clear market signal that stimulates private sector action and investment into new technologies.

A summary of DGS’s budgeted costs for fiscal year 2009/2010 is shown in Table 12.

**Table 12: Summary of DGS’s AB 32 Implementation Costs
Fiscal Year 2009/2010 (Preliminary)**

	Costs (Million \$)
Staff Related Costs (2 PY)	\$0.18
Contracts	0
Equipment	0
Total	\$0.18

E. California Integrated Waste Management Board

In collaboration with ARB, the California Integrated Waste Management Board (CIWMB) developed several measures in the Scoping Plan that have potential greenhouse gas emission reductions. These measures address landfill methane emissions and moving towards zero waste processes.

The CIWMB assisted ARB in the June 2007 adoption of a Discrete Early Action Measure for increasing landfill methane capture, and is continuing such efforts in the development of the control measure rulemaking expected to be completed during the 2009/2010 fiscal year.

Furthermore, the CIWMB has identified several measures in the Scoping Plan that focus on moving towards zero waste and high recycling by reducing waste and materials at the source of generation, expanding use of compost to benefit soils, and increasing commercial recycling. The CIWMB will also work to ensure that additional emission reductions will be realized through the implementation of the Extended Producer Responsibility measure and the Environmentally Preferable Purchasing measures.

A summary of CIWMB's budgeted costs for fiscal year 2009/2010 is shown in Table 13.

**Table 13: Summary of CIWMB's AB 32 Implementation Costs
Fiscal Year 2009/2010 (Preliminary)**

	Costs (Million \$)
Staff Related Costs (6 PY)	\$0.50
Contracts	\$0.80
Equipment	0
Total	\$1.30

F. Department Of Food and Agriculture

The California Department of Food and Agriculture (CDFA) is involved with several activities in the agricultural arena to identify and reduce sources of greenhouse gas emissions. In collaboration with ARB, the CDFA is supporting efforts that encourage voluntary installation of anaerobic digesters at large dairies in order to capture methane from manure. The CDFA is also funding research activities to determine baseline nitrous oxide (N₂O) emission levels from cotton and corn crops with and without nitrogen fertilizer. The CDFA will be collaborating with other state agencies to identify data to estimate the energy use of agricultural water use to reduce energy and related greenhouse gas emissions. Along with ARB and the CEC, the CDFA staff is developing

strategies to remove barriers and promote the adoption of clean farm-based energy technologies, such as bio-gas, bio-fuels, and biomass technologies, and to implement motor fuel quality standards.

A summary of CDFA’s budgeted costs for fiscal year 2009/2010 is shown in Table 14.

**Table 14: Summary of CDFA’s AB 32 Implementation Costs
Fiscal Year 2009/2010 (Preliminary)**

	Costs (Million \$)
Staff Related Costs (2 PY)	\$0.30
Contracts	0
Equipment	0
Total	\$0.30

Funding Process for AB 32 Implementation Fee

To receive funding under this Fee, state agencies would go through the standard Budget Change Proposal (BCP) process of requesting and gaining approval from both the Legislature and Governor.

The proposed process is detailed as follows:

1. Each state agency would prepare and submit a BCP to the Department of Finance (DOF) through their normal budget process.
2. To assist stakeholders, Cal/EPA would issue a “*Preliminary AB 32 Crosscut Budget Summary*” based on information from DOF and the contents of the Proposed Governor’s Budget.
3. After the Legislature passes and the Governor signs the annual budget act, Cal/EPA would issue an “*Approved AB 32 Crosscut Budget Summary*.” This document would be an update of the *Preliminary AB 32 Crosscut Budget Summary*. This final document would become the basis for the current fiscal year’s Revenue Requirement under this regulation.

Appendix D

Default Emissions Factor for Unspecified Electricity Imports

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Default Emissions Factor for Unspecified Electricity Imports

In order to equitably include greenhouse gas emissions associated with the generation of electricity in the Cost of Implementation Fee (Fee), it is necessary to assign emissions to imported electricity, which accounts for approximately half of total emissions from electricity consumed in California. Sources of imported electricity can be classified as either specified sources or unspecified sources.

