ATTACHMENT A

PROPOSED 15-DAY MODIFICATIONS

Subchapter 10. Climate Change

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

[NOTE: This document shows proposed modifications to the originally proposed amendments to the Regulation for the Mandatory Reporting of Greenhouse Gas Emissions (Title 17, Division 3, Chapter 1, Subchapter 10, Article 2, sections 95101, 95102, 95103, 95104, 95105, 95111, 95112, 95113, 95114, 95115, 95117, 95118, 95119, 95121, 95122, 95124, 95129, 95130, 95131, 95132, 95133, 95150, 95153, 95156, 95157, Appendix A, and Appendix B, title 17 California Code of Regulations (CCR), and proposed adoption of new sections 95160, 95161, 95162, and 95163, title 17, CCR, set forth in Attachment A to the Staff Report: Initial Statement of Reasons, released on July 19, 2016.

*The original proposed amendments are shown in underline; deletions from the regulation are shown in ~~strikeout~~. The additional proposed modifications made available with this notice of public availability of modified text dated December 21, 2016 are shown in double-underline to indicate additions and ~~double-strikeout~~ to indicate deletions. The symbol "***" means that intervening text not proposed for amendment is not shown.]*

Amend Division 3, Chapter 1, Subchapter 10, Article 2, Subarticle 1, sections 95101, 95102, 95103, 95104, 95105, 95111, 95112, 95113, 95114, 95115, 95117, 95118, 95119, 95121, 95122, 95124, 95129, 95130, 95131, 95132, 95133, 95150, 95153, 95156, 95157, Appendix A, and Appendix B, and proposed adoption of new sections 95160, 95161, 95162, 95163, title 17 California Code of Regulations to read as follows:

Article 2: Mandatory Greenhouse Gas Emissions Reporting

Subarticle 1. General Requirements for Greenhouse Gas Reporting

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§ 95101. Applicability.

(a) *General Applicability.*

(1) This article applies to the following entities:

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(D) Carbon dioxide suppliers as specified below in paragraph (c), including CO_2 producers regardless of quantity produced, and CO_2 importers and exporters when annual bulk imports or exports equal or exceed 10,000 metric tons ~~for 2011 or a later calendar year~~;

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(b) *Calculating Facility GHG Emissions Relative to Thresholds.* For facilities for which an emissions-based applicability threshold is specified in section 95101(a)(1), the operator must calculate emissions for comparison to applicable thresholds as specified below:

(1) For the purpose of computing emissions relative to the 25,000 metric ton CO_2e threshold specified in section 95812 of the cap-and-trade regulation, operators must include all covered emissions of CO_2, CH_4, and N_2O.

(2) For the purpose of computing emissions relative to the 10,000 metric ton CO_2e threshold for reporting applicability specified in section 95101(a), operators must include emissions of CO_2, CH_4 and N_2O from stationary combustion sources and process emissions, but may exclude any vented and fugitive emissions from the estimate. Petroleum and natural gas system facilities identified under section 95101(e) must include all flaring emissions in the 10,000 metric ton CO_2e threshold determination. ~~However, i~~If all the CO_2, CH_4, and N_2O emissions emitted~~captured~~ within the reporting entity's facility boundary, including vented and fugitive emissions, exceed the 25,000 metric ton CO_2e threshold specified in sections 95103(a) and 95103(f), the reporting entity is not eligible for the abbreviated reporting option provided in section 95103(a) and must submit an emissions data report pursuant to the full requirements of this Article, including obtaining verification services pursuant to section 95103(f).

~~(3) Facilities with only stationary combustion emissions are subject to reporting according to the requirements of 40 CFR §98.2(a)(3), except that the thresholds for reporting in California are 10,000 metric tons of CO_2e and an aggregate maximum heat input capacity of 12 MMBtu/hr or greater.~~When determining applicability relative to the thresholds for emissions reporting in sections 95101(b)(1) and (2) above, facility operators must include any supplier emissions from source categories in sections 95101(c)(5), (7), (8) and (10). If the threshold for reporting is exceeded, the facility and supplier emissions must be reported. If emissions are reported under multiple ARB facility IDs, the operator must report the other ARB facility ID's associated with the facility.

(4) ~~Notwithstanding 40 CFR §98.2(b)(2), o~~Operators of facilities and suppliers must include emissions of CO_2 from the combustion of biomass and other biofuels when determining applicability relative to thresholds for emissions reporting and cessation of reporting.

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(c) *Fuel and Carbon Dioxide Suppliers.* The suppliers listed below, as defined in

section 95102(a), are required to report under this article when they produce, import and/or deliver an annual quantity of fuel that, if completely combusted, oxidized, or used in other processes, would result in the release of greater than or equal to 10,000 metric tons of CO_2e in California, unless otherwise specified in this article:

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(5) ~~California consignees of imported~~Importers of liquefied petroleum gas, compressed natural gas, or liquefied natural gas into California, as described in section 95122;

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(10) ~~Operators of liquefied natural gas production f~~Facilities that make~~produce~~ liquefied natural gas products or compressed natural gas products by liquefying or compressing~~from~~ natural gas received from interstate pipelines, as described in section 95122;

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(e) *Petroleum and Natural Gas Systems.* The facility types listed below, as further specified in section 95150, are required to report under this article when their stationary combustion emissions (including flaring) and process emissions equal or exceed 10,000 metric tons of CO_2e, or their stationary combustion, process, fugitive, and vented emissions equal or exceed 25,000 metric tons of CO_2e.

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(g) *Demonstration of Nonapplicability*. The Executive Officer may request a demonstration from any operator, supplier, or entity that the operator, supplier, or entity does not meet one or more of the applicability criteria specified in this article. Such demonstration must be provided to the Executive Officer within 20 days of receipt of a written request.

(h) *Cessation of Reporting and Verification for Reduced Emissions*. The requirements for facility operators, suppliers, and electric power entities whose emissions are reduced below applicable reporting and verification thresholds are as follows for ceasing reporting and verification. Cessation requirements for facility operators that permanently "shut down" are in section 95101(i).

(1) Reporting Entities Subject to a Compliance Obligation.

(A) Facility operators and suppliers. Facility operators and suppliers that are subject to a compliance obligation under the Cap-and-Trade Regulation must report and verify until covered emissions are less than 25,000 $MTCO_2e$ for an entire subsequent compliance period, or until the reporting entity is no longer a covered entity, except as specified in section 95101(h)(1)(A). If annual covered emissions for a facility operator or supplier exceed 25,000 $MTCO_2e$ in any year after cessation requirements have been met, the operator or supplier must resume verification as required under this article, and the operator or supplier would again have a compliance obligation under the Cap-and-Trade Regulation, and must meet all applicable requirements.

1. If a facility operator or supplier's emissions drop below 25,000 $MTCO_2e$, in meeting the requirements for cessation in section 95101(h)(1)(A), but a facility operator or supplier's total reported emissions remain above 10,000 $MTCO_2e$, the facility operator must continue to report under MRR until emissions drop below 10,000 $MTCO_2e$ for a consecutive three-year period and in this case the facility operator or supplier must meet the requirements in section 95101(h)(2) before exiting MRR.

2. Notwithstanding section 95101(h)(1)(A), facilities with source categories in section 95101(a)(1)(A) that are subject to a compliance obligation under the Cap-and-Trade Regulation, are subject to reporting and verification regardless of emission level, and so must follow the cessation of reporting and verification provisions in section 95101(i).

3. Once an opt-in covered entity begins reporting, it must continue to report and verify for each data year in which it incurs a compliance obligation under the Cap-and-Trade Regulation.

4. Fuel suppliers that cease to supply fuel in California and whose emissions drop to zero during a Cap-and-Trade compliance period must continue to report and verify until emissions are zero for an entire subsequent compliance period as defined in the Cap-and-Trade Regulation. Pursuant to section 95103(n)(2)(D), entities that cease to have a compliance and/or reporting obligation as a fuel supplier due to a change in ownership or sale or relinquishment of an inventory position at a terminal must continue to report and verify emissions from the reportable fuel transactions that occurred prior to the change.

(B) Electric power entities. Electric power entities that import electricity to California, and therefore are subject to a compliance obligation under the Cap-and-Trade Regulation, must report and verify until the entity has no reportable imported electricity to California, and until the entity is no longer subject to a compliance obligation under the Cap-and-Trade Regulation for an entire subsequent compliance period.

(C) An entity that meets the cessation requirements pursuant to sections 95101(h)(1)(A) and (B) must notify the Executive Officer, in writing, that it is ceasing to report and verify pursuant to this article and provide the reason(s) for the reduction of emissions. The notification must be submitted no later than the applicable reporting deadline for the year following the last data year that the entity is required to submit an emissions data report. Entities must provide the cessation notification to the address indicated in section 95103(o) of this article.

(D) Operators, suppliers, and electric power entities that are subject to a compliance obligation and fully exit reporting pursuant to section 95101(h)(1) must maintain the corresponding records required under

section 95105 and retain such records for 10 years following the submission of the final emissions data report to ARB.

(2) Reporting Entities Not Subject to a Compliance Obligation.

(A) Facility operators and suppliers. Facility operators and suppliers whose total reported emissions are below 25,000 $MTCO_2e$ in each reporting year, or have total reported emissions but not covered emissions that exceed 25,000 $MTCO_2e$ a year, and therefore are not subject to a compliance obligation under the Cap-and-Trade Regulation, must report under this article until total reported emissions are less than 10,000 $MTCO_2e$ for a consecutive three-year period. If total reported emissions for a facility operator or supplier exceeds 10,000 $MTCO_2e$ in any year after cessation requirements have been met, the operator or supplier must resume reporting as required under this article.

1. Facility operators and suppliers that have total reported emissions, but not covered emissions, including CO_2 from biomass-derived fuels and geothermal sources, that exceed 25,000 $MTCO_2e$ a year, and therefore are not subject to a compliance obligation under the Cap-and-Trade Regulation, and total reported emissions fall below 25,000 $MTCO_2e$ in a reporting year, must have their emissions data report verified for the first year that total reported emissions are reduced below the 25,000 $MTCO_2e$ threshold. Any reporting year thereafter with total reported emissions that are below 25,000 $MTCO_2e$ is not subject to verification.

a. If in any subsequent year after meeting the verification cessation requirements in section 95101(h)(2)(A)(1.), total reported emissions exceed 25,000 $MTCO_2e$, the operator or supplier must have its emissions data report verified, and verification must continue until cessation is met again.

b. Facility operators and suppliers that meet the verification cessation requirements in section 95101(h)(2)(A)(1.) must notify ARB pursuant to the requirements in section 95101(h)(2)(D), if they choose to cease verification.

2. If in meeting the cessation requirements in section 95101(h)(2)(A) a fuel supplier ceases to supply fuel in California and emissions drop to zero ~~during~~, the entity must continue to report until emissions are zero for a consecutive three-year period. Pursuant to section 95103(n)(2)(D), entities that cease to have a reporting obligation as a fuel supplier due to a change in ownership or sale or relinquishment of an inventory position at a terminal must continue to report and verify emissions from the reportable fuel transactions that occurred prior to the change.

(B) For facilities and suppliers with source categories in section 95101(a)(2)(A) whose total reported emissions are below 25,000

MTCO$_2$e, and therefore are not subject to a compliance obligation under the Cap-and-Trade Regulation, cessation of reporting and verification provisions in section 95101(i) apply.

(C) Electric power entities that only report exports of electricity from California, and therefore are not subject to a compliance obligation under the Cap-and-Trade Regulation, must report until there are zero exports to report for a consecutive three-year period. Verification is not required for the report of the first full year where there are zero exports reported.

(D) Electric power entities who meet the definition of "retail provider" must always report retail sales for each calendar year, even if they have zero retail sales to report. Entities that are registered as ESPs but have never provided retail electricity to California customers are not required to report under MRR until they meet the definition of "retail provider." WAPA and DWR must always report pump loads for each calendar year.

(E) An entity that meets the cessation requirements for reporting, and verification if applicable, pursuant to sections 95101(h)(2)(A) through (D) must notify the Executive Officer, in writing, that it is ceasing to report, or verify if applicable, pursuant to this article and provide the reason(s) for cessation of reporting, or verification if applicable. The notification must be submitted no later than the applicable reporting deadline for the year following the last data year that the entity is required to submit an emissions data report. Entities must provide the cessation notification to the address indicated in section 95103(o) of this article.

(F) Operators, suppliers, and electric power entities that fully exit reporting pursuant to section 95101(h)(2) must maintain the corresponding records required under section 95105 and retain such records for five years following the submission of the final emissions data report to ARB.

~~(h) *Cessation of Reporting*. A facility operator or supplier who is not subject to the cap-and-trade regulation, whose emissions fall below the applicable emissions reporting thresholds of this article and who wishes to cease annual reporting must comply with the requirements specified in section 95101(h). A reporting entity that is subject to the cap-and-trade regulation must follow the requirements in section 95812 and continue to comply with all reporting requirements until there is no longer a compliance obligation. If the compliance obligation ceases, the reporting entity must still follow the requirements in section 95101(h) before ceasing to comply with the reporting requirements of this article. The operator or supplier must provide the letter notifications specified below to the address indicated in section 95103 of this article.~~

~~(1) For facilities with source categories in section 95101(a)(1)(A) that are subject to the requirements of this article regardless of emissions level, cessation of reporting provisions in section 95101(h)(1) apply, but the 2011 data year is the earliest year that criteria for cessation can be applied.~~

~~If reported emissions are less than 10,000 metric tons of CO_2e per year for three consecutive years, then the owner, operator, or supplier may discontinue complying with this article provided that the owner, operator, or supplier submits a notification to ARB that announces the cessation of reporting and explains the reasons for the reduction in emissions. The notification must be submitted no later than March 31 of the year immediately following the third consecutive year in which emissions are less than 10,000 metric tons of CO_2e per year. The owner, operator, or supplier must maintain the corresponding records required under section 95103 for each of the three consecutive years and retain such records for five years following the year that reporting was discontinued. The owner, operator, or supplier must resume reporting if annual emissions in any future calendar year increase to 10,000 metric tons of CO_2e per year or more.~~

(i) *Cessation of Reporting and Verification for Shutdown Facilities*. The requirements for facility operators that cease to operate or permanently shut down as defined in this section are as follows for ceasing reporting and verification.

(1~~2~~) If the operations of a facility ~~or supplier~~ are changed such that all applicable GHG-emitting processes and operations ~~listed in paragraph (a)(1) of this section~~ cease to operate or are permanently shut down, the owner or operator~~, or supplier~~ must submit an emissions data report for the year in which ~~a~~the facility~~ or supplier~~'s GHG-emitting processes and operations ceased to operate, and for the first full year of non-operation that follows. The owner~~,~~ or operator~~, or supplier~~ must submit a notification to ARB that announces the cessation of reporting and certifies to the cessation~~closure~~ of all GHG-emitting processes and operations no later than ~~March 31~~the reporting deadline of the year following the cessation of operations or permanent shutdown ~~such changes~~.

For the purposes of this provision, "cease to operate" means the facility did not operate any GHG-emitting processes for an entire calendar year. Continued operation of space heaters and water heaters as necessary until operations are restarted in a subsequent year does not preclude a facility from meeting the definition of "cease to operate." The owner or operator must resume reporting for any future calendar year during which any of the GHG-emitting processes or operations resume operation and are subject to reporting.

For the purposes of this provision, permanently "shut down" means the reporting entity has objective evidence that the industrial operations are permanently shut down, including but not limited to, decommissioning and cancelling air permits. For this provision, permanent shutdown may include continued operation of space heaters and water heaters as necessary to support decommissioning activities.

(2) ~~Paragraph~~Section 95101(i)(1)~~(h)(2)~~ does not apply to seasonal or other temporary cessation of operations.

(3) The owner, operator, or supplier must resume reporting for any future calendar year during which any of the GHG-emitting processes or operations resume operation and are subject to reporting ~~pursuant to section 95101(a)(1)~~.

(4) If a facility owner or operator meets the requirements for cessation of reporting pursuant to section 95101(i), the owner or operator must continue to obtain the services of an accredited verification body for purposes of verifying the emissions data report for the year in which the facility's GHG-emitting processes and operations ceased to operate. Verification is not required for the emissions data report of the first full year of non-operation that follows.

(j) If an entity has met the cessation requirements pursuant to MRR section 95101(h) or (i) and remains in the Cap-and-Trade Program solely to meet the requirements of section 95835(f), then the entity need not report and verify data pursuant to MRR for any time period after which the MRR cessation requirements have been met.

~~(3) Electric power entities must comply with the following requirements for cessation of reporting:~~

~~(A) Electric power entities that import or export electricity in 2011 or 2012 must continue to submit and certify an emissions data report through the 2014 data year. If an electric power entity has zero imports or exports, it must indicate as such in its emissions data report.~~

~~(B) Electric power entities that import or export electricity in any year of a subsequent compliance period must continue to submit and certify an emissions data report through the end of the same compliance period. If an electric power entity has zero imports or exports, it must indicate as such in its emissions data report.~~

~~(C) Electric power entities no longer importing or exporting electricity at the beginning of a subsequent compliance period are not required to submit, and certify an emissions data report demonstrating that they have no imports or exports pursuant to this article, but must notify the Executive Officer in writing of the reason(s) for cessation of reporting. The notification must be submitted no later than March 31 of the year following the last year that the electric power entity is required to submit an emissions data report.~~

~~(D) Electric power entities who meet the definition of "retail provider" must always report retail sales for each calendar year. WAPA and DWR must always report pump loads for each calendar year.~~

~~(i) *Cessation of Verification*. A facility operator, supplier, or electric power entity who wishes to cease annual verification must comply with the requirements specified in section 95101(i) and notify ARB by the applicable reporting deadline if the reporting entity has met the cessation criteria and intends to no longer obtain verification services. A reporting entity that is subject to the cap-and-trade regulation must follow the requirements in section 95812 and continue to comply with all verification requirements until there is no longer a compliance obligation. If the compliance obligation ceases, the reporting entity must still follow the requirements in section~~

~~95101(i) before ceasing to comply with the verification requirements of this Article.~~

~~(1) If the operations of a facility or supplier are changed such that all applicable GHG-emitting processes and operations listed in paragraph 95101(a)(1) of this section cease to operate or are permanently shut down, the owner, operator, or supplier must continue to obtain the services of an accredited verification body for purposes of verifying the emissions data report for the year in which the facility or supplier's GHG-emitting processes and operations ceased to operate. Verification is not required for the emissions data report of the first full year of non-operation that follows.~~

~~(2) If the operations of an electric power entity are changed such that the entity ceases to import and export electricity, the electric power entity must continue to obtain the services of an accredited verification body for purposes of verifying the emissions data report for the year in which the imports and exports ceased. Verification is not required for the emissions data report of the first full year of non-operation that follows.~~

~~(3) A facility operator or supplier whose emissions decrease to less than 25,000 metric tons of CO_2e, including CO_2 from biomass-derived fuels and geothermal sources, must continue to obtain the services of an accredited verification body for purposes of verifying the emissions data report for the first year in which the facility or supplier's emissions are less than 25,000 metric tons of CO_2e.~~

NOTE: Authority cited: Sections 38510, 38530, 39600, 39601, 39607, 39607.4 and 41511, Health and Safety Code. Reference: Sections 38530, 39600 and 41511, Health and Safety Code.

§ 95102. Definitions.

(a) For the purposes of this article, the definitions in subsections (a), (b), and (c) shall apply. Subsection (b) is specific to product data definitions. Subsection (c) is specific to definitions regarding refining and related processes.

~~(1)~~ "Absorbent circulation pump" means a pump commonly powered by natural gas pressure that circulates the absorbent liquid between the absorbent regenerator and natural gas contactor.

~~(2)~~ "Accuracy" means the closeness of the agreement between the result of the measurement and the true value of the particular quantity (or a reference value determined empirically using internationally accepted and traceable calibration materials and standard methods), taking into account both random and systematic factors.

~~(3)~~ "Acid gas" means hydrogen sulfide (H_2S) and/or carbon dioxide (CO_2) contaminants that are separated from sour natural gas by an acid gas removal.

~~(4)~~ "Acid gas removal unit (AGR)" means a process unit that separates hydrogen sulfide and/or carbon dioxide from sour natural gas using liquid or solid absorbents or membrane separators.

~~(5)~~ “Acid gas removal vent stack emissions” mean the acid gas separated from the acid gas absorbing medium (e.g., an amine solution) and released with methane and other light hydrocarbons to the atmosphere or a flare.

~~(6)~~ “Adverse emissions data verification statement” means a verification statement rendered by a verification body attesting that the verification body cannot say with reasonable assurance that the submitted emissions data report is free of material misstatement, or that the emissions data submitted in the emissions data report contains correctable errors as defined pursuant to this section and thus is not in conformance with the requirement to fix such errors pursuant to section 95131(b)(9), or both.

~~(7)~~ “Adverse product data verification statement” means a verification statement rendered by a verification body attesting that the verification body cannot say with reasonable assurance that the submitted emissions data report is free of material misstatement, or that the covered product data submitted in the emissions data report contains correctable errors as defined pursuant to this section and thus is not in conformance with the requirements to fix such errors pursuant to section 95131(b)(9), or both.

~~(8)~~ “Adverse verification statement” means a verification statement rendered by a verification body attesting that the verification body cannot say with reasonable assurance that the submitted emissions data report is free of material misstatement, or that the emissions or covered product data submitted in the emissions data report contains correctable errors as defined pursuant to this section and thus is not in conformance with the requirements to fix such errors pursuant to section 95131(b)(9), or both. This definition applies to the adverse emissions data verification statement and the adverse product data verification statement.

~~(9)~~ “Agricultural waste” means waste produced on land used for horticulture, fruit growing, seed growing, dairy farming, livestock breeding and keeping, or grazing land, meadow land, osier land (growing willow), market gardens and nursery grounds as a result of agricultural activity.

~~(10)~~ “Air injected flare” means a flare in which air is blown into the base of a flare stack to induce complete combustion of gas.

~~(11)~~ “Annual” means with a frequency of once a year; unless otherwise noted, annual events such as reporting requirements will be based on the calendar year.

~~(12)~~ “API” means the American Petroleum Institute.

~~(13)~~ "API Gravity" means a scale used to reflect the specific gravity (SG) of a fluid such as crude oil, water, or natural gas. The API gravity is calculated as [(141.5/SG) - 131.5], where SG is the specific gravity of the fluid at 60°F, and where API refers to the American Petroleum Institute.

~~(14)~~ “AQMD/APCD” or “air district” or “air quality management district” or “air pollution control district” means any district created or continued in existence pursuant to the provisions of Part 3 (commencing with Section 40000) of Division 26 of the Health and Safety Code.

~~(15)~~ "ARB" means the California Air Resources Board.

~~(16)~~ "ARB ID" means, for the purposes of this article, the unique identification number assigned to each facility, supplier, and electric power entity that reports GHG emissions to the ARB.

~~(17)~~ "ARB offset credit" is as defined in the cap-and-trade regulation.

~~(18)~~ "Artificial island" is a plot of land or other structure constructed on a body of water to support onshore petroleum or natural gas production.

~~(19)~~ "Asphalt" means a dark brown-to-black cement-like material obtained by petroleum processing and containing bitumens as the predominant component. It includes crude asphalt as well as the following finished products: cements, fluxes, the asphalt content of emulsions (exclusive of water), and petroleum distillates blended with asphalt to make cutback asphalts.

~~(20)~~ "Asset-controlling supplier" means any entity that owns or operates inter-connected electricity generating facilities or serves as an exclusive marketer for these facilities even though it does not own them, and is assigned a supplier-specific identification number and system emission factor by ARB for the wholesale electricity procured from its system and imported into California. Asset controlling suppliers are considered specified sources.

~~(21)~~ "Assigned emissions level" means an amount of emissions, in CO_2e, assigned to the reporting entity by the Executive Officer under the requirements of section 95103(g).

~~(22)~~ "Associated gas" or "produced gas" means a natural gas that is produced in association with the production of crude oil.

~~(23)~~ "ASTM" means the American Society of Testing and Materials.

"Atomic hydrogen content" means the mass fraction of all hydrogen atoms in a gas, mixture of gases, or a mixture of other materials.

~~(24)~~ "Authorized project designee" means an entity authorized by an Offset Project Operator to act on behalf of the Offset Project Operator.

~~(25)~~ "Aviation gasoline" means a complex mixture of volatile hydrocarbons, with or without additives, suitably blended to be used in aviation reciprocating engines. Specifications can be found in ASTM Specification D910–07a, "*Standard Specification for Aviation Gasolines*" (2007).

~~(26)~~ "Balancing authority" means the responsible entity that integrates resource plans ahead of time, maintains load-interchange-generation balance within a balancing authority area, and supports interconnection frequency in real time.

~~(27)~~ "Balancing authority area" means the collection of generation, transmission, and loads within the metered boundaries of a balancing authority. A balancing authority maintains load-resource balance within this area.

(~~28)~~ "Barrel" means a volume equal to 42 U.S. gallons.

~~(29)~~ “Basin” means geological provinces as defined by the American Association of Petroleum Geologists (AAPG) Geologic Note: AAPG-CSD Geological Provinces Code Map: AAPG Bulletin, Prepared by Richard F. Meyer, Laurie G. Wallace, and Fred J. Wagner, Jr., Volume 75, Number 10 (October 1991), which is hereby incorporated by reference.

~~(30)~~ "Best available data and methods" means ARB methods for emissions calculations set forth in this article where reasonably feasible, or facility fuel use and other facility process data used in conjunction with ARB-provided emission factors and other data, or other industry standard methods for calculating greenhouse gas emissions.

~~(31)~~ “Bias” means systematic error, resulting in measurements that will be either consistently low or high relative to the reference value.

~~(32)~~ “Bigeneration unit” means a unit that simultaneously generates electricity and useful thermal energy from the same fuel source but without waste heat recovery. An example of bigeneration includes a boiler generating steam that is split into two streams, and one stream powers a steam turbine to generate electricity, while the other stream is used for other industrial, commercial, heating and cooling purposes that are not in support of or a part of the electricity generation system.

~~(33)~~ “Biodiesel” means a diesel fuel substitute produced from nonpetroleum renewable resources that meet the registration requirements for fuels and fuel additives established by the U.S. Environmental Protection Agency under section 211 of the Clean Air Act. It includes biodiesel that is all of the following:

~~(A)~~ Registered as a motor vehicle fuel or fuel additive under 40 CFR Part 79;

~~(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” (2008*), which is hereby incorporated by reference;

~~(D)~~ Intended for use in engines that are designated to run on conventional diesel fuel; and

~~(E)~~ Derived from nonpetroleum renewable resources.

~~(34)~~ “Biofuel production facility” means a production facility that produces one or more of the following biomass-derived transportation fuels: ethanol, biodiesel, renewable diesel, rendered animal fat, or vegetable oil.

~~(35)~~ “Biogas” means gas that is produced from the breakdown of organic material in the absence of oxygen. Biogas is produced in processes including anaerobic digestion, anaerobic decomposition, and thermochemical decomposition. These processes are applied to biodegradable biomass materials, such as manure, sewage, municipal solid waste, green waste, and waste from energy crops, to produce landfill gas, digester gas, and other forms of biogas.

~~(36)~~ "Biogenic portions of CO_2 emissions" means carbon dioxide emissions generated as the result of biomass combustion from combustion units.

~~(37)~~ "Biomass" means non-fossilized and biodegradable organic material originating from plants, animals and micro-organisms, including products, byproducts, residues and waste from agriculture, forestry and related industries as well as the non-fossilized and biodegradable organic fractions of industrial and municipal wastes, including gases and liquids recovered from the decomposition of non-fossilized and biodegradable organic material. For the purpose of this article, biomass includes both California Renewable Portfolio Standard (RPS) eligible and non-eligible biomass as defined by the California Energy Commission.

~~(38)~~ "Biomass-derived fuels" or "biomass fuels" or "biofuels" or "biomass-based fuels" means fuels derived from biomass.

~~(39)~~ "Biomethane" means biogas that meets pipeline quality natural gas standards.

~~(40) "Blendstocks" are petroleum products used for blending or compounding into finished motor gasoline. These include RBOB (reformulated blendstock for oxygenate blending) and CBOB (conventional blendstock for oxygenate blending), but exclude oxygenates, butane, and pentanes plus.~~

~~(41)~~ "Blowdown" means the act of emptying or depressurizing a vessel. This may also refer to the discarded material such as blowdown water from a boiler or cooling tower.

~~(42)~~ "Blowdown vent stack emissions" mean natural gas and/or CO_2 released due to maintenance and/or blowdown operations including compressor blowdown and emergency shut-down (ESD) system testing.

~~(43)~~ "Boiler" means a closed vessel or arrangement of vessels and tubes, together with a furnace or other heat source, in which water is heated to produce hot water or steam.

~~(44)~~ "Bone dry short ton" means an amount of material that weighs 2,000 pounds at zero percent moisture content.

~~(45)~~ "Bottom ash" means ash that collects at the bottom of a combustion chamber.

~~(46)~~ "Bottoming cycle" means a type of cogeneration system in which the energy input to the system is first applied to a useful thermal energy application or process, and at least some of the reject heat emerging from the application or process is then used for electricity production.

~~(47)~~ "British thermal unit" or "Btu" means the quantity of heat required to raise the temperature of one pound of water by one degree Fahrenheit at about 39.2 degrees Fahrenheit.

~~(48)~~ "BTEX" means gaseous compounds of benzene, toluene, ethyl benzene, and xylenes.

~~(49)~~ "Bulk transfer/terminal system" means a fuel distribution system consisting of refineries, pipelines, vessels, and terminals. Fuel storage and blending facilities that are not fed by pipeline or vessel are considered outside the bulk transfer system.

~~(50)~~ "Busbar" means a power conduit of a facility with electricity generating units that serves as the starting point for the electricity transmission system.

~~(51)~~ "Business-as-usual scenario" means the set of conditions reasonably expected to occur within the offset project boundary in the absence of the financial incentives provided by offset credits, taking into account all current laws and regulations, as well as current economic and technological trends.

(~~52)~~ "Butane" or "n-Butane" is a paraffinic straight-chain hydrocarbon with molecular formula C_4H_{10}.

~~(53)~~ "Butylene" or "n-Butylene" means an olefinic straight-chain hydrocarbon with molecular formula C_4H_8.

~~(54)~~ "Bypass dust" means discarded dust from the bypass system dedusting unit of suspension preheater, precalciner and grate preheater kilns, consisting of fully calcined kiln feed material.

~~(55)~~ "Calcination" means the thermal decomposition of carbonate minerals, such as calcium carbonate (the principal mineral in limestone) to form calcium oxide in a cement kiln.

~~(56)~~ "Calcine" means to heat a substance so that it oxidizes or reduces.

~~(57)~~ "Calendar year" means the time period from January 1 through December 31.

~~(58)~~ "Calibrated bag" means a flexible, non-elastic, anti-static bag of a calibrated volume that can be affixed to an emitting source such that the emissions inflate the bag to its calibrated volume.

~~(59)~~ "California balancing authority" means a balancing authority with control over a balancing authority area primarily located in the State of California. A California balancing authority is responsible for the operation of the transmission grid within its metered boundaries which may extend beyond the geographical boundaries of the State of California.

~~(60)~~ "California Climate Action Registry" or "CCAR" means the entity established pursuant to former Health and Safety Code Section 42800 et seq.

~~(61)~~ "California consignee" means the person or entity in California to whom the shipment is to be delivered.

~~(62)~~ "California Energy Commission" or "CEC" means the California Energy Resources Conservation and Development Commission.

<u>"California Independent System Operator" or "CAISO" means the Independent System Operator that serves California EDUs, which operates competitive wholesale electricity markets, manages the reliability of the CAISO-controlled</u>

transmission grid, provides open access to transmission, and performs long-term planning. CAISO markets include energy (day-ahead and real-time), ancillary services, congestion revenue rights, and the Energy Imbalance Market (EIM).

~~(63)~~ "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).

~~(64)~~ "Cap-and-trade regulation" or "cap-and-trade program" means ARB's regulation establishing the California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms set forth in title 17, California Code of Regulations, Chapter 1, Subchapter 10, article 5 (commencing with section 95800).

~~(65)~~ "Carbon dioxide" or "CO_2" means the most common of the six primary greenhouse gases, consisting on a molecular level of a single carbon atom and two oxygen atoms.

~~(66)~~ "Carbon dioxide equivalent" or "CO_2 equivalent" or "CO_2e" means the number of metric tons of CO_2 emissions with the same global warming potential as one metric ton of another greenhouse gas when calculated using the individual global warming potentials as specified in the "global warming potential" definition of this article. ~~For the purposes of this article, global warming potential values listed in Table A-1 of 40 CFR Part 98 are used to determine the CO_2 equivalent of emissions.~~

~~(67)~~ "Carbon dioxide supplier" means: (a) facilities with production process units located in the State of California that capture a CO_2 stream for purposes of supplying CO_2 to another entity or facility~~for commercial applications~~ or that capture the CO_2 stream in order to utilize it for geologic sequestration where capture refers to the initial separation and removal of CO_2 from a manufacturing process or any other process, (b) facilities with CO_2 production wells located in the State of California that extract or produce a CO_2 stream for purposes of supplying CO_2 for commercial applications or that extract a CO_2 stream in order to utilize it for geologic sequestration, (c) exporters (out of the State of California) of bulk CO_2 that export CO_2 for the purpose of geologic sequestration, (d) exporters (out of the State of California) of bulk CO_2 that export for purposes other than geologic sequestration, and (e) importers (into the State of California) of bulk CO_2. This source category is focused on upstream supply and is not intended to place duplicative compliance obligations on CO_2 already covered upstream. The source category does not include transportation or distribution of CO_2, purification, compression or processing of CO_2, or on-site use of CO_2 captured on-site.

~~(68)~~ "Carbonate" means compounds containing the radical CO_3^{-2}. Upon calcination, the carbonate radical decomposes to evolve carbon dioxide (CO_2). Common carbonates consumed in the mineral industry include calcium carbonate ($CaCO_3$) or calcite; magnesium carbonate ($MgCO_3$) or magnesite; and calcium-magnesium carbonate ($CaMg(CO_3)_2$) or dolomite.

~~(69)~~ "Carbonate-based raw material" means any of the following materials used in the manufacture of glass: Limestone, dolomite, soda ash, barium carbonate, potassium carbonate, lithium carbonate, and strontium carbonate.

~~(70)~~ "Catalyst" means a substance added to a chemical reaction, which facilitates or causes the reaction, and is not consumed by the reaction.

~~(71)~~ "CBOB-summer" or "conventional blendstock for oxygenate blending-summer" means a petroleum product which, when blended with a specified type and percentage of oxygenate, meets the definition of conventional-summer.

~~(72)~~ "CBOB-winter" or "conventional blendstock for oxygenate blending-winter" means a petroleum product which, when blended with a specified type and percentage of oxygenate, meets the definition of conventional-winter.

~~(73)~~ "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.

~~(74)~~ "Cement kiln dust" or "CKD" means the fine-grained, solid, highly alkaline waste removed from cement kiln exhaust gas by air pollution control devices. CKD consists of partly calcined kiln feed material and includes all dust from cement kilns and bypass systems including bottom ash and bypass dust.

~~(75)~~ "Centrifugal compressor" means any equipment that increases the pressure of a process natural gas or CO_2 by centrifugal action, employing rotating movement of the driven shaft.

~~(76)~~ "Centrifugal compressor dry seals" mean a series of rings around the compressor shaft where it exits the compressor case that operate mechanically under the opposing forces to prevent natural gas or CO2 from escaping to the atmosphere.

~~(77)~~ "Centrifugal compressor wet seal degassing vent emissions" means emissions that occur when the high-pressure oil barriers for centrifugal compressors are depressurized to release absorbed natural gas or CO2. High-pressure oil is used as a barrier against escaping gas in centrifugal compressor seals.

~~(78)~~ "Certification" or "certify" refers to the procedure in 40 CFR §98.4(e), as required for reports submitted to ARB under this article.

~~(79)~~ "Chain of title" means the sequence of historical transfers of title to a fuel from the producer to the reporting entity.

~~(80)~~ "City gate" means a location at which natural gas ownership or control passes from one party to another, neither of which is the ultimate consumer. In this article, in keeping with common practice, the term refers to a point or measuring station at which a local gas distribution utility receives gas from a natural gas pipeline company or transmission system. Meters at the city gate station measure the flow of natural gas into the local distribution company system and typically are used to measure local distribution company system sendout to customers.

~~(81)~~ “Coal” means all solid fuels classified as anthracite, bituminous, sub-bituminous, or lignite by the American Society for Testing and Materials Designation ASTM D388–05 “Standard Classification of Coals by Rank” (2005), which is hereby incorporated by reference.

~~(82)~~ “Coal coke” means a solid residue high in carbon content produced by the destructive distillation of coal at high temperatures in either a by-product coke oven battery or a non-recovery coke oven battery.

~~(83)~~ “Cogeneration” means an integrated system that produces electric energy and useful thermal energy for industrial, commercial, or heating and cooling purposes, through the sequential or simultaneous use of the original fuel energy. Cogeneration must involve generation of electricity and useful thermal energy and some form of waste heat recovery. Some examples of cogeneration include: (a) a gas turbine or reciprocating engine generating electricity by combusting fuel, which then uses a heat recovery unit to capture useful heat from the exhaust stream of the turbine or engine; (b) Steam turbines generating electricity as a byproduct of steam generation through a fired boiler; (c) Cogeneration systems in which the fuel input is first applied to a thermal process such as a furnace and at least some of the heat rejected from the process is then used for power production. For the purposes of this article, a combined-cycle power generation unit, where none of the generated thermal energy is used for industrial, commercial, or heating and cooling purposes (these purposes exclude any thermal energy utilization that is either in support of or a part of the electricity generation system), is not considered a cogeneration unit.

~~(84)~~ “Cogeneration system” means individual cogeneration components including the prime mover (heat engine), generator, heat recovery, and electrical interconnection, configured into an integrated system that provides sequential or simultaneous generation of multiple forms of useful energy (usually mechanical and thermal), at least one form of which the facility consumes on-site or makes available to other users for an end-use other than electricity generation.

~~(85)~~ “Cogeneration unit” means a unit that produces electric energy and useful thermal energy for industrial, commercial, or heating and cooling purposes, through the sequential or simultaneous use of the original fuel energy and waste heat recovery.

~~(86)~~ “Coke (petroleum)” means a solid residue consisting mainly of carbon which results from the cracking of petroleum hydrocarbons in processes such as coking and fluid coking. This includes catalyst coke deposited on a catalyst during the refining process which must be burned off in order to regenerate the catalyst.

~~(87)~~ “Combustion emissions” means greenhouse gas emissions occurring during the exothermic reaction of a fuel with oxygen.

~~(88)~~ “Combustion source” means a source of emissions resulting from combustion.

~~(89)~~ “Commercial propane” means liquefied petroleum gas that has a wide mixture of gases that can sustain combustion as defined by ASTM D1835-05

"Standard Specification for Liquefied Petroleum (LP) Gases" (2005), which is hereby incorporated by reference.

~~(90)~~ "Common control" means having common "operational control" as defined herein.

~~(91)~~ "Compliance instrument" is as defined in the cap-and-trade regulation.

~~(92)~~ "Compliance obligation" means the quantity of verified reported emissions or assigned emissions for which an entity must submit compliance instruments to ARB.

~~(93)~~ "Compliance offset protocol" means an offset protocol adopted by the Board.

~~(94)~~ "Compliance period" means the period for which the compliance obligation is calculated for covered entities pursuant to the cap-and-trade regulation.

~~(95)~~ "Component" for the purposes of sections 95150 to 95157 of this article means each metal to metal joint or seal of non-welded connection separated by a compression gasket, screwed thread (with or without thread sealing compound), metal to metal compression, or fluid barrier through which natural gas or liquid can escape to the atmosphere.

~~(96)~~ "Compressed natural gas" or "CNG" means natural gas in high-pressure containers that is highly compressed (though not to the point of liquefaction), typically to pressures ranging from 2900 to 3600 psi.

~~(97)~~ "Compressor" means any machine for raising the pressure of a natural gas or CO2 by drawing in low pressure natural gas and discharging significantly higher pressure natural gas or CO2.

~~(98)~~ "Condensate" means hydrocarbon and other liquid, including both water and hydrocarbon liquids, separated from natural gas that condenses due to changes in the temperature, pressure, or both, and remains liquid at storage conditions.

~~(99)~~ "Conflict of interest" means a situation in which, because of financial or other activities or relationships with other persons or organizations, a person or body is unable or potentially unable to render an impartial verification statement of a potential client's greenhouse gas emissions data report, or the person or body's objectivity in performing verification services is or might be otherwise compromised.

~~(100)~~ "Consignee" means the same as "California consignee."

~~(101)~~ "Continuous bleed" means a continuous flow of pneumatic supply natural gas to the process control device (e.g. level control, temperature control, pressure control) where the supply gas pressure is modulated by the process condition, and then flows to the valve controller where the signal is compared with the process set-point to adjust gas pressure in the valve actuator.

~~(102)~~ "Continuous emissions monitoring system" or "CEMS" means the total equipment required to obtain a continuous measurement of a gas concentration or emission rate from combustion or industrial processes.

(~~103)~~ "Continuous physical transmission path" means the full transmission path shown in the physical path table of a single NERC e-tag from ~~the first point of receipt closest to~~ the generation source to the ~~final point of delivery closest to the~~ final sink. This is one criterion to establish direct delivery.

(~~103)~~ "Conventional-summer" means finished gasoline formulated for use in motor vehicles, the composition and properties of which do not meet the requirements of the reformulated gasoline regulations promulgated by the U.S. Environmental Protection Agency under 40 CFR §80.40, but which meet summer RVP standards required under 40 CFR §80.27 or as specified by the state. Note: This category excludes conventional gasoline for oxygenate blending (CBOB) as well as other blendstock.

~~(105)~~ "Conventional wells" mean crude oil or gas wells in producing fields that do not employ hydraulic fracturing to produce commercially viable quantities of crude oil or natural gas.

~~(106)~~ "Conventional-winter" means finished gasoline formulated for use in motor vehicles, the composition and properties of which do not meet the requirements of the reformulated gasoline regulations promulgated by the U.S. Environmental Protection Agency under 40 CFR §80.40 or the summer RVP standards required under 40 CFR §80.27 or as specified by the state. Note: This category excludes conventional blendstock for oxygenate blending (CBOB) as well as other blendstock.

~~(107)~~ "Correctable errors" means errors identified by the verification team that affect covered emissions data~~, non-covered emissions data,~~ or covered product data in the submitted emissions data report that result from a ~~non-conformance~~ nonconformance with this article. Differences that, in the professional judgment of the verification team, are the result of differing but reasonable methods of truncation or rounding or averaging, where a specific procedure is not prescribed by this article, are not considered errors and therefore do not require correction.

(~~108)~~ "Covered emissions" mean all emissions included in a compliance obligation under sections 95852 through 95852.2 of the cap-and-trade regulation, regardless of whether the cap-and-trade regulation imposes a compliance obligation for the data year.

(~~109)~~ "Covered product data" means all product data included in the allocation of allowances under sections 95870, 95890, and 95891 of the cap-and-trade regulation, regardless of whether the cap-and-trade regulation imposes a compliance obligation for the data year.

~~(110)~~ "Cracking" means the process of breaking down larger molecules into smaller molecules, utilizing catalysts and/or elevated temperatures and pressures.

~~(111)~~ "Crude oil" means a mixture of hydrocarbons that exists in the liquid phase in natural underground reservoirs and remains liquid at atmospheric pressure after passing through surface separating facilities. Depending upon the characteristics of the crude stream, it may also include any of the following:

~~(A)~~ Small amounts of hydrocarbons that exist in gaseous phase in natural

underground reservoirs but are liquid at atmospheric conditions (temperature and pressure) after being recovered from oil well (casing-head) gas in lease separators and are subsequently commingled with the crude stream without being separately measured. Lease condensate recovered as a liquid from natural gas wells in lease or field separation facilities and later mixed into the crude stream is also included.

~~(B)~~ Small amounts of non-hydrocarbons, such as sulfur and various metals.

~~(C)~~ Drip gases, and liquid hydrocarbons produced from tar sands, oil sands, gilsonite, and oil shale.

~~(D)~~ Petroleum products that are received or produced at a refinery and subsequently injected into a crude supply or reservoir by the same refinery owner or operator.

Liquids produced at natural gas processing plants and natural gas fractionating facilities are excluded, unless the produced natural gas liquids are extracted from produced gas, associated gas, and waste gas at a facility and re-injected into barrels of crude oil produced by the same facility. Crude oil is refined to produce a wide array of petroleum products, including heating oils; gasoline, diesel and jet fuels; lubricants; asphalt; ethane, propane, and butane; and many other products used for their energy or chemical content.

~~(112)~~ "Customer" means a purchaser of electricity not for the purposes of retransmission or resale.

~~(113)~~ "Customer meter" means natural gas meter, riser, and fittings at residential, commercial, or industrial premise(s).

(~~114)~~ "Data year" means the calendar year in which emissions occurred.

(~~115)~~ "De minimis" means those emissions reported for a source or sources that are calculated using alternative methods selected by the operator, subject to the limits specified in section 95103(i).

~~(116)~~ "Dehydrator" means a device in which a liquid absorbent (including desiccant, ethylene glycol, diethylene glycol, or triethylene glycol) directly contacts a natural gas stream to absorb water vapor.

~~(117)~~ "Dehydrator vent emissions" means natural gas and CO_2 release from a natural gas dehydrator system absorbent (typically glycol) reboiler or regenerator to the atmosphere or a flare, including stripping natural gas and motive natural gas used in absorbent circulation pumps.

~~(118)~~ "Delayed coking" means a process by which heavier crude oil fractions are thermally decomposed under conditions of elevated temperature and pressure to produce a mixture of lighter oils and petroleum coke.

~~(119)~~ “Delivered electricity” means electricity that was distributed from a PSE and received by a PSE or electricity that was generated, transmitted, and consumed.

~~(120)~~ “Demethanizer” means the natural gas processing unit that separates methane rich residue gas from the heavier hydrocarbons (e.g., ethane, propane, butane, pentane-plus) in the feed natural gas stream.

~~(121)~~ “Desiccant” means a material used in solid-bed dehydrators to remove water from raw natural gas by adsorption or absorption. Desiccants include activated alumina, palletized calcium chloride, lithium chloride and granular silica gel material. Wet natural gas is passed through a bed of the granular or pelletized solid adsorbent or absorbent in these dehydrators. As the wet gas contacts the surface of the particles of desiccant material, water is adsorbed on the surface or absorbed and dissolves the surface of these desiccant particles. Passing through the entire desiccant bed, almost all of the water is adsorbed onto or absorbed into the desiccant material, leaving the dry gas to exit the contactor.

~~(122)~~ “Designated representative” means the person responsible for certifying, signing, and submitting the GHG emissions data report.

~~(123)~~ “Diesel fuel” means Distillate Fuel No. 1 and Distillate Fuel No. 2, including dyed and nontaxed fuels.

~~(124)~~ “Direct delivery of electricity” or “directly delivered” means electricity that meets any of the following criteria:

~~(A)~~ The facility has a first point of interconnection with a California balancing authority;

~~(B)~~ The facility has a first point of interconnection with distribution facilities used to serve end users within ~~a~~ California balancing authority area;

~~(C)~~ The electricity is scheduled for delivery from the specified source into ~~a~~ California balancing authority-via a continuous physical transmission path from interconnection of the facility in the balancing authority in which the facility is located to a sink located in the ~~s~~State of California; or

~~(D)~~ There is an agreement to dynamically transfer electricity from the facility to a California balancing authority.

~~(125)~~ “Distillate fuel oil” means a classification for one of the petroleum fractions produced in conventional distillation operations and from crackers and hydrotreating process units. The generic term distillate fuel oil includes kerosene (EIA product code 311), kerosene-type jet fuel (EIA product codes 213, 217, and 218), diesel fuels (Diesel Fuels No. 1, No. 2, and No. 4; EIA product codes 465, 466, and 467), and fuel oils (Fuel Oils No. 1, No. 2, and No. 4; EIA product codes 508, 509, and 510).

(~~126)~~ “Distillate Fuel No. 1” has a maximum distillation temperature of 550°F at the 90 percent recovery point and a minimum flash point of 100°F and includes fuels commonly known as Diesel Fuel No. 1 and Fuel Oil No. 1, but excludes

kerosene. This fuel is further subdivided into categories of sulfur content: High Sulfur (greater than 500 ppm), Low Sulfur (less than or equal to 500 ppm and greater than 15 ppm), and Ultra Low Sulfur (less than or equal to 15 ppm).

~~(127)~~ "Distillate Fuel No. 2" has a minimum and maximum distillation temperature of 540°F and 640°F at the 90 percent recovery point, respectively, and includes fuels commonly known as Diesel Fuel No. 2 and Fuel Oil No. 2. This fuel is further subdivided into categories of sulfur content: High Sulfur (greater than 500 ppm), Low Sulfur (less than or equal to 500 ppm and greater than 15 ppm), and Ultra Low Sulfur (less than or equal to 15 ppm).

(~~128)~~ "Distillate Fuel No. 4" ~~is~~means a distillate fuel oil with a minimum flash point of 131 °F made by blending distillate fuel oil and residual fuel oil~~, with a minimum flash point of 131°F~~.

~~(129)~~ "Distribution pipeline" means a pipeline that is designated as such by the Pipeline and Hazardous Material Safety Administration (PHMSA) in 49 CFR §192.3.

(~~130)~~ "District Heating Facility" means a facility that, at a central plant, produces hot water, steam and/or chilled water that is distributed through underground pipes to buildings and facilities connected to the system that are not part of the same facility. District Heating Facility does not include a facility that produces electricity.