Specified sources are particular electricity generation facilities, for which emissions and electricity output is known. For this fee, asset-owning and asset-controlling suppliers that have been assigned a supplier-specific identification number by ARB are treated as specified sources. When electricity is purchased on the market from an unspecified source, actual emissions cannot be precisely known, but an estimated emissions factor can be used, based on the generation facilities and electricity market in the region from which the electricity originates.

Staff proposes to use an emissions factor of 0.499 MTCO₂ MWh for imported electricity from unspecified sources. This is equivalent to the 1,100 lbs CO₂/MWh interim emission factor recommended by the California Public Utilities Commission and the California Energy Commission in CPUC Decision 07-09-017 (Decision)¹¹. CPUC and CEC recommend using this emission factor until a regional tracking system for greenhouse gas emissions is in place¹².

The joint agency Decision was the result of a public process to provide recommendations to ARB regarding the reporting and verification of greenhouse gas emissions from the electricity sector. It builds on reporting protocols of the California Climate Action Registry. The Decision recommends that proposed regulations for emissions reporting focusing on entities that are “first-deliverers” of electricity into California’s transmission grid. This fee would be applied to retail providers and marketers that are first deliverers of electricity from specified or unspecified sources.

An important issue considered by the energy agencies is how to address electricity transactions classified as “contract shuffling.” According to the Decision, “contract shuffling refers to a situation in which a retail provider modifies its power contracts to make it appear that emissions have been reduced whereas in fact, emissions are unchanged.” For example, contract shuffling would occur if a California retail provider enters into a contract for power from a specified low-emission facility, but the payments to the supplier are actually used to increase generation at a different plant. Because ARB does not have jurisdiction over the electricity market outside of California, it may not be possible

¹¹ CPUC (California Public Utilities Commission), 2007. Decision 07-09-017: Interim Opinion on Reporting and Verification of Greenhouse Gas Emissions in the Electricity Sector. http://docs.cpuc.ca.gov/word_pdf/FINAL_DECISION/72513.pdf

¹² To date, there is no regional tracking system for greenhouse gas emissions.

to determine if contract shuffling is occurring. This may create a significant barrier to accurate accounting of emissions. It is important that the choice of a default emissions factor not be an incentive for contract shuffling.

Prior to the joint agency Decision, CPUC and CEC staff prepared a joint staff proposal for a reporting protocol for electricity retail providers to report greenhouse gas emissions, and parties provided comments on the proposal¹³. The joint staff proposal recommended separate default emission factors for purchases from separate California Independent System Operator (CAISO) markets, and for unspecified sources in the Pacific Northwest and the Southwest. The proposal recommended a lower emissions factor of 419 lbs CO₂/MWh for the Northwest based on a mix of generation with a high percentage of hydroelectric power, and a higher emission factor of 1,075 lbs CO₂/MWh for the Southwest based on marginal electricity generation available for sales from primarily natural gas facilities and a small fraction of coal.

Several parties opposed using different emission factors for different CAISO market pools because they believed this would give marketers incentives that would undermine the efficient operation of electricity markets. Parties also believed that having different emission factors for the Northwest and Southwest would provide an incentive for importers to enter into transactions to hide high-emission sources located in the Southwest by moving power through California to the Northwest and then back into California. State agencies from Oregon and Washington also asserted that hydropower in their states is used primarily for local or regional loads, and that power generated from natural gas or coal is exported to California. They recommended a default emission factor of 1,062 lbs CO₂/MWh for the Northwest.

The joint energy agencies decided to use the conservative default emission factor of 1,100 lbs CO₂/MWh. This relatively high factor would help discourage high-emitting resources from characterizing themselves unspecified resources. Such a factor also would encourage marketers and retail providers to specify their sources of power, improving accuracy in emissions reporting. Using a relatively high default emissions factor would also reduce contract shuffling opportunities. In contrast, a low default emission factor could increase purchases from high-emitting resources by encouraging such sources to market themselves as unspecified sources. The 1,100 lbs CO₂/MWh emission factor is close to the regional average for the western states and higher than emission factors for most modern natural gas combined cycle facilities. With a default emission factor of 1,100 lbs CO₂/MWh, marketers that can specify their lower-emission sources will be encouraged to do so, so that imports from those facilities will have a specific emission factor.