~~(131)~~ "Double-Valve Cylinder," for purposes of Appendix B, means a cylinder used for gathering crude oil or condensate samples. The cylinder is provided by a laboratory filled with laboratory grade water which prevents flashing within the cylinder.

~~(132)~~ "Dry gas" means a natural gas that is produced from gas wells not associated with the production of crude oil.

~~(133)~~ "E&P Tank" means E&P Tank Version 2.0 for Windows software, copyright 1996-1999 by the American Petroleum Institute and the Gas Research Institute (published 2000).

~~(134)~~ "EIA" means the Energy Information Administration. The Energy Information Administration (EIA) is a statistical agency of the United States Department of Energy.

~~(135) "Electrical Distribution Utility(ies)" means an entity that owns and/or operates an electrical distribution system, including: 1) a public utility as defined in the Public Utilities Code section 216 (referred to as an Investor Owned Utility or IOU); or 2) a local publicly owned electric utility (POU) as defined in Public Utilities Code section 224.3; or 3) an Electrical Cooperative (COOP) as defined in Public Utilities Code section 2776, that provides electricity to retail end users in California.~~

~~(136)~~ "Electric arc furnace" or "EAF" means a furnace that produces molten steel and heats the charge materials with electric arcs from carbon electrodes. Furnaces that continuously feed direct-reduced iron ore pellets as the primary source of iron are not affected facilities within the scope of this definition.

"Electrical Distribution Utility(ies)" or "EDU" means an entity that owns and/or operates an electrical distribution system, including: 1) a public utility as defined in

the Public Utilities Code section 216 (referred to as an Investor Owned Utility or IOU); or 2) a local publicly owned electric utility (POU) as defined in Public Utilities Code section 224.3; or 3) an Electrical Cooperative (COOP) as defined in Public Utilities Code section 2776, that provides electricity to retail end users in California.

(~~137)~~ "Electric Power Entity" or "EPE" means those entities specified in section 95101(d) of this article, including electricity importers and exporters; retail providers, including multi-jurisdictional retail providers; the California Department of Water Resources (DWR); the Western Area Power Administration (WAPA); and the Bonneville Power Administration (BPA).

(~~138)~~ "Electricity exporter" means electric power entities that deliver exported electricity. The entity that exports electricity is identified on the NERC e-Tag as the purchasing-selling entity (PSE) on the last segment of the tag's physical path, with the point of receipt located inside the state of California and the point of delivery located outside the state of California. Electricity exporters include Energy Imbalance Market (EIM) Entity Scheduling Coordinators serving the EIM market that can result in exports from California. For electricity exported through EIM, CAISO will report the MWhs and emissions associated with the EIM exported electricity.

~~(139)~~ "Electricity generating facility" means a facility that generates electricity and includes one or more generating units at the same location.

"Electricity generation provider" means a provider of the energy or generation component of electricity services, as distinguished from the provider of transmission and/or distribution service that provides the wires for the transport of electricity. Electricity generation providers may include electricity service providers, community choice aggregators, cogeneration facilities, and other entities in addition to electrical distribution utilities that may provide both generation and transmission/distribution service.

~~(140)~~ "Electricity generating unit" or "EGU" 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. An EGU may include a unit that generate electricity from fuel combustion or from other renewable energy sources, such as solar and wind.

(~~141)~~ "Electricity importers" deliver imported electricity. For electricity that is scheduled with a NERC e-Tag to a final point of delivery inside the state of California, the electricity importer is identified on the NERC e-Tag as the purchasing-selling entity (PSE) on the last segment of the tag's physical path with the point of receipt located outside the state of California and the point of delivery located inside the state of California. For facilities physically located outside the state of California with the first point of interconnection to a California balancing authority's transmission and distribution system when the electricity is not scheduled on a NERC e-Tag, the importer is the facility operator or scheduling coordinator. Federal and state agencies are subject to the regulatory authority of ARB under this article and include Western Area Power Administration (WAPA), Bonneville Power Administration (BPA), and California Department of Water

Resources (DWR). For electricity that is imported into California through the CAISO Energy Imbalance Market, the electricity importer is identified as the~~Electricity Importers include~~ EIM Participating Resource Scheduling Coordinators serving the EIM market whose transactions result in electricity imports into California ~~and the EIM purchaser~~.

(~~142)~~ "Electricity sold into the CAISO markets" means electricity sold into California Independent System Operator (CAISO) markets, including but not limited to the day-ahead market, real time market, integrated forward market, and energy imbalance market. Transactions excluded as CAISO sales pursuant to section 11.29(a)(iii) of the CAISO Fifth Replacement Tariff dated May 1, 2014 do not fall under this definition.

~~(143)~~ "Electricity transaction" means the purchase, sale, import, export or exchange of electric power.

~~(144)~~ "Electricity wheeled through California" or "wheeled electricity" means electricity that is generated outside the state of California and delivered into California with the final point of delivery outside California. Electricity wheeled through California is documented on a single NERC e-Tag showing the first point of receipt located outside the state of California, an intermediate point of delivery located inside the state of California, and the final point of delivery located outside the state of California.

~~(145)~~ "Eligible renewable energy resource" is as defined in section 95802(a) of the cap-and-trade regulation.

~~(146)~~ "Emission 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 barrel of fossil fuel burned.)

~~(147)~~ "Emissions" means the release of greenhouse gases into the atmosphere from sources and processes in a facility, including from the combustion of transportation fuels such as natural gas, petroleum products, and natural gas liquids.

~~(148)~~ "Emissions data report" or "greenhouse gas emissions data report" or "report" means the report prepared by an operator or supplier each year and submitted by electronic means to ARB that provides the information required by this article. The emissions data report is for the submission of required data for the calendar year prior to the year in which the report is due. For example, a 2013 emissions data report would cover emissions and product data for the 2013 calendar year and would be reported in 2014.

~~(149)~~ "Emissions data verification statement" means the final statement rendered by a verification body attesting whether a reporting entity's covered emissions data in their emissions data report is free of material misstatement, and whether the emissions data conforms to the requirements of this article.

~~(150)~~ "Emulsion" means a mixture of water, crude oil, associated gas, and other components from the oil extraction process that is transferred from an existing platform that is permanently affixed to the ocean floor and that is located outside

the distance specified in the “offshore” definition of this article, to an onshore petroleum and natural gas production facility. For purposes of Appendix B, emulsion means a mixture of crude oil, condensate, or produced water in any proportion.

~~(151)~~ “End user” means a final purchaser of an energy product, such as electricity, thermal energy, or natural gas not for the purposes of retransmission or resale. In the context of natural gas consumption, an “end user” is the point to which natural gas is delivered for consumption.

(~~152)~~ “Energy Imbalance Market” or “EIM” means the operation of the CAISO’s real-time market to manage transmission congestion and optimize procurement of energy to balance supply and demand for the combined CAISO and EIM footprint.

~~(153)~~ “Energy Imbalance Market, Participating Resource Scheduling Coordinator” or “EIM” Participating Resource Scheduling Coordinator means the participating resource owner or operator, or a third-party designated by the resource owner or operator that is certified by the CAISO and enters into the pro forma EIM Participating Resource Scheduling Coordinator Agreement, under which it is responsible for meeting the requirements specified in the CAISO Tariff on behalf of the resource owner or operator.

~~“Energy Imbalance Market Purchaser” or “EIM Purchaser” means the entity serving California load or the entity purchasing energy to be delivered or sold to an entity serving California load that purchases energy imported to California through the EIM market.~~

~~(154)~~ “Enforceable” means the authority for ARB to hold a particular party liable and to take appropriate action if any of the provisions of this article are violated.

~~(155)~~ “Engineering estimation,” for the purposes of sections 95150 to 95157 of this article, means an estimate of emissions based on engineering principles applied to measured and/or approximated physical parameters such as dimensions of containment, actual pressures, actual temperatures, and compositions.

~~(156)~~ “Enhanced oil recovery” or “EOR” means the use of certain methods such as steam (thermal EOR), water flooding or gas injection into existing wells to increase the recovery of crude oil from a reservoir. In the context of this rule, EOR also applies to injection of critical phase carbon dioxide into a crude oil reservoir to enhance the recovery of oil.

~~(157)~~ “Enterer” means an entity that imports into California motor vehicle fuel, diesel fuel, fuel ethanol, biodiesel, non-exempt biomass-derived fuel or renewable fuel and who is the importer of record under federal customs law or the owner of fuel upon import into California if the fuel is not subject to federal customs law. Only enterers that import the fuels specified in this definition outside the bulk transfer/terminal system are subject to reporting under the regulation.

~~(158)~~ “Entity” means a person, firm, association, organization, partnership, business trust, corporation, limited liability company, company, or government agency.

~~(159)~~ "Equipment" means any stationary article, machine, or other contrivance, or combination thereof, which may cause the issuance or control the issuance of air contaminants; equipment shall not mean portable equipment, tactical support equipment, or electricity generators designated as backup generators in a permit issued by an air pollution control district or air quality management district.

~~(160)~~ "Equipment leak" means those emissions which could not reasonably pass through a stack, chimney, vent, or other functionally-equivalent opening.

~~(161)~~ "Equipment leak detection" means the process of identifying emissions from equipment, components, and other point sources.

~~(162)~~ "Ethane" is a paraffinic hydrocarbon with molecular formula C_2H_6.

~~(163)~~ "Ethanol" is an anhydrous alcohol with molecular formula C_2H_5OH.

~~(164)~~ "Ethylene" is an olefinic hydrocarbon with molecular formula C_2H_4.

~~(165)~~ "Exchange agreement" means a commitment between electricity market participants to swap energy for energy. Exchange transactions do not involve transfers of payment or receipts of money for the full market value of the energy being exchanged, but may include payment for net differences due to market price differences between the two parts of the transaction or to settle minor imbalances.

~~(166)~~ "Exclusive marketer" means a marketer that has exclusive rights to market electricity for a generating facility or group of generating facilities.

~~(167)~~ "Executive Officer" means the Executive Officer of the California Air Resources Board, or his or her delegate.

~~(168)~~ "Exported electricity" means electricity generated inside the state of California and delivered to serve load located outside the state of California. This includes electricity delivered from a first point of receipt inside California, to the first point of delivery outside California, with a final point of delivery outside the state of California. Exported electricity delivered across balancing authority areas is documented on NERC e-Tags with the first point of receipt located inside the state of California and the final point of delivery located outside the state of California. Exported electricity does not include electricity generated inside the state of California then transmitted outside of California, but with a final point of delivery inside the state of California. Exported electricity does not include electricity generated inside the state of California that is allocated to serve the California retail customers of a multi-jurisdictional retail provider, consistent with a cost allocation methodology approved by the California Public Utilities Commission and the utility regulatory commission of at least one additional state in which the multi-jurisdictional retail provider provides retail electric service.

~~(169)~~ "External combustion" means fired combustion in which the flame and products are separated from contact with the process fluid to which the energy is delivered. Process fluids may be air, hot water, or hydrocarbons. External combustion equipment may include fired heaters, industrial boilers, and commercial and domestic combustion units.

~~(170)~~ "Facility," unless otherwise specified in relation to natural gas distribution facilities and onshore petroleum and natural gas production facilities as defined in section 95102(a), means any physical property, plant, building, structure, source, or stationary equipment 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 ownership or common 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.

~~(171)~~ "Facility," with respect to natural gas distribution for the purposes of sections 95150 to 95158 of this article, means the collection of all distribution pipelines and metering-regulating stations that are operated by a local distribution company (LDC) within the State of California that is regulated as a separate operating company by a public utility commission or that are operated as an independent municipally-owned distribution system.

~~(172)~~ "Facility," with respect to onshore petroleum and natural gas production for the purposes of sections 95150 to 95158 of this article, means all petroleum and natural gas equipment on a well-pad, associated with a well pad or to which emulsion is transferred and CO_2 EOR operations that are under common ownership or common control including leased, rented, or contracted activities by an onshore petroleum and natural gas production owner or operator and that are located in a single basin as defined in section 95102(a). When a commonly owned cogeneration plant is within the basin, the cogeneration plant is only considered part of the onshore petroleum and natural gas production facility if the onshore petroleum and natural gas production facility operator or owner has a greater than fifty percent ownership share in the cogeneration plant. Where a person or entity owns or operates more than one well in a basin, then all onshore petroleum and natural gas production equipment associated with all wells that the person or entity owns or operates in the basin would be considered one facility. Onshore natural gas processing equipment as defined in section 95150(a)(3) that is owned and/or operated by the facility owner/operator and located within the same basin, is considered "associated with a well pad" and is included with the onshore petroleum and natural gas production facility, unless such equipment is required to be reported as part of a separate onshore petroleum and natural gas processing facility.

"Facility," with respect to onshore natural gas processing for the purposes of sections 95150 to 95158 of this article, means equipment associated with the separation of natural gas liquids (NGLs) or non-methane gases from produced natural gas, including separation of sulfur and carbon dioxide, that processes an annual average throughput of 25 MMscf per day or greater, or whose owner/operator does not also own/operate a production facility in the same basin.

~~(173)~~ "Farm taps" are pressure regulation stations that deliver gas directly from transmission pipelines to rural customers. In some cases a nearby LDC may handle the billing of the gas to the customer(s).

~~(174)~~ "Feedstock" means the raw material supplied to a process.

~~(175)~~ "Field," in the context of oil and gas systems, means oil and gas fields identified in the United States as defined by the Energy Information Administration Oil and Gas Field Code Master List 2008, DOE/EIA 0370(08), January 2009, which is hereby incorporated by reference.

~~(176)~~ "Field accuracy assessment" means a test, check, or engineering analysis intended to confirm that a flow meter or other mass or volume measurement device is operating within an acceptable accuracy range. A field accuracy assessment should be conducted in a manner that does not interrupt operations or require removal of the meter or require primary element inspection. The selected method for field accuracy assessment will vary based on meter type and piping system design, and may be performed by the facility operator, a third party meter servicing firm, or the original equipment manufacturer.

~~(177)~~ "Final point of delivery" means the sink specified on the NERC e-Tag, where defined points have been established through the NERC Registry. When NERC e-Tags are not used to document electricity deliveries, as may be the case within a balancing authority, the final point of delivery is the location of the load. Exported electricity is disaggregated by the final point of delivery on the NERC e-Tag.

~~(178)~~ "First deliverer of electricity" or "first deliverer" means the owner or operator of an electricity generating facility in California or an electricity importer.

~~(179)~~ "First point of delivery in California" means the first defined point on the transmission system located inside California at which imported electricity and electricity wheeled through California may be measured, consistent with defined points that have been established through the NERC Registry.

~~(180)~~ "First point of receipt" means the ~~location from which a Generator delivers its output to the transmission system (the closest POR to the generation source) generation source~~ specified on the NERC e-Tag, where defined points have been established through the NERC Registry. When NERC e-Tags are not used to document electricity deliveries, as may be the case within a balancing authority, the first point of receipt is the location of the individual generating facility or unit, or group of generating facilities or units. ~~Imported electricity and wheeled~~ ~~Wheeled~~ electricity ~~are~~ ~~is~~ disaggregated by the first point of receipt on the NERC e-Tag.

~~(181)~~ "Flare" means a combustion device, whether at ground level or elevated, that uses an open flame to burn combustible gases with combustion air provided by uncontrolled ambient air around the flame.

~~(182)~~ "Flare combustion" means unburned hydrocarbons including CH_4, CO_2, and N_2O emissions resulting from the incomplete combustion of gas in flares.

~~(183)~~ "Flare combustion efficiency" means the fraction of liquid and gases sent to the flare, on a volume or mole basis, that is combusted at the flare burner tip.

~~(184)~~ "Flare stack emissions" means CO_2 and N_2O from partial combustion of hydrocarbon gas sent to a flare plus CH_4 emissions resulting from the incomplete combustion of hydrocarbon gas in the flare.

~~(185)~~ "Flash Analysis," for purposes of Appendix B, means laboratory methodologies for measuring the volume and composition of gases released from liquids, including the molecular weight of the total gaseous sample, the weight percent of individual compounds, and a Gas-Oil Ratio or Gas-Water Ratio required to calculate the specified emission rates as described in Section 10 of Appendix B.

~~(186)~~ "Flash point" of a volatile liquid is the lowest temperature at which it can vaporize to form an ignitable mixture in air.

~~(187)~~ "Flashing," for purposes of Appendix B, means the release of hydrocarbons and carbon dioxide from liquid to surrounding air when the liquid changes temperature and pressure, also known as phase change.

~~(188)~~ "Floating-Piston Cylinder," for purposes of Appendix B, means a cylinder used for gathering produced water. The cylinder contains an internal piston controlled by gas pressure. The piston prevents sample liquid from flashing within the sampling cylinder and provides a means of extracting the sample liquid.

~~(189)~~ "Flow meter" means a measurement device consisting of one or more individual components that is designed to measure the bulk fluid movement of liquid or gas through a piped system at a designated point. Bulk fluid movement can be measured with a variety of devices in units of mass flow or volume.

~~(190)~~ "Flow monitor" means a component of the continuous emission monitoring system that measures the volumetric flow of exhaust gas.

~~(191)~~ "Flowback Fluid," for purposes of Appendix B, means chemicals, fluids, or propellants injected underground under pressure to stimulate or hydraulically fracture a crude oil or natural gas well or reservoir and that flows back to the surface as a fluid after injection is completed.

~~(192)~~ "Fluid catalytic cracking unit" or "FCCU" means a process unit in a refinery in which petroleum derivative feedstock is charged and fractured into smaller molecules in the presence of a catalyst, or reacts with a contact material to improve feedstock quality for additional processing, and in which the catalyst or contact material is regenerated by burning off coke and other deposits. The unit includes, but is not limited to, the riser, reactor, regenerator, air blowers, spent catalyst, and all equipment for controlling air pollutant emissions and recovering heat.

~~(193)~~ "Fluid coking" means a thermal cracking process utilizing the fluidized-solids technique to remove carbon (coke) for continuous conversion of heavy, low-grade oils into lighter products.

~~(194)~~ "Fluorinated greenhouse gas" means sulfur hexafluoride (SF_6), nitrogen trifluoride (NF_3), and any fluorocarbon except for controlled substances as defined at 40 CFR Part 82, subpart A, (May 1995), which is hereby incorporated by reference, and substances with vapor pressures of less than 1 mm of Hg absolute at 25°C. With these exceptions, "fluorinated GHG" includes any hydrofluorocarbon,

any perfluorocarbon, any fully fluorinated linear, branched or cyclic alkane, ether, tertiary amine or aminoether, any perfluoropolyether, and any hydrofluoropolyether.

~~(195)~~ "Forced extraction of natural gas liquids" means removal of ethane or higher carbon number hydrocarbons existing in the vapor phase in natural gas, by removing ethane or heavier hydrocarbons derived from natural gas into natural gas liquids by means of a forced extraction process. Forced extraction processes include refrigeration, absorption (lean oil), cryogenic expander, and combinations of these processes. Forced extraction does not include in and of itself, natural gas dehydration, or the collection or gravity separation of water or hydrocarbon liquids from natural gas at ambient temperatures, or the condensation of water or hydrocarbon liquids through passive reduction in pressure or temperature, or portable dewpoint suppression skids.

~~(196)~~ "Forest-derived wood and wood waste" means wood harvested pursuant to the California Forest Practice Rule, Title 14, California Code of Regulations, Chapters 4, 4.5, and 10 or pursuant to the National Environmental Policy Act.

~~(197)~~ "Fossil fuel" means natural gas, petroleum, coal, or any form of solid, liquid, or gaseous fuel derived from such material.

~~(198)~~ "Fractionates" means the process of separating natural gas liquids into their constituent liquid products.

~~(199)~~ "Fractionator" means plants that produce fractionated natural gas liquids (NGLs) extracted from produced natural gas and separate the NGLs individual component products: ethane, propane, butanes and pentane-plus (C5+). Plants that only process natural gas but do not fractionate NGLs further into component products are not considered fractionators. Some fractionators do not process production gas, but instead fractionate bulk NGLs received from natural gas processors. Some fractionators both process natural gas and fractionate bulk NGLs received from other plants.

~~(200)~~ "Fuel" means solid, liquid or gaseous combustible material. Volatile organic compounds burned in destruction devices are not fuels unless they can sustain combustion without use of a pilot fuel, and such destruction does not result in a commercially useful end product.

~~(201)~~ "Fuel analytical data" means data collected about fuel usage (including mass, volume, and flow rate) and fuel characteristics (including heating value, carbon content, and molecular weight) to support emissions calculation.

~~(202)~~ "Fuel characteristic data" means, for the purpose of this article, properties of a fuel used for calculating GHG emissions including carbon content, high heat value, and molecular weight.

~~(203)~~ "Fuel combusting electricity generating or cogeneration unit" means an electricity generating unit, which may include a cogeneration or bigeneration unit, that produces electricity from fuel combustion.

~~(204)~~ "Fuel ethanol" means ethanol that meets ASTM D-4806-08 "*Standard Specification for Denatured Fuel Ethanol for Blending with Gasolines for Use as*

Automotive Spark-Ignition Engine Fuel" (2008), specifications, which is hereby incorporated by reference, for blending with gasolines for use as automotive spark-ignition engine fuel.

~~(205)~~ "Fuel flowmeter system" means a monitoring system which provides a continuous record of the flow rate of fuel oil or gaseous fuel. A fuel flowmeter system consists of one or more fuel flowmeter components, all necessary auxiliary components (e.g., transmitters, transducers, etc.), and a data acquisition and handling system (DAHS).

~~(206)~~ "Fuel production facility" means a facility, other than a refinery, in which motor vehicle fuel, diesel fuel or biomass-based fuel is produced.

~~(207)~~ "Fuel supplier" means a supplier of petroleum products, a supplier of biomass-derived transportation fuels, a supplier of natural gas including operators of interstate and intrastate pipelines, a supplier of liquefied natural gas, or a supplier of liquid petroleum gas as specified in this article.

~~(208)~~ "Fuel transaction" means the record of the exchange of fuel possession, ownership, or title from one entity to another.

~~(209)~~ "Fugitive emissions" means those emissions which are unintentional and could not reasonably pass through a stack, chimney, vent, or other functionally-equivalent opening.

~~(210)~~ "Fugitive emissions detection" means the process of identifying emissions from equipment, components, and other point sources.

~~(211)~~ "Fugitive equipment leak" means the unintended or incidental emissions of greenhouse gases from the production, transmission, processing, storage, use or transportation of fossil fuels, greenhouse gases, or other equipment.

~~(212)~~ "Fugitive source" means a source of fugitive emissions.

~~(213)~~ "Full verification" means all verification services as provided in section 95131.

(~~214)~~ "Gas" means the state of matter distinguished from the solid and liquid states by: relatively low density and viscosity; relatively great expansion and contraction with changes in pressure and temperature; the ability to diffuse readily; and the spontaneous tendency to become distributed uniformly throughout any container.

~~(215)~~ "Gas conditions" means the actual temperature, volume, and pressure of a gas sample.

~~(216)~~ "Gas gathering/booster stations" means centralized stations where produced natural gas from individual wells is co-mingled, compressed for transport to processing plants, transmission and distribution systems, and other gathering/booster stations which co-mingle gas from multiple production gathering/booster stations. Such stations may include gas dehydration, gravity separation of liquids (both hydrocarbon and water), pipeline pig launchers and receivers, and gas powered pneumatic devices.

~~(217)~~ "Gas-to-oil ratio" or "GOR" means the ratio of gas produced from a barrel of crude oil or condensate when cooling and depressurizing these liquids to standard conditions, expressed in terms of standard cubic feet of gas per barrel of oil. Where used in this article, the terms "Total gas-to-oil ratio" and "Total GOR" refer to the ratio of the total volume of produced associated gas to the total volume of produced crude oil from one or more wells, including any associated gas that is separated and either recovered or emitted to the atmosphere prior to the collection of samples for a Flash Analysis.

~~(218)~~ "Gas-to-water ratio" or "GWR" means the ratio of gas produced from a barrel of produced water when cooling and depressurizing produced water to standard conditions, expressed in terms of standard cubic feet of gas per barrel of water.

~~(219)~~ "Gas well" means a well completed for production of natural gas from one or more gas zones or reservoirs. Such wells contain no completions for the production of crude oil.

~~(220)~~ "Generated electricity" means electricity generated by an electricity generating unit at the reporting facility. Generated electricity does not include any electricity that is generated outside the facility and delivered into the facility with final destination outside of the facility.

~~(221)~~ "Generated energy" means electricity or thermal energy generated by the electricity generating, cogeneration, or bigeneration units included in the reporting facility.

(~~222)~~ "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.

~~(223)~~ "Generation providing entity" or "GPE" means a facility or generating unit operator, full or partial owner, party to a contract for a fixed percentage of net generation from the facility or generating unit, party to a tolling agreement with the owner, or exclusive marketer recognized by ARB that is either the electricity importer or exporter with prevailing rights to claim electricity from the specified source.

"Geologic sequestration" means the process of injecting CO_2 captured from an emissions source into deep subsurface rock formations for permanent storage.

~~(224)~~ "Geothermal" means heat or other associated energy derived from the natural heat of the earth.

~~(225)~~ "Global warming potential" or "GWP" means the ratio of the time-integrated radiative forcing from the instantaneous release of one kilogram of a trace substance relative to that of one kilogram of a reference gas, i.e., CO_2. For 2011 through 2020 data years, the GWP values used for emissions estimation and reporting are as specified in Table A-1 to Subpart A of Title 40, Code of Federal Regulations (CFR) Part 98 as published to the Federal Register on 10/30/2009. For data years 2021 and onward, the GWP values are as specified in the Table A-1

to Subpart A of Title 40 Code of Federal Regulations ~~(CFR)~~ Part 98 as published to the CFR on 12/11/2014, which is hereby incorporated by reference.

~~(226)~~ "Graduated Cylinder," for purposes of Appendix B, means a measuring instrument for measuring fluid volume, such as a glass container (cup or cylinder or flask) which has sides marked with or divided into amounts.

~~(227)~~ "Greenhouse gas" or "GHG" means carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), sulfur hexafluoride (SF_6), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and other fluorinated greenhouse gases as defined in this section.

~~(228)~~ "Greenhouse gas emission reduction" or "GHG emission reduction" or "greenhouse gas reduction" or "GHG reduction" means a calculated decrease in GHG emissions relative to a project baseline over a specified period of time.

~~(229)~~ "Greenhouse gas removal enhancement" or "GHG removal" means the calculated total mass of a GHG removed, relative to a project baseline, from the atmosphere over a specified period of time.

~~(230)~~ "Greenhouse gas reservoir" or "GHG reservoir" means a physical unit or component of the biosphere, geosphere or hydrosphere with the capability to store, accumulate, or release of a GHG removed from the atmosphere by a GHG sink or a GHG captured from a GHG emission source.

~~(231)~~ "Greenhouse gas sink" or "GHG sink" means a physical unit or process that removes a GHG from the atmosphere.

~~(232)~~ "Grid" or "electric power grid" means a system of synchronized power providers and consumers connected by transmission and distribution lines and operated by one or more control centers.

~~(233)~~ "Grid-dedicated facility" means an electricity generating facility in which all net power generated is destined for distribution on the grid through retail providers or electricity marketers, ultimately serving wholesale or retail customers of the grid.

~~(234)~~ "Gross generation" or "gross power generated" means the total electrical output of the generating facility or unit, expressed in megawatt hours (MWh) per year.

~~(235)~~ "HD-5" or "special duty propane" means a consumer grade of liquefied petroleum gas containing a minimum of 90% propane, a maximum of 5% propylene, and a maximum of 2.5% butane as specified in ASTM D1835-05.

~~(236)~~ "HD-10" means the fuel that meets the specifications for propane used in transportation fuel found in Title 13, California Code of Regulations, section 2292.6.

~~(237)~~ "Heat input rate" means the product (expressed in MMBtu/hr) of the gross calorific value of the fuel (expressed in MMBtu/mass of fuel) and the fuel feed rate into the combustion device (expressed in mass of fuel/hr) and does not include the heat derived from preheated combustion air, recirculated flue gases, or exhaust from other sources.

~~(238)~~ "Heavy crude oil" or "heavy crude" means a category of crude oil characterized by relatively high viscosity, a higher carbon-to-hydrogen ratio, and a relatively higher density having an API gravity of less than 20.

~~(239)~~ "High-bleed pneumatic devices" means automatic, continuous or intermittent bleed flow control devices powered by pressurized natural gas and used for maintaining a process condition such as liquid level, pressure, delta-pressure and temperature. Part of the gas power stream that is regulated by the process condition flows to a valve actuator controller where it vents continuously or intermittently (bleeds) to the atmosphere at a rate in excess of 6 standard cubic feet per hour.

~~(240)~~ "High heat value" or "HHV" means the high or gross heat content of the fuel with the heat of vaporization included. The water vapor is assumed to be in a liquid state.

~~(241)~~ "Horizontal well" means a well bore that has a planned deviation from primarily vertical to primarily horizontal inclination or declination tracking in parallel with and through the target formation.

~~(242)~~ "Hydrocarbons" means chemical compounds containing predominantly carbon and hydrogen.

~~(243)~~ "Hydrofluorocarbons" or "HFCs" means a class of GHGs consisting of hydrogen, fluorine, and carbon.

~~(244)~~ "Hydrogen" means diatomic molecular hydrogen, the lightest of all gases~~, occurring chiefly in combination with oxygen in water; exists also in acids, bases, alcohols, petroleum, and other hydrocarbons~~.

~~(245)~~ "Hydrogen plant" means a facility that produces hydrogen with steam hydrocarbon reforming, partial oxidation of hydrocarbons, or other processes.

~~(246)~~ "Imported electricity" means electricity generated outside the state of California and delivered to serve load located inside the state of California. Imported electricity includes electricity delivered across balancing authority areas from a ~~first point of receipt generation source~~ located outside the state of California, to the first point of delivery located inside the state of California, having a final point of delivery in California. Imported electricity includes electricity imported into California over a multi-jurisdictional retail provider's transmission and distribution system, or electricity imported into the state of California from a facility or unit physically located outside the state of California with the first point of interconnection to a California balancing authority's transmission and distribution system. Imported electricity includes electricity that is a result of cogeneration located outside the state of California. Imported electricity does not include electricity wheeled through California, defined pursuant to this section. Imported electricity does not include electricity imported into the California Independent System Operator (CAISO) balancing authority area to serve retail customers that are located within the CAISO balancing authority area, but outside the state of California. Imported Electricity does not include electricity imported into California by an Independent System Operator to obtain or provide emergency assistance

under applicable emergency preparedness and operations reliability standards of the North American Electric Reliability Corporation or Western Electricity Coordinating Council. Imported electricity shall include Energy Imbalance Market (EIM) dispatches ~~designated by the CAISO's optimization model and reported by the CAISO to EIM Participating Resource Scheduling Coordinators~~ as electricity imported to serve retail customers load that are located within the State of California~~, and shall also include electricity emissions not reported by EIM Participating Resource Scheduling Coordinators but distributed to EIM Purchasers pursuant to section 95852~~.

"Importer of fuel" means an entity that imports fuel into California and who is the importer of record under federal customs law~~, or the owner or first entity to hold title to the fuel upon import into the State of California if the fuel is not subject to federal customs law~~. For fuel not subject to federal customs law, the "importer of fuel" is the owner of the fuel upon its entering into California if the transfer of ownership of the product between the seller and the California buyer occurs upon delivery to a destination inside California. However, where the transfer of ownership of the product between the seller and the California buyer occurs at a location outside of California, the "importer of fuel" is the producer, marketer, or distributor that is the seller of the fuel that is forwarding the fuel in accordance with a contract of sale from an origination outside of California to a buyer located inside California. Pursuant to section 95122, only importers of liquefied petroleum gas, compressed natural gas, and liquefied natural gas are subject to reporting as an importer of fuel.

~~(247)~~ "Importer of record" means the owner or purchaser of the goods that are imported into California.

~~(248)~~ "Independently operated and sited cogeneration/bigeneration facility" means a cogeneration or bigeneration facility that is not located on the same facility footprint as its thermal host and has different operational control and different ownership than the thermal host.

~~(249)~~ "Independently operated cogeneration/bigeneration facility co-located with the thermal host" means a cogeneration or bigeneration facility that is located on the same property footprint as its thermal host but has different operational control and different ownership than the thermal host.

~~(250)~~ "Independent reviewer" has the same meaning as "lead verifier independent reviewer."

~~(251)~~ "Industrial/institutional/commercial facility with electricity generation capacity" means a facility whose primary business is not electricity generation and includes one or more electricity generating, cogeneration, or bigeneration units.

~~(252)~~ "Intermittent bleed pneumatic devices" means automated flow control devices powered by pressurized natural gas and used for automatically maintaining a process condition such as liquid level, pressure, delta-pressure and temperature. These are snap-acting or throttling devices that discharge all or a portion of the full volume of the actuator intermittently when control action is necessary, but do not bleed continuously. Intermittent bleed devices which bleed at a cumulative rate of 6

standard cubic feet per hour or greater are considered high bleed devices for the purposes of this regulation.

~~(253)~~ “Internal combustion” means the combustion of a fuel that occurs with an oxidizer (usually air) in a combustion chamber. In an internal combustion engine the expansion of the high-temperature and high-pressure gases produced by combustion, applies direct force to a component of the engine, such as pistons, turbine blades, or a nozzle. This force moves the component over a distance, generating useful mechanical energy. Internal combustion equipment may include gasoline and diesel industrial engines, natural gas-fired reciprocating engines, and gas turbines.

~~(254)~~ “Interstate pipeline” means any entity that owns or operates a natural gas pipeline delivering natural gas to consumers in the state and is subject to rate regulation by the Federal Energy Regulatory Commission.

~~(255)~~ “Intrastate pipeline” means any pipeline or piping system wholly within the ~~s~~State of California that is delivering natural gas to end-users and is not regulated as a public utility gas corporation by the California Public Utility Commission (CPUC), is not a publicly~~-~~owned natural gas utility, and is not regulated as an interstate pipeline by the Federal Energy Regulatory Commission. For purposes of this article, only intrastate pipeline operators that physically deliver gas to end users in California are subject to reporting under this article~~considered to be Local Distribution Companies~~. This definition includes onshore petroleum and natural gas production facilities and natural gas processing facilities, as defined by sections 95150(a)(2)-(3)of this article, that deliver pipeline and/or non-pipeline quality natural gas to one or more end users. Facility operators that operate an interconnection pipeline that connects their facility to an interstate pipeline, or that share an interconnection pipe to an interstate pipeline with other nearby facilities, are not considered intrastate pipeline operators. Facilities that receive gas from an upstream LDC and redeliver a portion of the gas to one or more adjacent facilities are not considered intrastate pipelines.

~~(256)~~ “Inventory position” means a contractual agreement with the terminal operator for the use of the storage facilities and terminaling services for the fuel.

(~~257)~~ "ISO" means the International Organization for Standardization.

(~~258)~~ “Isobutane” is a paraffinic branch chain hydrocarbon with molecular formula C_4H_{10}.

~~(259)~~ “Isobutylene” is an olefinic branch chain hydrocarbon with molecular formula C_4H_8.

“Joint powers authority” means a public agency that is formed and created pursuant to the provisions of Government Code sections 6500. et seq.

~~(260)~~ “Isopentane” is the methylbutane or 2-methylbutane, branched chain, isomer of C_5H_{12} under the International Union of Pure and Applied Chemistry (IUPAC) nomenclature.

~~(261)~~ "Jurisdiction" means U.S. state or Canadian province. For purposes of this article, "U.S. state" means U.S. State, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, and American Samoa and includes the Commonwealth of the Northern Mariana Islands. For purposes of this article, "province" means any Canadian province or territory.

~~(262)~~ "Kerosene" is a light petroleum distillate with a maximum distillation temperature of 400°F at the 10-percent recovery point, a final maximum boiling point of 572°F, a minimum flash point of 100°F, and a maximum freezing point of -22°F. Included are No. 1-K and No. 2-K, distinguished by maximum sulfur content (0.04 and 0.30 percent of total mass, respectively), as well as all other grades of kerosene called range or stove oil. "Kerosene" does not include kerosene-type jet fuel.

~~(263)~~ "Kerosene-type jet fuel" means a kerosene-based product used in commercial and military turbojet and turboprop aircraft. The product has a maximum distillation temperature of 400 °F at the 10 percent recovery point and a final maximum boiling point of 572 °F. Included are Jet A, Jet A–1, JP–5, and JP–8.

~~(264)~~ "Kiln" means an oven, furnace, or heated enclosure used for thermally processing a mineral or mineral-based substance.

~~(265)~~ "Kilowatt hour" or "kWh" means the electrical energy unit of measure equal to one thousand watts of power supplied to, or taken from, an electric circuit steadily for one hour. (A watt is a unit of electrical power equal to one ampere under pressure of one volt, or 1/746 horsepower.)

~~(266)~~ "Last point of delivery in California" means the last defined point on the transmission system located inside California at which exported electricity may be measured, consistent with defined points that have been established through the NERC Registry.

(~~267)~~ "Lead verifier" means a person that has met all of the requirements in section 95132(b)(2) and who may act as the lead verifier of a verification team providing verification services or as a lead verifier providing an independent review of verification services rendered.

~~(268)~~ "Lead verifier independent reviewer" or "independent reviewer" means a lead verifier within a verification body who has not participated in conducting verification services for a reporting entity, offset project developer, or authorized project designee for the current reporting year who provides an independent review of verification services rendered to the reporting entity as required in section 95131. The independent reviewer is not required to meet the requirements for a sector specific verifier.

~~(269)~~ "Legacy contract" shall have the meaning defined in section 95802(a) of the cap-and-trade regulation.

~~(270)~~ "Legacy contract transition assistance" means allowances provided under section 95894 of the cap-and-trade regulation to an entity which has applied for allowances on the basis of its legacy contract(s).

~~(271)~~ "Less intensive verification" means the verification services provided in interim years between full verifications; less intensive verification of a reporting entity's emissions data report only requires data checks and document reviews of a reporting entity's emissions data report based on the analysis and risk assessment in the most current sampling plan developed as part of the most current full verification services. This level of verification may only be used if the verifier can provide findings with a reasonable level of assurance.

~~(272)~~ "Light Crude Oil" means a category of crude oil characterized by relatively low viscosity, a lower carbon-to-hydrogen ratio, and a relatively lower density having an API gravity of greater than or equal to 20.

~~(273) "Liquefied natural gas" or "LNG" means natural gas (primarily methane) that has been liquefied by reducing its temperature to -260 degrees Fahrenheit at atmospheric pressure.~~

~~(274) "Liquefied petroleum gas" or "LP-Gas" or "LPG" means a flammable mixture of hydrocarbon gases used as a fuel. LPG is a natural gas liquid (NGL) that is primarily a mixture of propane and butane, with small amounts of propene (propylene) and ethane. The most common specification categories are propane grades HD-5, HD-10, and commercial grade propane, and propane/butane mix. LPG also includes both odorized and non-odorized liquid petroleum gas, and is also referred to as propane.~~

~~(275)~~ "Linkage" is as defined in section 95802(a) of the cap-and-trade regulation.

~~(276)~~ "Linked jurisdiction" means a jurisdiction which has entered into a linkage agreement pursuant to subarticle 12 of the cap-and-trade regulation.

<u>"Liquefied natural gas" or "LNG" means natural gas (primarily methane) that has been liquefied by reducing its temperature to -260 degrees Fahrenheit at atmospheric pressure.</u>

<u>"Liquefied petroleum gas" or "LP-Gas" or "LPG" means a flammable mixture of hydrocarbon gases used as a fuel. LPG is a natural gas liquid (NGL) that is primarily a mixture of propane and butane, with small amounts of propene (propylene) and ethane. The most common specification categories are propane grades HD-5, HD-10, and commercial grade propane, and propane/butane mix. LPG also includes both odorized and non-odorized liquid petroleum gas, and is also referred to as propane.</u>

~~(277)~~ "LNG boiloff gas" means natural gas in the gaseous phase that vents from LNG storage tanks due to ambient heat leakage through the tank insulation and heat energy dissipated in the LNG by internal pumps.

~~(278)~~ "Local distribution company" or "LDC," for purposes of this article, means a company that owns or operates distribution pipelines, not interstate pipelines, that physically deliver natural gas to end users and includes public utility gas corporations, publicly-owned natural gas utilities and intrastate pipelines that are delivering natural gas to end users.

~~(279)~~ “Lookback period” means the specified time period of historical data that the operators must use for missing data substitution as required by the regulation.

~~(280)~~ “Low-bleed pneumatic devices” means automated flow control devices powered by pressurized natural gas and used for maintaining a process condition such as liquid level, pressure, delta-pressure and temperature. Part of the gas power stream that is regulated by the process condition flows to a valve actuator controller where it vents continuously or intermittently bleeds to the atmosphere at a rate equal to or less than six standard cubic feet per hour.

~~(281)~~ “Low Btu gas” means gases recovered from casing vents, vapor recovery systems, crude oil and petroleum product storage tanks and other parts of the crude oil refining and natural gas production process.

~~(282)~~ “Marketer” means a purchasing-selling entity that delivers electricity and is not a retail provider.

~~(283)~~ “Market-shifting leakage,” in the context of an offset project, means increased GHG emissions or decreased GHG removals outside an offset project’s boundary due to the effects of an offset project on an established market for goods or services.

~~(284)~~ “Material misstatement” means any discrepancy, omission, or misreporting, or aggregation of the three, identified in the course of verification services that leads a verification team to believe that the total reported covered emissions (metric tons of CO_2e) or ~~total~~ reported covered product data contains errors greater than 5%, as applicable, in an emissions data report. Material misstatement is calculated separately for covered emissions and covered product data, as specified in section 95131(b)(12)(A).

~~(285)~~ “Maximum potential fuel flow rate” or “maximum fuel consumption rate” means the maximum fuel use rate the source is capable of combusting, measured in physical unit of the fuel (e.g. million standard cubic feet for gases, gallons for liquids, short tons for non-biomass solids, and bone dry short tons for biomass-derived solids). When the source consists of multiple units, the maximum potential fuel use rate is the sum of the maximum potential fuel use rates of all the units aggregated as a source.

~~(286)~~ “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.

~~(287)~~ “Meter/regulator run” means a series of components used in regulating pressure or metering natural gas flow or both.

~~(288)~~ “Metering/regulating station” means a station that meters the flowrate, regulates the pressure, or both, of natural gas in a natural gas distribution facility. This does not include customer meters, customer regulators, or farm taps.

~~(289)~~ “Methane” or “CH_4” means a GHG consisting on the molecular level of a single carbon atom and four hydrogen atoms.

~~(290)~~ "Metric ton" or "MT" means a common international measurement for mass, equivalent to 2204.6 pounds or 1.1 short tons.

~~(291)~~ "Midgrade gasoline" means gasoline that has an octane rating greater than or equal to 88 and less than or equal to 90. This definition applies to the midgrade categories of conventional-summer, conventional-winter, reformulated-summer, and reformulated-winter. For midgrade categories of RBOB-summer, RBOB-winter, CBOB-summer, and CBOB-winter, this definition refers to the expected octane rating of the finished gasoline after oxygenate has been added to the RBOB or CBOB.

~~(292)~~ "Missing data period" means a period of time during which a piece of data is not collected, is invalid, or is collected while the measurement device is not in compliance with the applicable quality-assurance requirements. In the context of periodic fuel sampling, missing data period is the entire sampling period (e.g. week, month, or quarter) for which corresponding fuel characteristic data are not obtained. In the context of periodic fuel consumption monitoring and recording, a missing data period consists of the consecutive time intervals (e.g. hours, days, weeks, or months) for which fuel consumption during the time period is not monitored and recorded.

~~(293)~~ "MMBtu" means million British thermal units.

~~(294) "Motor gasoline (finished)" means a complex mixture of volatile hydrocarbons, with or without additives, suitably blended to be used in spark ignition engines. Motor gasoline includes conventional gasoline, reformulated gasoline, and all types of oxygenated gasoline. Gasoline also has seasonal variations in an effort to control ozone levels. This is achieved by lowering the Reid Vapor Pressure (RVP) of gasoline during the summer driving season. Depending on the region of the country the RVP is lowered to below 9.0 psi or 7.8 psi. The RVP may be further lowered by state regulations.~~

~~(295)~~ "Motor vehicle fuel" means gasoline. It does not include aviation gasoline, jet fuel, diesel fuel, kerosene, liquefied petroleum gas, natural gas in liquid or gaseous form, or racing fuel.

~~(296)~~ "Mscf" means thousand standard cubic feet.

~~(297)~~ "Multi-jurisdictional retail provider" means a retail provider that provides electricity to consumers in California and in one or more other states in a contiguous service territory or from a common power system.

~~(298)~~ "Municipal solid waste" or "MSW" means solid phase household, commercial/retail, and/or institutional waste. Household waste includes material discarded by single and multiple residential dwellings, hotels, motels, and other similar permanent or temporary housing establishments or facilities. Commercial/retail waste includes material discarded by stores, offices, restaurants, warehouses, non-manufacturing activities at industrial facilities, and other similar establishments or facilities. Institutional waste includes material discarded by schools, nonmedical waste discarded by hospitals, material discarded by non-manufacturing activities at prisons and government facilities, and material discarded

by other similar establishments or facilities. Household, commercial/retail, and institutional wastes include yard waste, refuse-derived fuel, and motor vehicle maintenance materials. Insofar as there is separate collection, processing and disposal of industrial source waste streams consisting of used oil, wood pallets, construction, renovation, and demolition wastes (which includes, but is not limited to, railroad ties and telephone poles), paper, clean wood, plastics, industrial process or manufacturing wastes, medical waste, motor vehicle parts or vehicle fluff, or used tires that do not contain hazardous waste identified or listed under 42 U.S.C. §6921, such wastes are not municipal solid waste. However, such wastes qualify as municipal solid waste where they are collected with other municipal solid waste or are otherwise combined with other municipal solid waste for processing and/or disposal.

~~(299)~~ "NAICS" means North American Industry Classification System.

~~(300)~~ "Nameplate generating capacity" means the maximum rated output of a generator under specific conditions designated by the manufacturer. Generator nameplate capacity is usually indicated in units of kilovolt-amperes (kVA) and in Kilowatts (kW) on a nameplate physically attached to the generator.

~~(301)~~ "Naphthas" (< 401°F) is a generic term applied to a petroleum fraction with an approximate boiling range between 122°F and 400°F. The naphtha fraction of crude oil is the raw material for gasoline and is composed largely of paraffinic hydrocarbons.

~~(302)~~ "Natural gas" means a naturally occurring mixture or process derivative of hydrocarbon and non-hydrocarbon gases found in geologic formations beneath the earth's surface, of which its constituents include, methane, heavier hydrocarbons and carbon dioxide. Natural gas may be field quality (which varies widely) or pipeline quality. For the purposes of this article, the definition of natural gas includes similarly constituted fuels such as field production gas, process gas, and fuel gas.

~~(303)~~ "Natural gas distribution facility" means the collection of all distribution pipelines, metering stations, and regulating stations that are operated by a local distribution company (LDC) that is regulated as a separate operating company by a public utility commission or that are operated as an independent municipally-owned distribution system.

~~(304)~~ "Natural gas driven pneumatic pump" means a pump that uses pressurized natural gas to move a piston or diaphragm, which pumps liquids on the opposite side of the piston or diaphragm.

~~(305)~~ "Natural gas liquids" or "NGLs" means those hydrocarbons in natural gas that are separated from the gas as liquids through the process of absorption, condensation, adsorption, or other methods. Natural gas liquids can be classified according to their vapor pressures as low (condensate), intermediate (natural gasoline), and high (liquefied petroleum gas) vapor pressure. Generally, such liquids consist of ethane, propane, butanes, pentanes, and higher molecular weight

hydrocarbons. Bulk NGLs refers to mixtures of NGLs that are sold or delivered as undifferentiated product from natural gas processing plants.

~~(306)~~ "Natural gas liquid fractionator" means an installation that fractionates natural gas liquids (NGLs) into their constituent liquid products (ethane, propane, normal butane, isobutene or pentanes plus) for supply to downstream facilities.

~~(307)~~ "Natural gas supplier" means, for the purposes of this article, the local distribution company or interstate pipeline that owns or operates the distribution pipelines that physically deliver natural gas to end users.

~~(308)~~ "Natural gasoline" means a mixture of liquid hydrocarbons (mostly pentanes and heavier hydrocarbons) extracted from natural gas. It includes isopentane. Natural gasoline is a natural gas liquid of intermediate vapor pressure.

~~(309)~~ "NERC e-Tag" means North American Electric Reliability Corporation (NERC) energy tag representing transactions on the North American bulk electricity market scheduled to flow between or across balancing authority areas.

~~(310)~~ "Net generation" or "net power generated" means the gross generation minus station service or unit service power requirements, expressed in megawatt hours (MWh) per year. In the case of cogeneration, this value is intended to include internal consumption of electricity for the purposes of a production process, as well as power put on the grid.

~~(311)~~ "Nitrous oxide" or "N_2O" means a GHG consisting at the molecular level of two nitrogen atoms and a single oxygen atom.

~~(312)~~ "Nonconformance" means the failure to use the methods or emission factors specified in this article to calculate emissions, or the failure to meet any other requirements of the regulation.

~~(313)~~ "Non-exempt biomass-derived CO_2" means CO_2 emissions resulting from the combustion of fuel not listed under section 95852.2(a) of the cap-and-trade regulation, or that does not meet the requirements of section 95131(i) of this article.

~~(314)~~ "Non-exempt biomass-derived fuel" means fuel not listed under section 95852.2(a) of the cap-and-trade regulation, or that does not meet the requirements of section 95131(i) of this article.

~~(315)~~ "Non-fuel based renewable electricity generating unit" means a unit that generates electricity not from fuel sources, but from renewable energy sources, such as solar, wind, or hydropower. For the purpose of this article, a non-fuel based renewable electricity generating unit does not include other types of generation explicitly listed in section 95112(a)-(f).