¹³ Murtishaw, Scott, and Karen Griffin, Joint California Public Utilities Commission and California Energy Commission Staff Proposal for an Electricity Retail Provider GHG Reporting Protocol, June 12, 2007, downloaded on March 30, 2009 from <http://ftp.cpuc.ca.gov/puc/energy/electric/climate+change/Joint+Staff+GHG+Reporting+Proposal.pdf>

Finally, asset-owning and asset-controlling suppliers that meet ARB's mandatory reporting requirements for a supplier-specific identification number will also be able to be treated as specified sources. The CPUC and CEC joint staff report recommends a methodology for ARB to use in calculating emission factors for these entities. This methodology is the same as that used by ARB for calculating regional emission factors, as described in the technical report for the mandatory reporting regulation¹⁴. In this methodology, an emission factor for an asset-owning or asset-controlling supplier is the weighted average of emission factors of the supplier's generating facilities and purchased electricity. When part or all of the supplier's purchased electricity is from unspecified sources, that portion is assigned the default emission factor. Staff propose that ARB use this methodology for calculating emission factors for asset-owning and asset-controlling suppliers. Using these supplier-specific emission factors will result in a smaller fraction of imported electricity being assigned the default emission factor.

For the reasons discussed above, staff propose that ARB adopt the stated default emission factor for use in determining the cost-of-implementation fee for unspecified imported electricity. ARB staff recognize that as the development of California's cap-and-trade regulation proceeds, and as experience is gained with the mandatory reporting of emissions, other methods for calculating default emission factors may be needed. Furthermore, better methods of tracking and specifying emissions associated electricity purchased across state lines are likely to be developed. By proposing the adoption of the CPUC and CEC recommended interim default emission factor, staff does not intend to set a precedent for future regulations. After the Cap and Trade regulatory process has determined appropriate emission factors to be used to determine compliance obligation, staff would expect to revisit emission factors used for this fee.

¹⁴ Appendix A of the Regulation for the Mandatory Reporting of Greenhouse Gas Emissions, ARB Compendium of Emission Factors and Methods to Support Mandatory Reporting of Greenhouse Gas Emissions.

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Appendix E

Total In-State Greenhouse Gas Emissions in 2006

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Total In-State Greenhouse Gas Emissions in 2006

Sector	Emission Type	Details	Total MMTCO ₂ E	% Sector	% Total
Transportation	Fuel	Gasoline	142.2	76.5%	29.6%
		Distillate	37.5	20.2%	7.8%
		Residual fuel oil	2.4	1.3%	0.5%
		Jet fuel	1.4	0.7%	0.3%
		Natural gas	0.6	0.3%	0.1%
		LPG	0.5	0.3%	0.1%
		Aviation gasoline	0.2	0.1%	0.0%
	Fugitive	Lubricant Losses	1.0	0.5%	0.2%
		Total	185.8		38.7%
Electricity Generation (In State)	Fuel	Natural gas	47.6	20.2%	9.9%
		Petroleum coke	2.4	1.0%	0.5%
		Coal	2.4	1.0%	0.5%
		Refinery gas	1.1	0.5%	0.2%
		MSW	0.3	0.1%	0.1%
		Biomass	0.1	0.0%	0.0%
		Distillate	0.1	0.0%	0.0%
		Waste oil	0.1	0.0%	0.0%
		Jet fuel	0.0	0.0%	0.0%
		Tires	0.0	0.0%	0.0%
		Crude oil	0.0	0.0%	0.0%
		Residual fuel oil	0.0	0.0%	0.0%
		Landfill gas	0.0	0.0%	0.0%
		Digester gas	0.0	0.0%	0.0%
		Propane	0.0	0.0%	0.0%
	Fugitive	Geothermal	2.0	0.9%	0.4%
			SF ₆	0.7	0.3%
		Total	57.0		11.9%
Electricity Generation (Imports)	Fuel	Coal	25.3	10.7%	5.3%
		Natural gas	0.1	0.0%	0.0%
		Distillate	0.0	0.0%	0.0%
		Residual fuel oil	0.0	0.0%	0.0%
		Unspecified Imports	24.3	10.3%	5.1%
	Fugitive	SF ₆	0.3	0.1%	0.1%
		Total	49.9		10.4%
Industrial	Fuel	Natural gas	37.4	36.4%	7.8%
		Refinery gas	19.5	19.0%	4.1%
		Catalyst coke	6.1	6.0%	1.3%
		Coal	5.9	5.7%	1.2%

		Petroleum coke	4.0	3.8%	0.8%
		Associated gas	3.2	3.1%	0.7%
		Gasoline	2.5	2.5%	0.5%
		LPG	1.3	1.3%	0.3%
		Naphtha	0.7	0.7%	0.1%
		Distillate	0.7	0.6%	0.1%
		Other petroleum products	0.2	0.2%	0.0%
		Tires	0.2	0.2%	0.0%
		Residual fuel oil	0.1	0.1%	0.0%
		Wood	0.1	0.0%	0.0%
		Waste oil	0.0	0.0%	0.0%
		Crude oil	0.0	0.0%	0.0%
		Biomass	0.0	0.0%	0.0%
		Kerosene	0.0	0.0%	0.0%
		Propane	0.0	0.0%	0.0%
		Biomass waste fuel	0.0	0.0%	0.0%
	Fugitive	Landfills	6.3	6.1%	1.3%
		Lubricant Losses	0.7	0.7%	0.2%
		Manufacturing	1.2	1.2%	0.3%
		Oil & Gas Extraction	0.8	0.7%	0.2%
		Petroleum Refining	0.0	0.0%	0.0%
		Pipeline Losses	1.9	1.8%	0.4%
		Wastewater Treatment	2.9	2.8%	0.6%
	Process Emissions	Cement Clinker Production	5.8	5.6%	1.2%
		Manufacturing	1.3	1.2%	0.3%
		Total	102.9		21.4%
Residential	Fuel	Natural gas	26.4	84.9%	5.5%
		LPG	4.3	13.8%	0.9%
		Wood	0.2	0.7%	0.0%
		Kerosene	0.1	0.4%	0.0%
		Distillate	0.1	0.2%	0.0%
		Total	31.1		6.5%
Commercial	Fuel	Coal	11.6	87.7%	2.4%
		Crude oil	0.8	5.7%	0.2%
		Digester gas	0.7	5.1%	0.1%
		Distillate	0.1	0.8%	0.0%
		Gasoline	0.0	0.4%	0.0%
		Kerosene	0.0	0.2%	0.0%
		Landfill gas	0.0	0.2%	0.0%
		LPG	0.0	0.0%	0.0%
		Natural gas	0.0	0.0%	0.0%
		Wood	0.0	0.0%	0.0%
		Total	13.2		2.8%
Agriculture &	Fuel	Distillate	3.8	14.6%	0.8%

Forestry		Natural gas	0.8	3.1%	0.2%
		Gasoline	0.6	2.1%	0.1%
		Kerosene	0.0	0.0%	0.0%
	Fugitive	Crop Emissions	9.2	35.0%	1.9%
		Livestock	15.7	59.8%	3.3%
	Managed Burning	Ag Burning	0.1	0.3%	0.0%
		Forest & Rangeland Burning	0.2	0.7%	0.0%
Net CO ₂ Flux	Net CO ₂ Flux	-4.1	-	-0.8%	
	Total	26.2	15.5%	-0.8%	
Not Specified	Fugitive	High GWP	13.4	99.0%	2.8%
		Solvent Evaporation	0.1	1.0%	0.0%
	Total	13.5	2.8%	2.8%	
Grand Total			479.7	100.0%	

Source: Air Resources Board, 2006 Greenhouse Gas Inventory