~~(316)~~ "Non-submitted/non-verified emissions data report" means an emissions data report that is not submitted to ARB by the applicable reporting deadline, or for which a verification statement has not been issued by the applicable verification deadline.

~~(317)~~ "North American Industry Classification System (NAICS) code(s)" means the six-digit code(s) that represent the product(s)/activity(s)/service(s) at a facility or

supplier as defined in North American Industrial Classification System Manual 2007, available from the U.S. Department of Commerce, National Technical Information Service.

~~(318)~~ "Offset project" means all equipment, materials, items, or actions that are directly related to or have an impact upon GHG reductions, project emissions or GHG removal enhancements within the offset project boundary.

~~(319)~~ "Offset project boundary" is defined by and includes all GHG emission sources, GHG sinks or GHG reservoirs that are affected by an offset project and under control of the Offset Project Operator or Authorized Project Designee. GHG emissions sources, GHG sinks or GHG reservoirs not under control of the Offset Project Operator or Authorized Project Designee are not included in the offset project boundary.

~~(320)~~ "Offset project data report" means the report prepared by an Offset Project Operator or Authorized Project Designee each year that provides the information and documentation required by this article or a compliance offset protocol.

~~(321)~~ "Offset project operator" means the entity(ies) with legal authority to implement the offset project.

~~(322)~~ "Offset project specific verifier" means an individual who has been accredited by ARB to verify offset projects of a specific offset project type.

~~(323)~~ "Offset protocol" means a documented set of procedures and requirements to quantify ongoing GHG reductions or GHG removal enhancements achieved by an offset project and calculate the project baseline. Offset protocols specify relevant data collection and monitoring procedures, emission factors and conservatively account for uncertainty and activity-shifting and market-shifting leakage risks associated with an offset project.

~~(324)~~ "Offshore," for purposes of this article, means all waters within three nautical miles of the California baseline, starting at the California-Oregon border and ending at the California-Mexico border at the Pacific Ocean, inclusive. For purposes of this definition, "California baseline" means the mean lower low water line along the California Coast.

~~(325)~~ "Oil well" means a well completed for the production of crude oil from at least one oil zone or reservoir.

~~(326)~~ "Oil and gas systems specialist" means a verifier accredited to meet the requirements of section 95131(a)(2) for providing verification services to operators petroleum refineries, hydrogen production units or facilities, and petroleum and natural gas systems listed in section 95101(e).

~~(327)~~ "Onshore petroleum and natural gas production facility" means all petroleum or natural gas equipment on a well pad, or associated with a well pad or to which emulsion is transferred and CO_2 EOR operations that are under common ownership or common control including leased, rented, or contracted activities by an onshore petroleum and natural gas production owner or operator that are located in a single basin as defined in 40 CFR §98.238. When a commonly owned

cogeneration plant is within the basin, the cogeneration plant is only considered part of the onshore petroleum and natural gas production facility if the onshore petroleum and natural gas production facility operator or owner has a greater than fifty percent ownership share in the cogeneration plant. Where a person or operating entity owns or operates more than one well in a basin, then all onshore petroleum and natural gas production equipment associated with all wells that the person or entity owns or operates in the basin would be considered one facility.

~~(328)~~ "Onshore petroleum and natural gas production owner or operator" means the person or entity who holds the permit to operate petroleum and natural gas wells on the drilling permit or an operating permit where no drilling permit is issued, which operates an onshore petroleum and/or natural gas production facility (as described in section 95102(a)). Where petroleum and natural gas wells operate without a drilling or operating permit, the person or entity that pays the State or Federal business income taxes is considered the owner or operator.

~~(329)~~ "On-site" or "onsite" in the context of GHG reporting means within the facility boundary.

~~(330)~~ "Operating pressure" means the containment pressure that characterizes the normal state of gas or liquid inside a particular process, pipeline, vessel or tank.

~~(331)~~ "Operational control" for a facility subject to this article means the authority to introduce and implement operating, environmental, health and safety policies. In any circumstance where this authority is shared among multiple entities, the entity holding the permit to operate from the local air pollution control district or air quality management district is considered to have operational control for purposes of this article.

~~(332)~~ "Operator" means the entity, including an owner, having operational control of a facility. For onshore petroleum and natural gas production, the operator is the operating entity listed on the state well drilling permit, or a state operating permit for wells where no drilling permit is issued by the state.

~~(333)~~ "Operating Pressure," for purposes of Appendix B means the working pressure that characterizes the conditions of crude oil, condensate, or produced water inside a particular process, pipeline, vessel or tank. In general, low pressure liquid is under less than approximately 200 psig of pressure.

~~(334)~~ "Outside of the facility boundary" means not within the physical boundary of the facility (regardless of ownership or operational control), or not in the same operational control of the reporting entity if within the same physical boundary of the facility. For example, an entity outside of the facility boundary may include another facility not in the reporting entity's operational control, another facility under the same operational control but considered a separate facility according to the definition of "facility" in this section, or an on-site industrial operation (e.g. a cogeneration system) within the facility fence line but that is operated by another operator and for which the on-site industrial operation has not been included in the reporting entity's GHG report.

~~(335)~~ "Parasitic load" means the amount of electricity consumed by auxiliary equipment that supports the electricity generation or cogeneration process. The equipment may include fans, pumps, drive motors, pollution control equipment, lighting, computer, CEMS, and other equipment.

~~(336)~~ "Particular end-user" means a final purchaser of an energy product (e.g. electricity or thermal energy) for whom the energy product is delivered for final consumption and not for the purposes of retransmission or resale.

~~(337)~~ "Pentane" is the n-pentane, straight chain, isomer of C_5H_{12} under the International Union of Pure and Applied Chemistry (IUPAC) nomenclature.

~~(338)~~ "Pentanes plus" or "C5+" means a mixture of hydrocarbons that is a liquid at ambient temperature and pressure, and consists mostly of pentanes (five carbon chain) and higher carbon number hydrocarbons. Pentanes plus includes normal pentane, isopentane, hexanes-plus (natural gasoline), and plant condensate.

~~(339)~~ "Perfluorocarbons" or "PFCs" means a class of greenhouse gases consisting on the molecular level of carbon and fluorine.

~~(340)~~ "Percent Water Cut," for purposes of Appendix B, means the percentage of water by volume, of the total emulsion throughput as measured using ASTM D-4007-08. The percent water cut is expressed as a percentage.

~~(341)~~ "Performance review" means an assessment conducted by ARB of an applicant seeking to become accredited as a verification body, verifier, lead verifier, offset project specific verifier, or sector specific verifier pursuant to section 95132 of this article. Such an assessment may include a review of applicable past sampling plans, verification reports, verification statements, conflict of interest submittals, and additional information or documentation regarding the applicant's fitness for qualification.

~~(342)~~ "Petroleum" means oil removed from the earth and the oil derived from tar sands and shale.

~~(343)~~ "Petroleum coke" means a black solid residue, obtained mainly by cracking and carbonizing of petroleum derived feedstocks, vacuum bottoms, tar and pitches in processes such as delayed coking or fluid coking. It consists mainly of carbon (90 to 95 percent), has low ash content, and may be used as a feedstock in coke ovens. This product is also known as marketable coke.

~~(344)~~ "Petroleum refinery" or "refinery" means any facility engaged in producing gasoline, gasoline blending stocks, naphtha, kerosene, distillate fuel oils, residual fuel oils, lubricants, or asphalt (bitumen) through distillation of petroleum or through redistillation, cracking, or reforming of unfinished petroleum derivatives. Facilities that distill only pipeline transmix (off-spec material created when different specification products mix during pipeline transportation) are not petroleum refineries, regardless of the products produced.

~~(345)~~ "Physical address," with respect to a United States parent company as defined in this section, means the street address, city, State and zip code of that company's physical location.

~~(346)~~ "Pipeline dig-in" means unintentional puncture or rupture to a buried natural gas transmission and distribution pipeline during excavation activities.

~~(347)~~ "Pipeline quality natural gas" means, for the purpose of calculating emissions under this article, natural gas having a high heat value greater than 970 Btu/scf and equal to or less than 1,100 Btu/scf, and which is at least ninety percent methane by volume, and which is less than five percent carbon dioxide by volume.

~~(348)~~ "Point of delivery" or "POD" means the point on an electricity transmission or distribution system where a deliverer makes electricity available to a receiver, or available to serve load. This point can be an interconnection with another system or a substation where the transmission provider's transmission and distribution systems are connected to another system, or a distribution substation where electricity is imported into California over a multi-jurisdictional retail provider's distribution system.

~~(349)~~ "Point of receipt" or "POR" means the point on an electricity transmission or distribution system where an electricity receiver receives electricity from a deliverer. This point can be an interconnection with another system or a substation where the transmission provider's transmission and distribution systems are connected to another system.

(~~350)~~ "Point source" means any separately identifiable stationary point from which greenhouse gases are emitted.

~~(351)~~ "Portable" means designed and capable of being carried or moved from one location to another. Indications of portability include wheels, skids, carrying handles, dolly, trailer, or platform. Equipment is not portable if any one of the following conditions exists:

~~(A)~~ The equipment is attached to a foundation.

~~(B)~~ The equipment or a replacement resides at the same location for more than 12 consecutive months.

~~(C)~~ The equipment is located at a seasonal facility and operates during the full annual operating period of the seasonal facility, remains at the facility for at least two years, and operates at that facility for at least three months each year.

~~(D)~~ The equipment is moved from one location to another in an attempt to circumvent the portable residence time requirements of this definition.

~~(352)~~ "Portland cement" means hydraulic cement (cement that not only hardens by reacting with water but also forms a water-resistant product) produced by pulverizing clinkers consisting essentially of hydraulic calcium silicates, usually containing one or more of the forms of calcium sulfate as an inter-ground addition.

~~(353)~~ "Position holder" means an entity that holds an inventory position in motor vehicle fuel, ethanol, distillate fuel, biodiesel, or renewable diesel as reflected in the records of the terminal operator or a terminal operator that owns motor vehicle fuel or diesel fuel in its terminal. "Position holder" does not include inventory held

outside of a terminal, fuel jobbers (unless directly holding inventory at the terminal), retail establishments, or other fuel suppliers not holding inventory at a fuel terminal.

~~(354)~~ "Positive emissions data verification statement" means a verification statement rendered by a verification body attesting that the verification body can say with reasonable assurance that the covered emissions data in the submitted emissions data report is free of material misstatement and that the emissions data conforms to the requirements of this article.

~~(355)~~ "Positive product data verification statement" means a verification statement rendered by a verification body attesting that the verification body can say with reasonable assurance that the covered product data in the submitted emissions data report is free of material misstatement and that the product data conforms to the requirements of this article.

~~(356)~~ "Positive verification statement" means a verification statement rendered by a verification body attesting that the verification body can say with reasonable assurance that the submitted emissions data report is free of material misstatement and that the emissions data report conforms to the requirements of this article. This definition applies to the emissions data verification statement and the product data verification statement.

~~(357)~~ "Power" means electricity, except where the context makes clear that another meaning is intended.

~~(358)~~ "Power contract" or "written power contract," as used for the purposes of documenting specified versus unspecified sources of imported and exported electricity, means a written document, including associated verbal or electronic records if included as part of the written power contract, arranging for the procurement of electricity. Power contracts may be, but are not limited to, power purchase agreements, enabling agreements, electricity transactions, and tariff provisions, without regard to duration, or written agreements to import or export on behalf of another entity, as long as that other entity also reports to ARB the same imported or exported electricity. A power contract for a specified source is a contract that is contingent upon delivery of power from a particular facility, unit, or asset-controlling supplier's system that is designated at the time the transaction is executed.

~~(359)~~ "Premium grade gasoline" is gasoline having an antiknock index, i.e., octane rating, greater than 90. This definition applies to the premium grade categories of conventional-summer, conventional-winter, reformulated-summer, and reformulated-winter. For premium grade categories of RBOB-summer, RBOB-winter, CBOB-summer, and CBOB-winter, this definition refers to the expected octane rating of the finished gasoline after oxygenate has been added to the RBOB or CBOB.

~~(360)~~ "Primary fuel" means the fuel that provides the greatest percentage of the annual heat input to a stationary fuel combustion unit.

~~(361)~~ "Primary Vessel," for purposes of Appendix B means a separator or tank that receives crude oil, condensate, produced water, natural gas, or emulsion from one or more crude oil, condensate, or natural gas wells or field gathering systems.

~~(362)~~ "Prime mover" means the type of equipment such as an engine or water wheel that drives an electric generator. "Prime movers" include, but are not limited to, reciprocating engines, combustion or gas turbines, steam turbines, microturbines, and fuel cells.

~~(363)~~ "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.

~~(364)~~ "Process emissions" means the emissions from industrial processes (e.g., cement production, ammonia production) involving chemical or physical transformations other than fuel combustion. For example, the calcination of carbonates in a kiln during cement production or the oxidation of methane in an ammonia process results in the release of process CO_2 emissions to the atmosphere. Emissions from fuel combustion to provide process heat are not part of process emissions, whether the combustion is internal or external to the process equipment.

~~(365)~~ "Process emissions specialist" means a verifier accredited to meet the requirements of section 95131(a)(2) for providing verification services to operators of facilities engaged in cement production, glass production, lime manufacturing, pulp and paper manufacturing, iron and steel production, nitric acid production, and lead production.

~~(366)~~ "Process gas" means any gas generated by an industrial process such as petroleum refining.

~~(367)~~ "Process Heater" means equipment for the heating of process streams (gases, liquids, or solids) other than water through heat provided by fuel combustion.

~~(368)~~ "Process unit" means the equipment assembled and connected by pipes and ducts to process raw materials and to manufacture either a final or an intermediate product used in the onsite production of other products. The process unit also includes the purification of recovered byproducts.

~~(369)~~ "Process vent" means an opening where a gas stream is continuously or periodically discharged during normal operation.

~~(370)~~ "Produced water" means the resulting water that is produced as a byproduct of crude oil or natural gas production.

~~(371)~~ "Producer" means a person who owns, leases, operates, controls or supervises a California production facility.

~~(372)~~ "Product data" means the sector-specific data specified in subarticles 2 and 5 of this article, including requirements in 40 CFR Part 98.

~~(373)~~ "Product data verification statement" means the final statement rendered by a verification body attesting whether a reporting entity's covered product data in their emissions data report is free of material misstatement, and whether the product data conforms to the requirements of this article.

~~(374)~~ "Professional judgment" means the ability to render sound decisions based on professional qualifications and relevant greenhouse gas accounting and auditing experience.

~~(375)~~ "Project baseline" means, in the context of a specific offset project, a conservative estimate of business-as-usual GHG emission reductions or GHG removal enhancements for the offset project's GHG emission sources, GHG sinks, or GHG reservoirs within the offset project boundary.

~~(376)~~ "Propane" is a paraffinic hydrocarbon with molecular formula C_3H_8.

~~(377)~~ "Propylene" is an olefinic hydrocarbon with molecular formula C_3H_6.

~~(378)~~ "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.

~~(379)~~ "Publicly-owned natural gas 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.

~~(380)~~ "Pump" means a device used to raise pressure, drive, or increase flow of liquid streams in closed or open conduits.

~~(381)~~ "Pump seal emissions" means hydrocarbon gas released from the seal face between the pump internal chamber and the atmosphere.

~~(382)~~ "Pump seals" means any seal on a pump drive shaft used to keep methane and/or carbon dioxide containing light liquids from escaping the inside of a pump case to the atmosphere.

~~(383)~~ "Purchasing-selling entity" or "PSE" means the entity that is identified on a NERC e-Tag for each physical path segment.

~~(384)~~ "Pure" means consisting of at least 97 percent by mass of a specified substance. For facilities burning biomass fuels, this means the fraction of biomass carbon accounts for at least 97 percent of the total amount of carbon in the fuel burned at the facility.

~~(385)~~ "PURPA Qualifying Facility" means a facility that has acquired a "qualifying facility (QF)" certification pursuant to 18 CFR §292.207 under the Public Utility Regulatory Policies Act of 1978 (PURPA).

~~(386)~~ "QA/QC" means quality assurance and quality control.

~~(387) "Qualified exports" is as defined in section 95802(a) of the cap-and-trade regulation.~~

~~(388)~~ "Qualified positive emissions data verification statement" means a statement rendered by a verification body attesting that the verification body can say with reasonable assurance that the covered emissions data in the submitted emissions data report is free of material misstatement and is in conformance with section 95131(b)(9), but the emissions data may include one or more other nonconformances with the requirements of this article which do not result in a material misstatement.

~~(389)~~ "Qualified positive product data verification statement" means a statement rendered by a verification body attesting that the verification body can say with reasonable assurance that the covered product data in the submitted emissions data report is free of material misstatement and is in conformance with section 95131(b)(9), but the product data may include one or more other nonconformance(s) with the requirements of this article which do not result in a material misstatement.

~~(390)~~ "Qualified positive verification statement" means a statement rendered by a verification body attesting that the verification body can say with reasonable assurance that the submitted emissions data report is free of material misstatement and is in conformance with section 95131(b)(9), but the emissions data report may include one or more other nonconformance(s) with the requirements of this article which do not result in a material misstatement. This definition applies to the qualified positive emissions data verification statement and the qualified positive product data verification statement.

~~(391)~~ "Qualified Thermal Output" means the thermal energy generated by a cogeneration unit or district heating facility that is sold to particular end-users and reported pursuant to MRR section 95112(a)(5)(A) and the thermal energy used on-site by industrial processes or operations and heating and cooling operations that is not in support of or a part of the electricity generation or cogeneration system and is reported pursuant to MRR sections 95112(a)(5)(C). Qualified thermal output does not include thermal energy that is vented, radiated, wasted, or discharged before it is utilized at industrial processes or operations, or, for a facility with a cogeneration unit, any thermal energy generated by equipment that is not an integral part of the cogeneration unit.

~~(392)~~ "Quality-assured data" or "quality-assured value" means the data are obtained from a monitoring system that is operating within the performance specifications and the quality assurance/quality control procedures set forth in the applicable rules, for example 40 CFR Part 60 (July 1, 2009) or Part 75, (July 1, 2009), which is hereby incorporated by reference, without unscheduled maintenance, repair, or adjustment.

~~(393)~~ "Rack" means a mechanism for delivering motor vehicle fuel or diesel from a refinery or terminal into a truck, trailer, railroad car, or other means of non-bulk transfer.

~~(394)~~ "RBOB-summer" or "reformulated blendstock for oxygenate blending-summer" means a petroleum product which, when blended with a specified type and percentage of oxygenate, meets the definition of reformulated-summer.

~~(395)~~ “RBOB-winter” or “reformulated blendstock for oxygenate blending-winter” means a petroleum product which, when blended with a specified type and percentage of oxygenate, meets the definition of reformulated-winter.

~~(396)~~ “Reasonable assurance” means a high degree of confidence that submitted data and statements are valid.

~~(397)~~ “Reciprocating compressor” means a piece of equipment that increases the pressure of a process natural gas or CO_2 by positive displacement, employing linear movement of a shaft driving a piston in a cylinder.

~~(398)~~ “Reciprocating compressor rod packing” means a series of flexible rings in machined metal cups that fit around the reciprocating compressor piston rod to create a seal limiting the amount of compressed natural gas or CO_2 that escapes to the atmosphere.

~~(399)~~ “Reciprocating internal combustion engine” or “RICE” or “piston engine” means an engine that uses heat from the internal combustion of fuel to create pressure that drives one or more reciprocating pistons, creating mechanical energy.

~~(400)~~ “Re-condenser” means heat exchangers that cool compressed boil-off gas to a temperature that will condense natural gas to a liquid.

~~(401)~~ “Refiner” means, for purposes of this article, an individual entity or a corporate-wide entity that delivers transportation fuels to end users in California that were produced by petroleum refineries owned by that entity or a subsidiary of that entity.

~~(402)~~ “Refinery fuel gas” or “still gas” means gas generated at a petroleum refinery or any gas generated by a refinery process unit, and that is combusted separately or in any combination with any type of gas or used as a chemical feedstock.

~~(403)~~ “Reformulated Gasoline Blendstock for Oxygenate Blending” or “RBOB” has the same meaning as defined in title 13 of the California Code of Regulations, section 2260(a).

~~(404)~~ “Reformulated-summer” means finished gasoline formulated for use in motor vehicles, the composition and properties of which meet the requirements of the reformulated gasoline regulations promulgated by the U.S. Environmental Protection Agency under 40 CFR §80.40 and 40 CFR §80.41, and summer RVP standards required under 40 CFR §80.27 or as specified by the state. Reformulated gasoline excludes RBOB as well as other blendstock.

~~(405)~~ “Reformulated-winter” means finished gasoline formulated for use in motor vehicles, the composition and properties of which meet the requirements of the reformulated gasoline regulations promulgated by the U.S. Environmental Protection Agency under 40 CFR §80.40 and 40 CFR §80.41, but which do not meet summer RVP standards required under 40 CFR §80.27 or as specified by the state. Note: This category includes Oxygenated Fuels Program Reformulated Gasoline (OPRG). Reformulated gasoline excludes RBOB as well as other blendstock.

~~(406)~~ "Regular grade gasoline" is gasoline having an antiknock index, i.e., octane rating, greater than or equal to 85 and less than 88. This definition applies to the regular grade categories of conventional-summer, conventional-winter, reformulated-summer, and reformulated-winter. For regular grade categories of RBOB-summer, RBOB-winter, CBOB-summer, and CBOB-winter, this definition refers to the expected octane rating of the finished gasoline after oxygenate has been added to the RBOB or CBOB.

~~(407)~~ "Relative Accuracy Test Audit" means a method of determining the correlation of continuous emissions monitoring system data to simultaneously collected reference method test data, for example as required in 40 CFR Part 60 (July 1, 2009) and 40 CFR Part 75 (July 1, 2009).

~~(408)~~ "Rendered animal fat" or "tallow" means fats extracted from animals which are generally used as a feedstock in making biodiesel.

~~(409)~~ "Renewable diesel" means a motor vehicle fuel or fuel additive that 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 designed to run on conventional diesel fuel; and

~~(D)~~ Derived from nonpetroleum renewable resources.

~~(410)~~ "Renewable energy" means energy from sources that constantly renew themselves or that are regarded as practically inexhaustible. Renewable energy includes energy derived from solar, wind, geothermal, hydroelectric, wood, biomass, tidal power, sea currents, and ocean thermal gradients.

~~(411)~~ "Renewable Energy Credit" or "REC" has the same meaning defined in the California Energy Commission's "Renewable Portfolio Standard Eligibility," 7th edition, Commission Guidebook, April, 2013; CEC-300-2013-005-ED7-CMF.

~~(412)~~ "Renewable liquid fuels" means fuel ethanol, biomass-based diesel fuel, other renewable diesel fuel and other renewable fuels.

~~(413)~~ "Reporting entity" means a facility operator, supplier, or electric power entity subject to the requirements of this article.

~~(414)~~ "Reporting period" means the calendar year which coincides with the data year for the GHG report.

~~(415)~~ "Reporting year" or "report year" means data year.

~~(416)~~ "Reservoir" means a porous and permeable underground natural formation containing oil or gas. A reservoir is characterized by a single natural pressure.

~~(417)~~ "Residual fuel oil" means a general classification for the heavier oils, known as No. 5 and No. 6 fuel oils, that remain after the distillate fuel oils and lighter hydrocarbons are distilled away in refinery operations.

~~(418)~~ "Residue gas and residue gas compression" means, respectively, production lease natural gas from which gas liquid products and, in some cases, non-hydrocarbon components have been extracted such that it meets the specifications set by a pipeline transmission company, and/or a distribution company; and the compressors operated by the processing facility, whether inside the processing facility boundary fence or outside the fence-line, that deliver the residue gas from the processing facility to a transmission pipeline.

~~(419)~~ "Retail end-use customer" or "retail end user" means a residential, commercial, agricultural, or industrial electric customer who buys electricity to be consumed as a final product and not for resale.

~~(420)~~ "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 224.3, a community choice aggregator as defined in Public Utilities Code section 331.1, or the Western Area Power Administration. For purposes of this article, electric cooperatives, as defined by Public Utilities Code section 2776, are excluded.

~~(421)~~ "Retail sales" means electricity sold to retail end users.

~~(422)~~ "Sales oil" means produced crude oil or condensate measured at the production lease automatic custody transfer (LACT) meter or custody transfer tank gauge.

~~(423)~~ "Secondary Vessel," for purposes of Appendix B means a separator or tank that receives crude oil, condensate, produced water, natural gas, or emulsion from one or more primary vessel separators or tanks.

~~(424)~~ "Sector" means a broad industrial categorization such as specified in section 95101.

~~(425)~~ "Sector specific verifier" means a verifier accredited pursuant to section 95132(b)(5)(A) as one or more of the following types of specialists defined pursuant to this section: a transactions specialist, an oil and gas systems specialist, or a process emissions specialist.

~~(426)~~ "Separator" means a sump or vessel used to separate crude oil, condensate, natural gas, produced water, emulsion or solids.

~~(427)~~ "Short ton" means a common international measurement for mass, equivalent to 2,000 pounds.

~~(428)~~ "Shutdown" means the cessation of operation of an emission source for any purpose.

~~(429)~~ "Simplified block diagram" means a diagram consisting of boxes, shapes, lines, arrows, and labels that meets the requirements of section 95112(a)(6) <u>or section 95105(c)</u>. A simplified block diagram is not an architectural drawing or an engineering drawing that shows the likeness of the physical objects being depicted and their actual locations and sizes in scale; it is a simplified graphical

representation of the objects being depicted, their relative locations, and how they are connected through flows of energy or energy carrier (e.g. steam, water, electricity, or fuel).

~~(430)~~ "Sink" or "sink to load" or "load sink" means the sink identified on the physical path of NERC e-Tags, where defined points have been established through the NERC Registry. Exported electricity is disaggregated by the sink on the NERC e-Tag, also referred to as the final point of delivery on the NERC e-Tag.

~~(431)~~ "Sorbent" means a material used to absorb or adsorb liquids or gases.

~~(432)~~ "Sour natural gas" means natural gas that contains significant concentrations of hydrogen sulfide (H_2S) and/or carbon dioxide that exceed the concentrations specified for commercially saleable natural gas delivered from transmission and distribution pipelines.

~~(433)~~ "Source" means greenhouse gas source; any physical unit, process, or other use or activity that releases a greenhouse gas into the atmosphere.

~~(434)~~ "Source category" means categories of emission sources as defined by Tables A-3, A-4, and A-5 of 40 CFR Part 98.

~~(435)~~ "Source of generation" or "generation source" means the generation source identified on the physical path of NERC e-Tags, where defined points have been established through the NERC Registry. Imported electricity ~~and wheels are is~~ disaggregated by the source on the NERC e-Tag~~, referred to as the first point of receipt~~.

~~(436)~~ "Specified source of electricity" or "specified source" means a facility or unit which is permitted to be claimed as the source of electricity delivered. The reporting entity must have either full or partial ownership in the facility/unit or a written power contract to procure electricity generated by that facility/unit. Specified facilities/units include cogeneration systems. Specified source also means electricity procured from an asset-controlling supplier recognized by the ARB.

~~(437)~~ "SSM" means periods of startup, shutdown and malfunction.

~~(438)~~ "Stand-alone electricity generating facility" means an electricity generating facility whose primary business and sole industrial operation is electricity generation, and is not a cogeneration or bigeneration facility.

~~(439)~~ "Standard conditions" or "standard temperature and pressure (STP)" means either 60 or 68 degrees Fahrenheit and 14.7 pounds per square inch absolute.

~~(440)~~ "Standard cubic foot" or "scf" is a measure of quantity of gas, equal to a cubic foot of volume at 60 degrees Fahrenheit and either 14.696 pounds per square inch (1 atm) or 14.73 PSI (30 inches Hg) of pressure.

~~(441)~~ "Steam generator" means equipment that produces steam using an external heat source.

~~(442)~~ "Stationary" means neither portable nor self-propelled, and operated at a single facility.

~~(443)~~ "Storage tank" means any tank, other container, or reservoir used for the storage of organic liquids, excluding tanks that are permanently affixed to mobile vehicles such as railroad tank cars, tanker trucks or ocean vessels.

~~(444)~~ "Sub-facility" for purposes of reporting data disaggregated pursuant to section 95156(a), means the geographic area, or areas, within a single township or within a group of contiguous or adjacent townships identified in the Public Land Survey System of the United States, where operations and equipment are located. The operator may disaggregate sub-facilities based on contiguous township areas to smaller sub-facilities according to similar operational, geological, or geographical characteristics. Sub-facility disaggregation may be retained from year to year, or may be updated when some of the operations cease or equipment is reconfigured within the previously designated sub-facilities. Sub-facility disaggregation must be updated from previous reporting years if there are new operations or equipment that lies outside previous township boundaries. The Principal Meridian name, Township and Range designations, and the section numbers that apply to each sub-facility, must be identified in the operator's GHG Monitoring Plan required pursuant to section 95105(c). The operator must also describe in the GHG Monitoring Plan any operational, geological or geographical characteristics used to determine sub-facility boundaries.

~~(445)~~ "Substitute power" or "substitute electricity" means electricity that is provided to meet the terms of a power purchase contract with a specified facility or unit when that facility or unit is not generating electricity.

~~(446)~~ "Sulfur hexafluoride" or "SF_6" means a GHG consisting on the molecular level of a single sulfur atom and six fluorine atoms.

~~(447)~~ "Sump," for purposes of Appendix B means a lined or unlined surface impoundment or depression in the ground that, during normal operations, is used for separating crude oil, condensate, produced water, emulsion, or solids.

~~(448)~~ "Supplemental firing" means an energy input to the cogeneration facility used only in the thermal process of a topping cycle plant, or in the electricity generating or manufacturing process of a bottoming cycle cogeneration facility.

~~(449)~~ "Supplier" means a producer, importer, exporter, position holder, interstate pipeline operator, intrastate pipeline operator, or local distribution company of a fossil fuel or an industrial greenhouse gas.

~~(450)~~ "Sweet gas" means natural gas with low concentrations of hydrogen sulfide (H_2S) and/or carbon dioxide (CO_2) that does not require (or has already had) acid gas treatment to meet pipeline corrosion-prevention specifications for transmission and distribution.

~~(451)~~ "Tactical support equipment" is as defined in title 17, California Code of Regulations, section 93116.2(a)(36).

~~(452)~~ "Tank," for the purposes of Appendix B, means a container, constructed primarily of non-earthen materials, used for holding or storing crude oil, condensate, produced water, or emulsion.

~~(453)~~ "Tentatively Identified Compound List," for purposes of Appendix B means a list of target compounds that laboratories can use to evaluate uncommon gaseous compounds when performing a Gas Chromatograph/ Mass Spectrometry analysis.

~~(454)~~ "Terminal" means a motor vehicle fuel or diesel fuel storage and distribution facility that is supplied by pipeline or vessel, and from which fuel may be removed at a rack. "Terminal" includes a fuel production facility where motor vehicle or diesel fuel is produced and stored and from which fuel may be removed at a rack.

~~(455)~~ "Terminal operator" means any entity that owns, operates or otherwise controls a terminal that is supplied by pipeline or vessel and from which accountable fuel products may be removed at a rack.

~~(456)~~ "Thermal energy" means the thermal output produced by a combustion source used directly as part of a manufacturing process, industrial/commercial process, or heating/cooling application, but not used to produce electricity.

~~(457)~~ "Thermal host" means the user of the steam or heat output of a cogeneration or bigeneration facility.

~~(458)~~ "Three-Phase Separator," for purposes of Appendix B, means a pressurized vessel sealed from the atmosphere used to gravimetrically separate crude oil, produced water and gases.

~~(459)~~ "Throughput" for the purposes of Appendix B, means the average volume of liquid processed by a vessel over a period of time, such as barrels per day. The throughput of crude oil or condensate may need to be calculated using the Percent Water Cut. The throughput of crude oil or condensate is calculated as the difference in volume between these liquids and the produced water.

~~(460)~~ "Tier" means the level of calculation method from 40 CFR §98.33 that is required for a stationary combustion source in section 95115 of this article.

~~(461)~~ "Tier 1" means a stationary combustion calculation method that applies default values for emission factors and high heat value to generate an emissions estimate, as specified in 40 CFR §98.33.

~~(462)~~ "Tier 2" means a stationary combustion calculation method that applies a default value for an emission factor and a fuel's measured high heat value (or a boiler efficiency for steam-generating solid fuels) to generate an emissions estimate, as specified in 40 CFR §98.33.

~~(463)~~ "Tier 3" means a stationary combustion calculation method that utilizes a fuel's measured carbon content to generate an emissions estimate, as specified in 40 CFR §98.33.

~~(464)~~ "Tier 4" means a stationary combustion calculation method that utilizes quality-assured data from a continuous emission monitoring system to generate an emissions estimate, as specified in 40 CFR §98.33. This method may also capture process emissions from a common stack.

~~(465)~~ “Tolling agreement” means an agreement whereby a party rents a power plant from the owner. The rent is generally in the form of a fixed monthly payment plus a charge for every MW generated, generally referred to as a variable payment.

~~(466)~~ “Topping cycle” means a type of cogeneration system in which the energy input to the plant is first used to produce electricity, and at least some of the reject heat from the electricity production process is then used to provide useful thermal output.

~~(467)~~ “Total thermal output” means the total amount of usable thermal energy generated by a cogeneration or bigeneration unit that can potentially be made available for use in any industrial or commercial processes, heating or cooling applications, or delivered to other end users. This quantity excludes the heat content of returned condensate and makeup water, but includes the thermal energy used for supporting (but not directly used for) power generation, thermal energy used in other on-site processes or applications that are not in support of or a part of the electricity generation system, thermal energy provided or sold to particular end-user, and thermal energy that is otherwise not utilized. Thermal energy directly used for power generation (e.g., steam used to drive a steam turbine generator for electricity generation) is not included in total thermal output.

~~(468)~~ “Transactions specialist” means a verifier accredited to meet the requirements of section 95131(a)(2) for providing verification services to electric power entities; suppliers of petroleum products and biofuels; suppliers of natural gas, natural gas liquids, and liquefied petroleum gas; and suppliers of carbon dioxide.

~~(469)~~ “Transmission-distribution (T-D) transfer station” means a metering-regulating station where a local distribution company takes part or all of the natural gas from a transmission pipeline and puts it into a distribution pipeline.

~~(470)~~ “Transmission pipeline” means a high pressure cross country pipeline transporting saleable quality natural gas from production or natural gas from processing to natural gas distribution pressure let-down, metering, regulating stations, where the natural gas is typically odorized before delivery to customers.

~~(471)~~ “Traceable” means that a standard used to calibrate a device has an unbroken chain of comparisons to a stated reference (such as a standard set by the National Institute of Standards and Technology), with each comparison having a stated uncertainty

~~(472)~~ “Turbine” means any of various types of machines in which the kinetic energy of a moving fluid is converted into mechanical energy by causing a bladed rotor to rotate.

~~(473)~~ “Turbine meter” means a flow meter in which a gas or liquid flow rate through the calibrated tube spins a turbine from which the spin rate is detected and calibrated to measure the fluid flow rate.

~~(474)~~ “Two-Phase Separator,” for purposes of Appendix B, means a pressurized vessel sealed from the atmosphere used to gravimetrically separate crude oil and produced water that still contain entrained gases.

~~(475)~~ "Type of thermal energy product" means the form in which energy is transferred from a facility producing thermal energy to another facility, or if not transferred, the form in which the energy is used. Types of thermal energy products include steam, hot water, chilled water, and distilled water.

~~(476)~~ "Uncertainty" means the degree to which data or a data system is deemed to be indefinite or unreliable.

~~(477)~~ "Uncontrolled blowdown system" means the use of a blowdown procedure that does not result in the recovery of emissions for flaring or re-injection.

~~(478)~~ "Unconventional wells" means crude oil or gas wells in producing fields that employ hydraulic fracturing to enhance crude oil or gas production volumes.

~~(479)~~ "United States parent company(s)" mean the highest-level United States company(s) with an ownership interest in the reporting entity as of December 31 of the reporting year.

~~(480)~~ "Unspecified source of electricity" or "unspecified source" means a source of electricity that is not a specified source at the time of entry into the transaction to procure the electricity.

~~(481)~~ "Upstream entity" means the last entity in the chain of title prior to the fuel being received by the reporting entity.

~~(482)~~ "Urban waste" means waste pallets, crates, dunnage, manufacturing and construction wood waste, tree trimmings, mill residues and range land maintenance residues.

~~(483)~~ "U.S. EPA" means the United States Environmental Protection Agency.

~~(484)~~ "Used oil" means a petroleum-derived or synthetically-derived oil whose physical properties have changed as a result of handling or use, such that the oil cannot be used for its original purpose. Used oil consists primarily of automotive oils (e.g., used motor oil, transmission oil, hydraulic fluids, brake fluid, etc.) and industrial oils (e.g., industrial engine oils, metalworking oils, process oils, industrial grease, etc.).

~~(485)~~ "Vapor recovery system" means any equipment located at the source of potential gas emissions to the atmosphere or to a flare, that is composed of piping, connections, and, if necessary, flow-inducing devices, and that is used for routing the gas back into the process as a product and/or fuel.

~~(486)~~ "Vegetable oil" means oils extracted from vegetation that are generally used as a feedstock in making biodiesel.

~~(487)~~ "Vented emissions" means intentional or designed releases of CH_4 or CO_2 containing natural gas or hydrocarbon gas (not including stationary combustion flue gas), including process designed flow to the atmosphere through seals or vent pipes, equipment blowdown for maintenance, and direct venting of gas used to power equipment (such as pneumatic devices).

~~(488)~~ "Verification" means a systematic, independent and documented process for evaluation of a reporting entity's emissions data report against ARB's reporting

procedures and methods for calculation and reporting GHG emissions and product data.

~~(489)~~ "Verification body" means a firm accredited by ARB that is able to render a verification statement and provide verification services for reporting entities subject to reporting under this article.

~~(490)~~ "Verification services" means services provided during verification as specified in section 95131 beginning with the development of the verification plan or first site visit, including but not limited to reviewing a reporting entity's emissions data report, ensuring its accuracy according to the standards specified in this article, assessing the reporting entity's compliance with this article, and submitting a verification statement(s) to the ARB.

~~(491)~~ "Verification statement" means the final statement rendered by a verification body attesting whether a reporting entity's emissions data report is free of material misstatement, and whether it conforms to the requirements of this article. This definition applies to the emissions data verification statement and the product data verification statement.

~~(492)~~ "Verification team" means all of those working for a verification body, including all subcontractors, to provide verification services for a reporting entity.

(493) "Verified emissions data report" means an emissions data report that has been reviewed by a third-party verifier and has a verification statement, or statements, if applicable, submitted to the ARB.

~~(494)~~ "Verifier" means an individual accredited by ARB to carry out verification services as specified in section 95131.

~~(495)~~ "Verifier review" means a verifier conducts all reviews and services in section 95131, except the material misstatement assessment under section 95131(b)(12). If some of the sources are selected for data checks based on the sampling plan, the verifier will check for conformance with the requirements of this article.

~~(496)~~ "Vertical well" means a well bore that is primarily vertical but has some unintentional deviation to enter one or more subsurface targets that are off-set horizontally from the surface location, intercepting the targets either vertically or at an angle.

~~(497)~~ "Vessel," for the purposes of Appendix B, means any container, constructed primarily of non-earthen materials, used to separate or store crude oil, condensate, natural gas, produced water, or emulsion.

~~(498)~~ "Volatile organic compound" or "VOC" means any volatile compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, which participates in atmospheric photochemical reactions.

~~(499)~~ "$VOC_{C3-C9,}$" for purposes of Appendix B, means Volatile Organic Compounds with three to nine carbon atoms.

~~(500)~~ "VOC_{C10+}," for purposes of Appendix B, means Volatile Organic Compounds with 10 or more carbon atoms. This value is needed for laboratory and quality control purposes.

~~(501)~~ "Weighted monthly average" means the sum of the products of two values measured during the same time period divided by the sum of the values not being averaged. For weighted average HHV it would be the sum of the products of volume and HHV measured during the same time period divided by the sum of the volumes.

~~(502)~~ "Well completions" means the process that allows for the flow of petroleum or natural gas from newly drilled wells to expel drilling and reservoir fluids and test the reservoir flow characteristics, steps which may vent produced gas to the atmosphere via an open pit or tank. Well completion also involves connecting the well bore to the reservoir, which may include treating the formation or installing tubing, packer(s), or lifting equipment, steps that do not significantly vent natural gas to the atmosphere. This process may also include high-rate flowback of injected gas, water, oil, and proppant used to fracture or re-fracture and prop open new fractures in existing lower permeability gas reservoirs, steps that may vent large quantities of produced gas to the atmosphere.

~~(503)~~ "Well testing venting and flaring" means venting and/or flaring of natural gas at the time the production rate of a well is determined for regulatory, commercial, or technical purposes. If well testing is conducted immediately after a well completion or workover, then it is considered part of well completion or workover.

~~(504)~~ "Well workover" means the process(es) of performing one or more of a variety of remedial operations on producing petroleum and natural gas wells to try to increase production. This process also includes high-rate flowback of injected gas, water, oil, and proppant used to re-fracture and prop-open new fractures in existing low permeability gas reservoirs, steps that may vent large quantities of produced gas to the atmosphere.

~~(505)~~ "Wellhead" means the piping, casing, tubing and connected valves protruding above the Earth's surface for an oil and/or natural gas well. The wellhead ends where the flow line connects to a wellhead valve. Wellhead equipment includes all equipment, permanent and portable, located on the improved land area (i.e. well pad) surrounding one or multiple wellheads.

~~(506)~~ "Wet natural gas" means natural gas in which water vapor exceeds the concentration specified for commercially saleable natural gas delivered from transmission and distribution pipelines. This input stream to a natural gas dehydrator is referred to as "wet gas".

~~(507)~~ "Wholesale sales" means sales to other LDCs.

(b) For the purposes of this article, the following definitions associated with reported product data shall apply:

~~(1)~~ "Air dried ton of paper" means paper with 6 percent moisture content.

~~(2) "Almond" means the edible seed of the almond (*Prunus amygdalus*).~~

~~(3)~~ "Aluminum alloy" is an alloy in which aluminum is the predominant metal and the alloying elements may typically be copper, magnesium, manganese, zinc, or other elemental additives or any combination of elements added.(4)

~~(4)~~ "Aluminum and aluminum alloy billet" means a solid bar of nonferrous metal, produced by casting molten aluminum alloys that is suitable for subsequent rolling, casting, or extrusion.

"Anhydrous milkfat" means fatty products derived exclusively from milk and/or products obtained from milk by means of processes which result in almost total removal of water and non-fat solids.

~~(5)~~ "Aseptic preparation" is a system in which a product is sterilized before filling into pre-sterilized packs under sterile conditions.

~~(6)~~ "Aseptic tomato paste" means tomato paste packaged using aseptic preparation. Aseptic paste is normalized to 31 percent tomato soluble solids. Aseptic paste normalized to 31% TSS = (%TSS - raw TSS)/(31 - raw TSS)

~~(7)~~ "Aseptic whole and diced tomato" means the sum of whole and diced tomatoes packaged using aseptic preparation. Sum of aseptic whole and diced tomatoes = whole tomatoes + (diced tomatoes x 1.05))

~~(8)~~ "Baked potato chip" means a potato chip made from potato dough that is rolled to a specified thickness, cut into a chip shape and then toasted in an oven.

~~(9)~~ "Barrel of oil equivalent," with respect to reporting of oil and gas production, means barrels of crude oil produced, plus associated gas and dry gas produced, converted to barrels at 5.8 MMBtu per barrel.

~~(10) "Bathroom tissue" means a thin, soft, lightweight, sanitized paper used in bathrooms for personal cleanliness. Bathroom tissue is usually sold as a long strip of perforated paper wrapped around a paperboard core.~~

~~(11) "Blending component" means a material blended into a primary refinery product, such as n-butane (EIA product codes 249 and 643), isobutane (EIA product codes 247 and 644), butylene (EIA product code 633), isobutylene (EIA product code 634), pentanes plus (EIA product code 220), ethyl tertiary butyl ether (ETBE) (EIA product code 142), methyl tertiary butyl ether (MTBE) (EIA product code 144), other oxygenates (EIA product code 445), and fuel ethanol (EIA product code 141).~~

~~(12)~~ *[Staff is reviewing the benchmark for this product and may propose a revision to this definition as a result. Any proposed revision would be circulated for a 15-day comment period.]*"Butter" means the product made by gathering the fat of fresh or ripened milk or cream into a mass that also contains a small portion of

other milk constituents including nonfat solids. Moisture and nonfat solids are essential constituents of butter.

~~(13)~~ "Buttermilk" means the low-fat portion of milk or cream remaining after the milk or cream has been churned to make butter.

~~(14)~~ *[Staff is reviewing the benchmark for this product and may propose a revision to this definition as a result. Any proposed revision would be circulated for a 15-day comment period.]* "Buttermilk powder" means milk powder obtained by drying liquid buttermilk that was derived from the churning of butter and pasteurized prior to condensing. Buttermilk powder has a protein content of no less than 30%. It may not contain, or be derived from, nonfat dry milk, dry whey, or products other than buttermilk, and contains no added preservatives, neutralizing agents, or other chemicals.

~~(15)~~ "By-product hydrogen gas" means pure hydrogen gas produced as a result of a process or processes dedicated to producing other products (e.g. catalytic reforming).

~~(16)~~ "Calcined coke" means petroleum coke purified to a dry, pure form of carbon suitable for use as anode and other non-fuel applications.

~~(17)~~ ~~*[Staff is reviewing the benchmark for this product and may propose a revision to this definition as a result. Any proposed revision would be circulated for a 15-day comment period.]*~~ "Calcium ammonium nitrate solution" means calcium nitrate that contains ammonium nitrate and water. Calcium ammonium nitrate solution is generally used as agricultural fertilizer.

"Calyx" means the leaflike structure~~s~~ composing the outermost part of a flower. This~~ese~~ structure~~s~~ often encloses and protects a bud and may remain after a fruit forms.

~~(18)~~ "Casein" means a group of proteins found in milk which is coagulated by enzymes and acid to form cheese.

~~(19)~~ "Cheese" means a food product derived from milk that is produced in a wide range of flavors, textures, and forms by coagulation of the milk protein casein.

~~(20)~~ "Clinker" means the mass of fused material produced in a cement kiln from which finished cement is manufactured by milling and grinding.

~~(21)~~ "Cold rolled and annealed steel sheet" means steel that is cold rolled and then annealed. Cold rolling means the changes in the structure and shape of steel through rolling, hammering or stretching the steel at a low temperature. Annealing is a heat or thermal treatment process by which a previously cold-rolled steel coil is made more suitable for forming and bending. The steel sheet is heated to a designated temperature for a sufficient amount of time and then cooled.

~~(22)~~ "Cold rolling of steel" means the changes in the structure and shape of steel through rolling, hammering or stretching the steel at a low temperature.

~~(23) "Concentrated milk" means the liquid food obtained by partial removal of water from milk. The milkfat and total milk solids contents of the food are not less~~

~~than 7.5 and 25.5 percent, respectively. It is pasteurized, but is not processed by heat so as to prevent spoilage. It may be homogenized.~~

~~(24)~~ "Condensed milk" means the food obtained by partial removal of water only from a milk product~~mixture of milk and nutritive carbohydrate sweeteners~~. The finished food contains ~~not less than 8 percent by weight of milkfat, and~~ not less than 28 percent by weight of total milk solids. ~~The quantity of nutritive carbohydrate sweetener used is sufficient to prevent spoilage. The food is pasteurized and may be homogenized.~~ The composition of the milk solid components and nutritional content in condensed milk remains the same relative ratios as the parent fluid milk product except for minor composition changes due to processing.

~~(25)~~ "Container Glass pulled" means the quantity of glass removed from the melting furnace in the container glass manufacturing process where "container glass" is defined as glass products intended for packaging.

~~(26)~~ "Corn" means the kernels of the dent corn plant (*Zea mays* var. *indentata*.) that have been shelled and contain no more than 10.0 percent of other grains.

~~(27)~~ "Corn chip" is a food product made from masa (ground corn dough) that is rolled to a specific thickness, cut into a chop shape, lightly toasted in an oven, and then deep fried.

~~(28)~~ "Corn curl" is a food product made from a deep-fried extrusion of masa (ground corn dough).

~~(29)~~ "Corn entering wet milling process" means corn entering the process in which feed corn is steeped in liquid in order to help separate the kernel's various components into starch, germ, fiber and protein (gluten) and then process the components into useful products such as starch, syrup, high fructose corn syrup, animal feed, and by-products such as gluten meal and germ.

~~(30)~~ "Cream" means that portion of milk, rich in milk fat, which rises to the surface of milk that is left standing or which is separated from milk by centrifugal force.

~~(31) "Dairy product solids for animal feed" means modified dairy by-products derived from the fluid milk production process that are purposely processed for animal consumption obtained by the removal of water, protein and/or lactose, and/or minerals.~~

~~(32)~~ "Dehydrated chili pepper" means chili pepper that has been dehydrated to no more than 12 percent water by volume in order to extend the shelf life and to concentrate the flavor. Chili peppers are the fruit of plants from the genus *Capsicum*, and are members of the nightshade family *Solanaceae*.

~~(33)~~ "Dehydrated garlic" means garlic that has been dehydrated to no more than 6.8 percent water by volume in order to extend the shelf life and to concentrate the flavor. Garlic is an onion-like plant *(Allium sativum)* having a bulb that breaks up into separable cloves with a strong distinctive odor and flavor.

~~(34)~~ "Dehydrated onion" mean onion that has been dehydrated to no more than 5.5 percent water by volume in order to extend the shelf life and to concentrate the

flavor. Onion (*Allium cepa*) is a plant that has a fan of hollow, bluish-green leaves and the bulb at the base of the plant begins to swell when a certain day-length is reached.

~~(35)~~ “Dehydrated parsley” means parsley that has been dehydrated to no more than 5 percent water by volume in order to extend the shelf life and to concentrate the flavor. Parsley (*Petroselinum crispum*) is a species of *Petroselinum* in the family *Apiaceae* widely cultivated as an herb, a spice, and a vegetable.

~~(36)~~ “Dehydrated spinach” means spinach that has been dehydrated to no more than 7 percent water by volume in order to extend the shelf life and to concentrate the flavor. Spinach (*Spinacia oleracea*) is an edible flowering plant in the family of *Amaranthaceae*.

~~(37) “Delicate task wiper” means tissue-based wipers used for the delicate cleaning of lenses, surfaces, and equipment in labs, research facilities, hospitals, and manufacturing settings.~~

~~(38)~~ "Deproteinized whey" means products manufactured through the cold ultrafiltration of sweet dairy whey, removing a portion of the protein from sweet whey to result in a non-hygroscopic, free-flowing and clean flavored powder containing greater than 80% carbohydrate (lactose) levels.

~~(39)~~ “Diced Tomatoes” means the food prepared from mature tomatoes conforming to the characteristics of the fruit *Lycopersicum esculentum* P. Mill, of red or reddish varieties. The tomatoes are ~~peeled and~~ diced or crushed, and shall have had the stems and cal~~i~~y~~c~~es removed ~~and shall have been cored, except where the internal core is insignificant to texture and appearance~~.

~~(40)~~ “Distilled spirit” means a spirit made from the separation of alcohol and a fermented product.

~~(41)~~ “Dolime" is calcined dolomite.

~~(42)~~ “Dry color concentrate” means precipitated solids extracted from fruits and vegetables whose uses are for altering the color of materials and/or food.

~~(43)~~ “Ductile iron pipe” means pipe made of cast ferrous material in which a major part of the carbon content occurs as free graphite in a substantially nodular or spheroidal form. Pipes are used mainly to convey substances which can flow.

~~(44)~~ “EIA product code” means the code used to report a specific product to the U.S. Energy Information Administration (EIA) through EIA reporting forms.

~~(45) “Facial Tissue” means a class of soft, absorbent, disposable tissue papers that is suitable for use on the face.~~

~~(46)~~ "Fiberglass pulled" means the quantity of glass removed from the melting furnace in the fiberglass manufacturing process where "fiberglass" is defined as insulation products for thermal, acoustic, and fire applications manufactured using glass.

~~(47)~~ "Flat glass pulled" means the quantity of glass removed from the melting furnace in the flat glass manufacturing process where "flat glass" is defined as glass initially manufactured in a sheet form.

"Fluid milk product" means a product that meets the definition of milk, skim milk, buttermilk, ultrafiltered milk, or cream.

~~(48)~~ *[Staff is reviewing the benchmark for this product and may propose a revision to this definition as a result. Any proposed revision would be circulated for a 15-day comment period.]* "Freshwater diatomite filter aids" means inorganic mineral powders derived by processing freshwater diatomite which is fossilized single-celled algae found in lake beds. Filter aids are used in combination with filtration hardware to enhance filtration performance to separate unwanted solids from fluids.

~~(49)~~ "Fried potato chip" means a thin slice of potato that is deep fried until crunchy.

~~(50)~~ "Galvanized steel sheet" means steel coated with a thin layer of zinc to provide corrosion resistance for such products as garbage cans, storage tanks, or framing for buildings. Sheet steel normally must be cold-rolled prior to the galvanizing stage.

~~(51)~~ "Granulated refined sugar" means white refined sugar (99.9% sucrose), made by dissolving and purifying raw sugar then drying it to prevent clumping.

~~(52)~~ "Grape juice concentrate" means the liquid from crushed grapes, from the botanical genus Vitas, processed to remove water.

~~(53)~~ "Grape seed extract" means the extract from grape seeds containing concentrations of proanthocyanidin.

~~(54)~~ "Gypsum" means a mineral with the chemical formula $CaSO_4 \cdot 2H_2O$.

~~(55)~~ "Horsepower tested" means the total horsepower of all turbine and generator set units tested prior to sale.

~~(56)~~ "Hot rolled steel sheet" means steel produced from the rolling mill that reduces a hot slab into a coil of specified thickness at a relatively high temperature.

~~(57)~~ "Imported protein" means protein found in pre-concentrated whey that is imported from other dairy facilities for further processing.

~~(58)~~ *[Staff is reviewing the benchmark for this product and may propose a revision to this definition as a result. Any proposed revision would be circulated for a 15-day comment period.]* "Intermediate dairy ingredients" means intermediate (non-final) dairy product imported from other dairy facilities that enter the rehydrating process, which uses water and heat to manufacture powdered products.

~~(59)~~ "Lactose" means a white to creamy white crystalline product, possessing a mildly sweet taste. It may be anhydrous, contain one molecule of water of hydration, or be a mixture of both forms.

~~(60)~~ “Lager beer” means beer produced with bottom fermenting yeast strains, *Saccharomyces uvarum* (or *carlsbergensis*) at colder fermentation temperatures than ales.

~~(61) *[Staff is reviewing the benchmark for this product and may propose a revision to this definition as a result. Any proposed revision would be circulated for a 15-day comment period.]*~~ “Lead and lead alloys” means lead or the metal alloy that combines lead and other elements such as antimony, selenium, arsenic, copper, tin, or calcium.

~~(62)~~ “Limestone” means a sedimentary rock composed largely of the minerals calcite and aragonite, which are different crystal forms of calcium carbonate ($CaCO$~~3~~$_3$).

~~(63)~~ “Liquid Color Concentrate” means a fluid extract from fruits and/or vegetables reduced by driving off water and ~~whose~~that has the purpose ~~the use of which is for~~ of altering the color of materials and/or food.

~~(64)~~ “Liquid Hydrogen" means hydrogen in a liquid state.

~~(65)~~ “Milk” means the lacteal secretion, practically free from colostrum, obtained by the complete milking of one or more healthy cows. Milk that is in final package form for beverage use shall have been pasteurized or ultra-pasteurized, and shall contain not less than 8 ¼ percent milk solids not fat and not less than 3 ¼ percent milk fat. Milk may have been adjusted by separating part of the milk fat from, or by adding cream to, concentrated milk, dry whole milk, skim milk, concentrated skim milk, or nonfat dry milk. Milk may be homogenized.

“Milk powder (high heat)” means milk powder obtained by removing water from pasteurized milk. It contains no more than 5% moisture (by weight) and includes undenatured whey protein nitrogen content less than 1.5 mg/g powder.

“Milk powder (low heat)” means milk powder obtained by removing water from pasteurized milk. It contains no more than 5% moisture (by weight) and includes undenatured whey protein nitrogen content greater than or equal to 6 mg/g powder.

“Milk powder (medium heat)” means milk powder obtained by removing water from pasteurized milk. It contains no more than 5% moisture (by weight) and includes undenatured whey protein nitrogen content greater than or equal to 1.51 mg/g powder and less than 6 mg/g powder.

“Milk Protein Concentrate” means milk powder obtained by concentrating skim milk through filtration processes so that the finished dry product contains 40 percent or more protein by weight. The filtration methods used capture essentially all of the casein and whey proteins contained in the raw material, resulting in a casein-to-whey protein ratio equivalent to that of the original milk."

~~(66) *[Staff is reviewing the benchmark for this product and may propose a revision to this definition as a result. Any proposed revision would be circulated for a 15-day comment period.]*~~ “Nitric acid” means HNO_3 of 100~~%~~ percent purity.

~~(67) “Nonfat dry milk and skimmed milk powder (high heat)” means milk powder obtained by removing water from pasteurized skim milk. It contains no~~

~~more than 5% moisture (by weight) and no more than 1.5% milkfat (by weight). It is derived from cumulative heat treatment of 88 ºC for 30 minutes and includes undenatured whey protein nitrogen content equal to or less than 1.5 mg/g powder.~~

~~(68) "Nonfat dry milk and skimmed milk powder (low heat)" means milk powder obtained by removing water from pasteurized skim milk. It contains no more than 5% moisture (by weight) and no more than 1.5% milkfat (by weight). It is derived from cumulative heat treatment of milk no higher than 70 ºC for 2 minutes and includes undenatured whey protein nitrogen content equal to or greater than 6 mg/g powder.~~

~~(69) "Nonfat dry milk and skimmed milk powder (medium heat)" means milk powder obtained by removing water from pasteurized skim milk. It contains no more than 5% moisture (by weight) and no more than 1.5% milkfat (by weight). It is derived from cumulative heat treatment of 70-78 ºC for 20 minutes and includes undenatured whey protein nitrogen content equal to or greater than 1.51 mg/g powder up to 5.99 mg/g powder.~~

~~(70)~~ "Non-Aseptic tomato juice" means tomato juice packaged using methods other than aseptic preparation.

~~(71)~~ "Non-aseptic tomato paste and tomato puree" means the sum of tomato paste and tomato puree packaged using methods other than aseptic preparation. Non-aseptic paste and puree is normalized to 24 percent tomato soluble solids. Non-aseptic paste and puree normalized to 24% TSS = (%TSS - raw TSS)/(24 - raw TSS).

~~(72)~~ "Non-aseptic whole and diced tomato" means the sum of whole and diced tomatoes packaged using methods other than aseptic preparation. Sum of non-aseptic whole and diced tomatoes = whole tomatoes + (diced tomatoes x 1.05).

~~(73)~~ "Non-thermal enhanced oil recovery" or "non-thermal EOR" means the process of using methods other than thermal EOR, which may include water flooding or CO_2 injection, to increase the recovery of crude oil from a reservoir.

~~(74)~~ "On-purpose hydrogen gas" means pure molecular hydrogen gas produced by a process or processes dedicated to producing hydrogen (e.g., steam methane reforming).

~~(75) "Paper Towel" means a disposable towel made of absorbent tissue paper.~~

~~(76)~~ "Pickled steel sheet" means hot rolled steel sheet that is sent through a series of hydrochloric acid baths that remove the oxides, and includes both finished pickled steel, and steel produced by the facility as an intermediate product for further processing.

~~(77) "Pistachio" means the nuts of the pistachio tree Pistacia vera.~~

~~(78)~~ "Plaster" is calcined gypsum that is produced and sold as a finished product and is not used in the production of plasterboard at the same facility.

~~(79)~~ "Plasterboard" is a panel made of gypsum plaster pressed between two thick sheets of paper.

~~(80)~~ “Poultry deli product” means the products, including corn dogs, sausages, and franks, that contain a significant portion of pre-processed poultry, that are cooked and sold wholesale or retail, or transferred to other facilities.

~~(81)~~ “Pretzel” is a crisp biscuit made from dough formed into a knot or stick, flavored with salt, passed through a caustic hot water bath and baked in an oven.

~~(82) “Primary refinery product” means aviation gasoline (EIA product codes 111 and 112), motor gasoline (finished) (EIA product codes 125, 127, 130, 149, and 166), motor gasoline blendstocks (EIA product codes 117, 118, 138, and 139), kerosene-type jet fuel (EIA product code 213), distillate fuel oil (EIA product codes 465, 466, and 467), renewable liquid fuels (EIA product codes 203, 205, and 207), and asphalt (EIA product code 931). For the purpose of calculating this value for each refinery, ARB will convert blendstocks into their finished fuel volumes by multiplying blendstocks by an assumed blending ratio.~~

~~(83)~~ “Proof Gallons” means one liquid gallon of distilled spirits that is 50% alcohol at 60 degrees F.

~~(84)~~ “Protein meal and fat” means meal, feather meal, and fat rendered product from poultry tissues including meat, viscera, bone, blood, and feathers.

~~(85)~~ “Raw TSS” means the average annual percent tomato soluble solids of raw tomatoes to be processed in a tomato processing facility.

~~(86)~~ “Rare earth elements” means a set of seventeen chemical elements in the periodic table, specifically the fifteen lanthanides (Lanthanum, Cerium, Praseodymium, Neodymium, Promethium, Samarium, Europium, Gadolinium, Terbium, Dysprosium, Holmium, Erbium, Thulium, and Lutetium) plus Scandium and Yttrium.

~~(87)~~ “Rare earth oxide equivalent” means the mass of oxide if all of the rare earth elements in the product are isolated and converted to their oxide form.

~~(86)~~ “Rare earth elements” means a set of seventeen chemical elements in the periodic table, specifically the fifteen lanthanides (Lanthanum, Cerium, Praseodymium, Neodymium, Promethium, Samarium, Europium, Gadolinium, Terbium, Dysprosium, Holmium, Erbium, Thulium, and Lutetium) plus Scandium and Yttrium.

~~(89)~~ "Recycled boxboard" means containers of solid fiber made from recycled fibers, including cereal boxes, shoe boxes, and protective paper packaging for dry foods. It also includes folding paper cartons, set-up boxes, and similar boxboard products. Recycled boxboard is made from recycled fibers.

~~(90)~~ "Recycled linerboard" means types of paperboard made from recycled fibers that meet specific tests adopted by the packaging industry to qualify for use as the outer facing layer for corrugated board, from which shipping containers are made.

~~(91)~~ "Recycled medium" means the center segment of corrugated shipping containers, being faced with linerboard on both sides. Recycled medium is made from recycled fibers.

~~(92)~~ “Salt” means sodium chloride, determined as chloride and calculated as percent sodium chloride, by the method prescribed in “Official Methods of Analysis of the Association of Official Analytical Chemists,” 13th Ed., 1980, sections 32.025 to 32.030, under the heading “Method III (Potentiometric Method).”

~~(93)~~ *[Staff is reviewing the benchmark for this product and may propose a revision to this definition as a result. Any proposed revision would be circulated for a 15-day comment period.]* “Seamless rolled ring” means a metal product manufactured by punching a hole in a thick, round piece of metal, and then rolling and squeezing (or in some cases, pounding) it into a thin ring. Ring diameters can be anywhere from a few inches to 30 feet.

~~(94)~~ "Skim milk" means the product that results from the complete or partial removal of milk fat from milk.

~~(95)~~ *[Staff is reviewing the benchmark for this product and may propose a revision to this definition as a result. Any proposed revision would be circulated for a 15-day comment period.]* "Soda ash equivalent" means the total mass of all soda ash, biocarb, borax, V-Bor, DECA, PYROBOR, Boric Acid, Sodium Sulfate, Potassium Sulfate, Potassium Chloride, and Sodium Chloride produced.

~~(96)~~ "Steel produced using an electric arc furnace" means steel produced by an electric arc furnace or "EAF." EAF means a furnace that produces molten steel and heats the charge materials with electric arcs from carbon electrodes. Furnaces that continuously feed direct-reduced iron ore pellets as the primary source of iron are not affected facilities within the scope of this definition of EAF.

~~(97)~~ “Stucco” means hemihydrate plaster ($CaSO_4 \bullet \frac{1}{2} H_2O$) produced by heating (“calcining”) raw gypsum, thereby removing three-quarters of its chemically combined water.

“Sulfuric acid regeneration” means the same definition found in 95102(c).

~~(98)~~ “Thermal enhanced oil recovery” or “thermal EOR” means the process of using injected steam to increase the recovery of crude oil from a reservoir.

~~(99)~~ "Tin Plate" means thin sheet steel with a very thin coating of metallic tin. Tin plate also includes Tin Free Steel or TFS which has an extremely thin coating of metallic chromium and chromium oxide. Tin plate is used primarily in can making.

~~(100) “Tissue” means a class of papers which are characteristically gauzy in texture and, in some cases, fairly transparent. They may be glazed, unglazed, or creped, and are used for a variety of purposes. Examples of different types of tissue papers include sanitary grades such as toilet, facial, napkin, towels, wipes, and special sanitary papers.~~

~~(101) "Tissue produced adjusted by water absorbency capacity" means the mass of tissue adjusted by water absorbency capacity derived by using the following metric: Tissue produced adjusted by water absorbency capacity = Air dried ton of tissue produced x grams of water absorbed by a gram of tissue product.~~

~~(102)~~ “Tomato juice” is the liquid obtained from mature tomatoes conforming to the characteristics of the fruit *Lycopersicum esculentum* P. Mill, of red or reddish

varieties. Tomato juice may contain salt, lemon juice, sodium bicarbonate, water, spices and/or flavoring. This food shall contain not less than 4.0~~5.0~~ percent by weight tomato soluble solids.

~~(103)~~ "Tomato paste" is the food prepared from mature tomatoes conforming to the characteristics of the fruit *Lycopersicum esculentum* P. Mill, of red or reddish varieties. Tomato paste is prepared by concentrating tomato ingredients until the food contains not less than 24.0 percent tomato soluble solids.

~~(104)~~ "Tomato puree" is the semisolid food prepared from mature tomatoes conforming to the characteristics of the fruit *Lycopersicum esculentum* P. Mill, of red or reddish varieties. Tomato puree~~paste~~ is prepared by concentrating tomato ingredients until the food contains not less than 8.0 percent but less than 24.0 percent tomato soluble solids.

~~(105)~~ "Tomato soluble solids" (TSS or NTSS) means the sucrose value of raw tomatoes or tomato product. For ~~incoming~~ raw tomatoes, this value shall be determined by the methods prescribed in the "Processing Tomato Advisory Board (PTAB) Inspection Procedures – Soluble Solids: Using a Digital Refractometer~~,~~" (2014), which is hereby incorporated by reference. For the tomato products tomato juice, tomato paste, tomato puree, and whole and diced tomatoes, this value shall be determined by the method prescribed in "Processing Tomato Advisory Board (PTAB) Inspection Procedures~~,~~" (2014), or~~as determined by the method prescribed in~~ the "Official Methods of Analysis of the Association of Official Analytical Chemists," 13th Ed., 1980, sections 32.014 to 32.016 and 52.012 (AOAC, 1980)~~.~~, depending on availability. For instances ~~where~~in which no salt has been added, the sucrose value obtained from the referenced tables shall be considered the percent of tomato soluble solids. If salt has been added either intentionally or through the application of the acidified break, determine the percent of such added sodium chloride as specified in the regulation's definition of salt. Subtract the percentage sodium chloride from the percentage of total soluble solids found (sucrose value from the refractive index tables) and multiply the difference by 1.016. The resultant value is considered the percent of "tomato soluble solids." The centrifuges, centrifuge spin rate, centrifuge spin time, and other lab measurement equipment specified in AOAC (1980) may be exchanged with more modern equipment and measurement procedures where the operator deems necessary. Tomato soluble solids must be rounded to the nearest tenth of a percent of solids.

~~(106)~~ "Ultrafiltered milk" means raw or pasteurized milk or nonfat milk that is passed over one or more semipermeable membranes to partially remove water, lactose, minerals, and water soluble vitamins without altering the casein-to-whey protein ratio of the milk or nonfat milk and resulting in a liquid product.

~~(107)~~ "Waste gas" means a natural gas that contains a greater percentage of gaseous chemical impurities than the percentage of methane. For purposes of this definition, gaseous chemical impurities may include carbon dioxide, nitrogen, helium, or hydrogen sulfide.

~~(108) "Water absorption capacity" means the mass of water that is absorbed per unit mass of the test piece using the methodology specified by ISO 12625-8:2010~~

~~except for the humidity and temperature conditions, which shall be 50% relative humidity ±2%, and 23 degrees C ±1 degree C.~~

~~(109)~~ "Whey protein concentrate" means the substance obtained by the removal of sufficient nonprotein constituents from pasteurized whey so that the finished dry product contains greater than 25% protein. Whey protein concentrate is produced by physical separation techniques such as precipitation, filtration, or dialysis. The acidity of whey protein concentrate may be adjusted by the addition of safe and suitable pH adjusting ingredients.

~~(110)~~ "Whole chicken and chicken parts" means the whole chicken or edible chicken parts (including breasts, thighs, wings, and drums) that are packaged for wholesale~~,~~ or retail sale~~s, or~~; transferred to other facilities; or binned, sent to an on-site rendering plant, and rendered into protein meal and fat.

~~(111)~~ "Whole Tomatoes" is the food prepared from mature tomatoes conforming to the characteristics of the fruit *Lycopersicum esculentum P*. Mill, of red or reddish varieties. The tomatoes are ~~peeled but~~ kept whole, and shall have had the stems and cal~~i~~ycies removed ~~and shall have been cored, except where the internal core is insignificant to texture and appearance~~.

(c) For the purposes of this article, the following definitions associated with refining and related processes shall apply:

~~(1)~~ "Air separation unit" means a refinery unit which separates air into its components including oxygen utilizing a cryogenic or other method.

~~(2)~~ "Alkylation/poly/dimersol" means a range of processes transforming C3/C4/C5 molecules into C7/C8/C9 molecules over an acidic catalyst. This can be accomplished by alkylation with sulfuric acid or hydrofluoric acid, polymerization with a C3 or C3/C4 olefin feed, or dimersol.

~~(3)~~ "Ammonia recovery unit" means a refinery unit in which ammonia-rich sour water stripper overhead is treated to separate ammonia suitable for reuse in the refinery, for fertilizer, for other sales, for the reduction of NOx emissions, or other commercial activities. This unit is the second stage of a two stage sour water stripping unit. The ammonia recovery unit may include the adsorber, stripper and fractionator.

~~(4)~~ "Aromatic saturation of distillates" means the saturation of aromatic rings over a fixed catalyst bed at low or medium pressure in the presence of hydrogen.

(~~5)~~ "AROMAX®" means a special application of catalytic reforming for the specific purpose of producing light aromatics.

~~(6)~~ "Aromatics production" means extraction of light aromatics from reformate and/or hydrotreated pyrolysis gasoline by a solvent.

~~(7)~~ "Asphalt production" means the processing required to produce asphalts and bitumen, including bitumen oxidation (mostly for road paving). This includes polymer-modified asphalt.

~~(8)~~ “Atmospheric Crude Distillation” means primary atmospheric distillation of crude oil and other feedstocks. The atmospheric crude distillation unit includes any ancillary equipment such as a crude desalter, naphtha splitting, gas plant and wet treatment of light streams for mercaptan removal and may have more than one distillation column.

~~(9)~~ “Benzene saturation” means a selective hydrogenation of benzene in gasoline streams over a fixed catalyst bed at moderate pressure.

~~(10)~~ “C4 isomer production” means conversion of n-butane into isobutane over a fixed catalyst bed in the presence of hydrogen at low to moderate pressure.

~~(11)~~ “C5/C6 isomer production - including ISOSIV” means conversion of normal paraffins into isoparaffins over a fixed catalyst bed in the presence of hydrogen at low to moderate pressure.

~~(12)~~ “Complexity weighted barrel” or “CWB” means a metric created to evaluate the greenhouse gas efficiency of petroleum refineries and related processes. The CWB value for an individual refinery is calculated using actual refinery throughput to specified process units and emission factors for these process units. The emission factor is denoted as the CWB factor and is representative of the greenhouse gas emission intensity at an average level of energy efficiency, for the same standard fuel type for each process unit for production, and for average process emissions of the process units across a sample of refineries. Each CWB factor is expressed as a value weighted relative to atmospheric crude distillation.

~~(13)~~ “Conradson carbon level” means a measurement describing the mass of carbon residue which an oil deposits when evaporated, as defined by ASTM D189 - 06(2010)e1 “Standard Test Method for Conradson Carbon Residue of Petroleum Products” (2010), which is hereby incorporated by reference.

~~(14)~~ “Conventional naphtha hydrotreating” means desulfurization of virgin and cracked naphthas over a fixed catalyst bed at moderate pressure in the presence of hydrogen. For cracked naphthas this also involves saturation of olefins.

(~~15)~~ “Cryogenic LPG recovery” means a refinery unit in which liquefied petroleum gas (LPG) is extracted from refinery gas streams through cooling and removing the condensate heavy fractions. The processes and equipment for this unit may include refrigeration, drier, compressor, absorber, stripper and fractionation.

~~(16)~~ “Cumene production” means the alkylation of benzene with propylene.

~~(17)~~ “Cyclohexane production” means hydrogenation of benzene to cyclohexane over a catalyst at high pressure.

~~(18)~~ “Delayed Coker” means a refinery unit which conducts a semi-continuous process where the heat of reaction is supplied by a fired heater. Coke is produced in alternate drums that are swapped at regular intervals. Coke is cut out of full coke drums as a product. For the purposes of analysis, facilities include coke handling and storage.

~~(19)~~ “Desalination” means a refinery’s desalination of seawater or contaminated water.

~~(20)~~ “Desulfurization of C4–C6 Feeds” means desulfurization of light naphthas over a fixed catalyst bed, at moderate pressure in the presence of hydrogen.

~~(21)~~ “Desulfurization of pyrolysis gasoline/naphtha” means selective or non-selective desulfurization of pyrolysis gasoline (by-product of light olefins production) and other streams over a fixed catalyst bed, at moderate pressure in the presence of hydrogen.

~~(22)~~ “Diolefin to olefin saturation of gasoline” means selective saturation of diolefins over a fixed catalyst bed, at moderate pressure in the presence of hydrogen to improve stability of thermally cracked and coker gasolines.

~~(23)~~ “Distillate hydrotreating” means desulfurization of distillate blends of components such as diesel and heating oil over a fixed catalyst bed at low or medium pressure in the presence of hydrogen.

~~(24)~~ “Ethylbenzene production” means the process of combining benzene and ethylene to form ethylbenzene.

~~(25)~~ “FCC gasoline hydrotreating with minimum octane loss” means selective desulfurization of FCC gasoline cuts with minimum olefins saturation, over a fixed catalyst bed, at moderate pressure and in the presence of hydrogen.

~~(26)~~ “Flare gas recovery” means a refinery unit in which flare gas is captured and compressed for other uses. Usually recovered flare gas is treated and routed to the refinery fuel gas system. The equipment for this process may include the compressor and separator.

~~(27)~~ “Flexicoker” means a refinery unit which conducts a proprietary process incorporating a fluid coker and where coke is gasified to produce a low BTU gas which is used to supply the refinery heaters and surplus coke is drawn off as a product.

~~(28)~~ “Flue gas desulfurizing” means a process in which sulfur dioxide is removed from flue gases with contaminants. This often involves an alkaline sorbent which captures sulfur dioxide and transforms it into a solid product. Flue gas desulfurizing systems can be of the regenerative type or the non-regenerative type. The processes and equipment for this process may include the contactor, catalyst/reagent regeneration, scrubbing circulation and solids handling.

~~(29)~~ “Fluid Catalytic Cracking” means cracking of a hydrocarbon stream typically consisting of gasoils and residual feedstocks over a catalyst. The finely divided catalyst is circulated in a fluidized state from the reactor where it becomes coated with coke to the regenerator where coke is burned off. The hot regenerated catalyst returning to the reactor may supply the heat for the endothermic cracking reaction and for most of the downstream fractionation of cracked products.

~~(30)~~ “Fluid Coker” means a continuous process where the fluidized powder-like coke is transferred between the cracking reactor and the coke burning vessel and burned for process heat production. Surplus coke is drawn off as a product.

~~(31)~~ "Fuel gas sales treating & compression" means treatment and compression of refinery fuel gas for sale to a third party.

~~(32)~~ "Houdry catalytic cracking" means a method of catalytic cracking which uses a fixed or moving bed of pellets of an aluminum silicate type catalyst. The catalyst is not fluidized.

~~(33)~~ "Hydrodealkylation" means dealkylation of toluene and xylenes into benzene over a fixed catalyst bed in the presence of hydrogen at low to moderate pressure.

~~(34)~~ "Kerosene hydrotreater" means a refinery process unit which treats and upgrades kerosene and gasoil streams using aromatic saturation of distillates, distillate hydrotreating, middle distillate dewaxing, the S-Zorb™ process for kerosene and gasoil or selective hydrotreating of C3-C5 streams for alkylation.

~~(35)~~ "Lube catalytic dewaxing" means the catalytic breakdown of long paraffinic chains in intermediate streams for the manufacture of lube oils.

~~(36)~~ "Lube solvent dewaxing" means the solvent removal of long paraffinic chains (wax) from intermediate streams in the manufacture of lube oils. This may include solvent regeneration. Different processes use different solvents, such as chlorocarbon, MEK/toluene, MEK/MIBK, or propane.

~~(37)~~ "Lube solvent extraction" means the solvent extraction of aromatic compounds from intermediate streams for the manufacture of base lube oils. This includes solvent regeneration. Different processes use different solvents, such as Furfural, NMP, phenol, or sulfur dioxide.

~~(38)~~ "Lube/Wax hydrofining" means the hydrotreating of lube oil fractions and wax for improving the quality of the lube and wax.

~~(39)~~ "Lubricant hydrocracking" means hydrocracking of heavy feedstocks for the manufacture of lube oils.

~~(40)~~ "Methanol synthesis" means the recombination of CO_2 and hydrogen to produce methanol. Methanol synthesis is only applicable when a refinery produces hydrogen via partial oxidation.

~~(41)~~ "Middle distillate dewaxing" means the cracking of long paraffinic chains in gasoils to improve cold flow properties over a fixed catalyst bed at low or medium pressure in the presence of hydrogen. This process includes the desulfurization step.

~~(42)~~ "Mild Residual FCC" means fluid catalytic cracking when the feed has a Conradson carbon level of 2.25% to 3.5% by weight.

~~(43)~~ "Naphtha/Distillate Hydrocracker" means a refinery process unit which conducts cracking of a hydrocarbon stream typically consisting of gasoils and distillates over a fixed catalyst bed, at high pressure and in the presence of hydrogen. The process combines cracking and hydrogenation reactions.

~~(44)~~ "Naphtha hydrotreater" means a refinery process unit that treats and upgrades naphtha/gasoline and lighter streams using any combination of one or

more of the following processes: benzene saturation, desulfurization of C4–C6 feeds, conventional naphtha hydrotreating, diolefin to olefin saturation of gasoline, FCC gasoline hydrotreating with minimum octane loss, olefinic alkylation of thio sulfur, desulfurization of pyrolysis gasoline/naphtha. For naphtha/distillates, selective hydrotreating or the S-Zorb™ process may be used.

~~(45)~~ "Non-Crude Input" means the total volume ~~of barrels~~ of non-crude raw materials processed in process units at the refinery, excluding returns from a lube refiner or a chemical plant within a refining/petrochemical complex and excluding non-processed blendstock. Non-crude input excludes crude petroleum, hydrogen, natural gas, and any input to a hydrogen production unit.

~~(46)~~ "Olefinic alkylation of thio sulfur" means a gasoline desulfurization process in which thiophenes and mercaptans are catalytically reacted with olefins to produce higher-boiling sulphur compounds removable by distillation. This process does not utilize hydrogen.

~~(47)~~ "Other FCC" means early catalytic cracking processes on fixed catalyst beds, including Houdry catalytic cracking and Thermofor catalytic cracking.

~~(48)~~ "Oxygenates" means ethers that are produced by reacting an alcohol with olefins.

~~(49)~~ "Paraxylene production" means the physical separation of paraxylene from mixed xylenes.

~~(50)~~ "Process CWB" means the contribution to the total ~~complexity-weighted barrels~~ CWB of a refinery that results from summing, for each on-site CWB unit, the product of the CWB factor and annual throughput. Process CWB excludes CWB contributions from off-sites and non-energy utilities and non-crude sensible heat that are calculated using ~~excluding those contributed by the process units called~~ total refinery input and non-crude input.

~~(51)~~ "Propane/Propylene splitter (propylene production)" means a refinery unit that conducts separation of propylene from other mostly olefinic C3/C4 molecules generally produced in an FCC or coker. This unit produces chemical or polymer grade propylene.

~~(52)~~ "POX syngas for fuel" means the production of synthesis gas by gasification (partial oxidation) of heavy residues. This includes syngas clean-up.

~~(53)~~ "Reactor for selective hydrotreating" means a special configuration where a distillation/fractionation column contains a solid catalyst that converts diolefins in FCC gasoline to olefins or where the catalyst bed is in a preheat train reactor vessel in front of the column.

~~(54)~~ "Reformer - including AROMAX" means a refinery unit which increases the octane rating of naphtha by dehydrogenation of naphthenic rings and paraffin isomerisation over a noble metal catalyst at low pressure and high temperature. The process also produces hydrogen.

~~(55)~~ "Residual FCC" means fluid catalytic cracking when the feed has a Conradson carbon level of greater than or equal to 3.5% by weight.

~~(56)~~ "Residual hydrotreater" means a refinery unit which conducts desulfurization of residues over a fixed catalyst bed at high pressure and in the presence of hydrogen. It results in a limited degree of conversion of the residue feed into lighter products.

~~(57)~~ "Residual Hydrocracker" means a refinery unit which conducts hydrocracking of residual feedstocks. Different processes involve continuous or semi-continuous catalyst replenishment. The residual hydrocracker unit must process residuum with a Conradson carbon level of at least 3.5% by weight.

~~(58)~~ "S-Zorb™ process for kerosene and gasoil" means desulfurization of gasoil using an absorption process. This process does not utilize hydrogen.

~~(59)~~ "S-Zorb™ process for naphtha/distillates" means desulfurization of naphtha/gasoline streams using a proprietary fluid-bed hydrogenation adsorption process in the presence of hydrogen.

~~(60)~~ "Selective hydrotreating of C3-C5 streams for alkylation" means selective saturation of diolefins for alkylation over a fixed catalyst bed, at moderate pressure and in the presence of hydrogen, or hydrotreatment of distillates for conversion of diolefins to olefins.

~~(61) "Solomon Energy Intensity Index®" or "Solomon EII" or "EII" means a petroleum refinery energy efficiency metric that compares actual energy consumption for a refinery with the "standard" energy consumption for a refinery of similar size and configuration. The "standard" energy consumption is calculated based on an analysis of worldwide refining capacity as contained in the database maintained by Solomon Associates. The ratio of a facility's actual energy to the standard energy is multiplied by 100 to arrive at the Solomon EII for a refinery.~~

~~(62) "Solomon Energy Review" means a data submittal and review conducted by a petroleum refinery and Solomon Associates. This process uses the refinery energy utilization, throughput and output to determine the Solomon EII of the refinery.~~

~~(63)~~ "Solvent deasphalter" means a refinery unit which uses a solvent such as propane, butane or a heavier solvent to remove asphaltines from a residual oil stream and produce asphalt and a deasphalted gasoil.

~~(64)~~ "Special Fractionation" means fractionation processes excluding solvents, propylene and aromatics fractionation, which are accomplished by a deethanizer, depropanizer, deisobutanizer, debutanizer, deisopentanizer, depentanizer, deisohexanizer, dehexanizer, deisoheptanizer, deheptanizer, naphtha splitter, alkylate splitter or reformate splitter.

(~~65)~~ "Standard FCC" means fluid catalytic cracking when the feed has a Conradson carbon level of less than 2.25% by weight.

~~(66)~~ "Sulfur Recovery" means a process where hydrogen sulfide is converted to elemental sulfur."

~~(67)~~ "Sulfuric acid regeneration" means a catalytic process in which spent acid is regenerated to concentrated sulfuric acid. The equipment for this process may

include the combustor, waste heat boiler, converter, absorber, SO_3~~3~~ recycle, gas cleaning including electrostatic precipitator and amine regenerator.

~~(68)~~ "Thermal Cracking" means thermal cracking of distillate feedstocks. A thermal cracking unit may include a vacuum flasher. Units that combine visbreaking and thermal cracking of distillate generate a contribution for both processes based on the residue and the distillate throughput respectively.

~~(69)~~ "Thermofor catalytic cracking" means a method of catalytic cracking in which gravity is used to pass the catalyst through the feedstock or to pass the feedstock through the catalytic reactor bed. The catalyst is not fluidized.

~~(70)~~ "Toluene disproportionation/transalkylation means a fixed-bed catalytic process for the conversion of toluene to benzene and xylene in the presence of hydrogen.

~~(71)~~ "Total Refinery Input" means the total volume of the following brought in to the refinery: crude oil and condensate, excluding basic sediment and water; finished product additives such as dyes, diesel pour point depressants and cetane improvers; antiknock compounds; and other raw materials, including crude diluents, feedstock from outside the refinery which is processed in other process units or blend stock blended into refinery products. Total refinery input excludes hydrogen, natural gas, and any input to a hydrogen production unit.

~~(72)~~ "Vacuum Distillation" means distillation of atmospheric residues under vacuum. Some units may have more than one main distillation column.

~~(73)~~ "Visbreaker" means a refinery unit which conducts mild thermal cracking of residual feedstocks to produce some distillates and reduce the viscosity of the cracked residue. It may include a vacuum flasher. Units that combine visbreaking and thermal cracking of distillate generate a contribution for both processes based on the residue and the distillate throughput respectively.

~~(74)~~ "VGO Hydrotreater" means a refinery unit which conducts desulfurization of a hydrocarbon stream typically made up of vacuum gasoils and cracked gasoils, principally destined to be used as FCC feed, over a fixed catalyst bed at medium or high pressure in the presence of hydrogen.

~~(75)~~ "Wax deoiling" means solvent removal of lighter hydrocarbons from wax obtained from lube dewaxing. Different proprietary processes use different solvents, such as MEK/toluene, MEK/MIBK, or propane.

~~(76)~~ "Xylene isomerization" means isomerization of mixed xylenes to paraxylene.

NOTE: Authority cited: Sections 38510, 38530, 39600, 39601, 39607, 39607.4 and 41511, Health and Safety Code. Reference: Sections 38530, 39600 and 41511, Health and Safety Code.

§ 95103. Greenhouse Gas Reporting Requirements.

The facilities, suppliers, and entities specified in section 95101 must monitor emissions and submit emissions data reports to the Air Resources Board following the requirements specified in 40 CFR §98.3 and §98.4, except as otherwise provided in this part.

(a) *Abbreviated Reporting for Facilities with Emissions Below 25,000 Metric Tons of CO_2e.* A facility operator may submit an abbreviated emissions data report under this article if all of the following conditions have been met: the facility operator does not have a compliance obligation under the cap-and-trade regulation during any year of the current compliance period; the operator is not subject to the reporting requirements of 40 CFR Part 98 specified in this article; and the facility total stationary combustion, process, fugitives and venting emissions are below 25,000 metric tons of CO_2e in the data~~2011 and each subsequent~~ year. This provision does not apply to suppliers or electric power entities. Abbreviated reports must include the information in paragraphs (1)-(7) below, and comply with the requirements specified in paragraphs (8)-(11) below:

(1) Facility name, assigned ARB identification number, physical street address including the city, state and zip code, air basin, air district, county, geographic location, natural gas supplier name, natural gas supplier customer identification number, natural gas supplier service account identification number or other primary account identifier, and annual billed MMBtu (10 therms = 1 MMBtu).

(2) Facility GHG stationary combustion emissions for all stationary fuel combustion units and calculated according to any method in 40 CFR §98.33(a), expressed in metric tons of total CO_2, CO_2 from biomass-derived fuels, CH_4, and N_2O. Using any applicable method in 40 CFR §98.33~~(a)~~ or 95153(l), reporting entities identified under section 95101(e) for petroleum and natural gas systems must also quantify and report emissions of CO_2, CO_2 from biomass-derived fuels, CH_4, and N_2O resulting from flaring activities. If ~~the~~ a facility includes multiple stationary fuel combustion units that belong to more than one unit type category listed in section 95115(h), the operator may report the multiple units in aggregate but must indicate the percentage of the aggregated fuel consumption attributed to each unit type category. In addition, if ~~the~~ a facility includes an electricity generating unit, the facility operator must report the electricity generating unit separate from other stationary fuel combustion sources by following the unit aggregation provisions in sections 95112(b) and 95103(a)(6). The operator has the option of using engineering estimation or any combination of existing meters to meet the requirements of this paragraph.

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(f) *Verification Requirement and Deadlines.* The requirements of this paragraph apply to each reporting entity submitting an emissions data report that indicates emissions

equaled or exceeded 25,000 metric tons of CO_2e, including CO_2 from biomass-derived fuels and geothermal sources, electric power entities that are electricity importers or exporters, facilities with sources as identified in section 95101(b)(3), or each reporting entity that has or has had a compliance obligation under the cap-and-trade regulation in any year of the current compliance period. The requirements of this paragraph ~~also~~ apply to reporting entities ~~electric power entities that are electricity importers or exporters~~ that have not met the requirements for cessation of verification in section 95101(i)~~(4)~~. The reporting entity subject to verification must obtain third-party verification services for that report from a verification body that meets the requirements specified in Subarticle 4 of this article. Such services must be completed and separate verification statements for emissions data and for product data, as applicable, must be submitted by the verification body to the Executive Officer by August~~September~~ 1 each year. Each reporting entity must ensure that these verification statements are submitted by this deadline. Contracting with a verification body without providing sufficient time to complete the verification statements by the applicable deadline will not excuse the reporting entity from this responsibility. These requirements are additional to the requirements in 40 CFR §98.3(f).

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(h) *Reporting in 2018~~2015~~.* All provisions of the regulation are in full effect for 2018~~2014~~ data reporting in 2019~~2015~~ and beyond, except the following:

(1) Pursuant to section 95103(f), verification of emissions data reports submitted for 2017 data in 2018 must be completed by August 1, 2018. Each year thereafter, verification must be completed by August 1.~~Operators of petroleum refineries may use best available methods for reporting 2014 data for primary refinery products and calcined coke pursuant to sections 95113(l)(1) and 95113(l)(2), respectively~~.

(2) All covered product data reporting must be reported for 2017 data submitted in 2018, and for each subsequent year.

(3) The method in section 95153(a) for continuous bleed pneumatic devices applies to 2019 data reported in 2020.

(4) The provisions of Subarticle 6 of this article become effective for 2021 data submitted in 2022, if U.S. EPA has approved, as memorialized by publication in the Federal Register and Code of Federal Regulations, that provision as part of California's plan for compliance with the Clean Power Plan.

(5) The requirements of section 95111(h) are effective for 2017 data reported in 2018.

(i) *Calculation and Reporting of De Minimis Emissions.* A facility operator ~~or supplier~~ may designate as de minimis a portion of GHG emissions representing no more than 3 percent of a facility's total CO_2 equivalent emissions (including emissions from biomass-derived fuels and feedstocks), not to exceed 20,000 metric tons of CO_2e. The operator or supplier may estimate de minimis emissions using alternative methods of the operator's choosing, subject to the concurrence of the

verification body that the methods used are reasonable, not biased toward significant underestimation or overestimation of emissions, and unlikely to exceed the de minimis limits. The operator~~ or supplier~~ must separately identify and include in the emissions data report the emissions from designated de minimis sources. The operator must determine CO_2 equivalence according to the global warming potentials as specified in the "global warming potential" definition of this article~~provided in Table A-1 of 40 CFR Part 98~~.

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(k) *Measurement Accuracy Requirement*. The operator or supplier subject to the requirements of 40 CFR §98.3(i) must meet those requirements for data used for calculating non-covered emissions and non-covered product data, except as otherwise specified in this paragraph. In addition, the following accuracy requirements apply to data used for calculating covered emissions and covered product data. The operator or supplier with covered product data or covered emissions equal to or exceeding 25,000 metric tons of CO_2e or a compliance obligation under the cap-and-trade regulation in any year of the current compliance period must meet the requirements of paragraphs (k)(1)-(10) below for calibration and measurement device accuracy. Inventory measurement, stock measurement, or tank drop measurement methods are subject to paragraph (11) below. The requirements of paragraphs (k)(1)-(11) apply to fuel consumption monitoring devices, feedstock consumption monitoring devices, process stream flow monitoring devices, steam flow devices, product data measuring devices, mass and fluid flow meters, weigh scales, conveyer scales, gas chromatographs, mass spectrometers, calorimeters, and devices for determining density, specific gravity, and molecular weight. The provisions of paragraph (k)(1)-(11) do not apply to: stationary fuel combustion units that use the methods in 40 CFR §98.33(a)(4) to calculate CO_2 mass emissions; emissions reported as *de minimis* under section 95103(i); and devices that are solely used to measure parameters used to calculate emissions that are not covered emissions or that are not covered product data. The provisions of paragraphs (k)(1)-(9) and (k)(11) do not apply to stationary fuel combustion units that use the methods in 40 CFR Part 75 Appendix G §2.3 to calculate CO_2 mass emissions, but the provisions in paragraph (k)(10) are applicable to such units.

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(4) Except as otherwise provided in sections 95103(k)(7) through (9), subsequent recalibrations of the flow meter and other measurement devices subject to the requirements of this section must be performed no less frequently than at one of the following time intervals, whichever is shortest:

(A) The frequency specified in a subpart of 40 CFR Part 98 that is applicable under this article.

(B) The frequency recommended by the manufacturer.

(C) Once~~ during~~ every ~~three-year compliance period of the cap-and-trade regulation, with the time between successive calibrations not to be less~~

~~than 30 months or greater than 48~~36 months.

(D) Immediately upon replacement of a previously calibrated meter.

(E) Immediately upon replacement or repair of a device that is deemed out of calibration as determined in paragraph (6).

(F) If the device manufacturer explicitly states in the product documentation that calibration is required at a period exceeding three years, the operator may follow the procedures in paragraph (9) to obtain Executive Officer approval to relieve the operator from having to comply with provisions (A) and (C) of this subparagraph.

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(6) In addition to the specific calibration requirements specified below, and, if applicable, the field accuracy assessment requirements specified below, all flow meter and other measurement devices covered by this part, regardless of type, must be selected, installed, operated, and maintained in a manner to ensure accuracy within ±5 percent.

(A) Perform all mass and volume measurement device calibration as specified in the original equipment manufacturers (OEM) documentation. If OEM documentation is unavailable, calibrate as specified in 40 CFR §98.3(i)(2)-(3), except that a minimum of three calibration points must be used spanning the normal operating conditions. When using the three calibration points, one point must be at or near the zero point, one point must be at or near the upscale point, and one point at or near the mid-point of the devices operating range. If OEM documentation does not specify a method or is unavailable, and calibration methods specified in 40 CFR §98.3(i)(2)-(3) are not possible for a particular device, the procedures in section 95109(b) must be followed to obtain approval for an alternative calibration procedure. Additionally:

1. Pressure differential devices must be inspected at a frequency specified in paragraph (k)(4) of this section, unless the device is located at a refinery that operates continuously with infrequent outages. In such cases, the owner or operator of the refinery must inspect each device at a frequency of at least once every six years. The inspection must be conducted as described in the appropriate part of ISO 5167-2 (2003), or AGA Report No 3 (2003) Part 2, both of which are incorporated by reference, or a method published by an organization listed in 40 CFR §98.7 applicable to the analysis being conducted. If the device fails any one of the tests then the meter shall be deemed out of calibration. If OEM guidance for a particular pressure differential device recommends against disassembly and inspection of the device, disassembly and inspection requirements in this paragraph do not apply. Documentation of OEM guidance must be made available to verifiers and ARB upon request.

a. Records of all tests, including an as-found condition, must be preserved pursuant to section 95105 and made available to verifiers and ARB upon request.
b. Where inspection requirements apply, the primary element must also be photographed on both sides prior to any treatment or cleanup of the element to clearly show the condition of the element as it existed in the pipe.

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(10) If the results of an initial calibration, recalibration, or field accuracy assessment fail to meet the required accuracy specification, and the emissions or product data estimated using the data provided by the device represent more than 5 percent of total facility emissions or product data on an annual basis, the operator must demonstrate by other means to the satisfaction of the verifier or ARB that measurements used to calculate GHG emissions and product data still meet the ± 5~~%~~ percent accuracy requirements going back to the last instance of successful field accuracy assessment or calibration of the device. Where the results of an initial calibration, recalibration, or field accuracy assessment fail to meet the accuracy specifications, the verifier shall note at a minimum a nonconformance as part of the emissions data verification statement.

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(l) *Reporting and Verifying Product Data*. The reporting entity must separately identify, quantify, and report all product data as specified in sections 95110-95124 and 95156 of this article. It is the responsibility of the reporting entity to obtain verification services for the product data. Product data will be evaluated for conformance and material misstatement independent of GHG emissions data. Covered product data is evaluated for material misstatement and conformance, while the remaining reported product data is evaluated for conformance only. Reporting entities must exclude inaccurate covered product data~~, and may elect to exclude accurate covered product data~~. Reporting entities that exclude covered product data must report a description of the excluded data and an estimated magnitude using best available methods. The excluded covered product data will not be used for the material misstatement assessment or for the total covered product data variable described in section 95131(b)(12)(A). Operators of cement plants may not exclude covered product data.

(m) *Changes in Methodology*. Except as specified below, where this article permits a choice between different methods for the monitoring and calculation of GHGs and product data, the operator must~~or supplier must make this choice by January 1, 2013, or January 1 of the first data year reporting under this article, and continue to~~ use the method chosen for all future emissions data reports, except ~~unless the use of an alternative monitoring or calculation method is approved in advance by the Executive Officer~~as provided pursuant to sections 95103(m)(1) and (2).

(1) Changes in Prescribed Methods.

(A) Permanent Improvement in Monitoring or Calculation Methodology for

Emissions Data. The operator or supplier is permitted to permanently improve the emissions or product data monitoring or calculation method ~~after January 1, 2013 through a change~~ to a higher-tier monitoring or calculation method specified in this article, such as the addition of a continuous emissions monitoring system. Permanent improvements to emissions monitoring or calculation methods do not require approval in advance by the Executive Officer; however, the operator or supplier must notify ARB ~~prior to January 1 of the year~~ by the reporting deadline for the applicable reporting year~~the new method implemented~~.

(B) Permanent Change to a Lower-Tier Methodology for Emissions Data. The operator or supplier is permitted to submit a request for approval of a ~~P~~permanent change~~s~~ to a lower-tier ~~emissions~~ monitoring or calculation method specified in this article for emissions data. ~~, and to all covered product data monitoring or calculation methods,~~ The request must be provided to ARB prior to January 1 of the year for which the data will be reported, and must be approved ~~in advance~~ by the Executive Officer and implemented per the timing requirements in ~~parts~~sections 95103(m)(2)-(3). The request must include a description of why the change in method is being proposed, a detailed description of the data that are affected by the method change, and a demonstration of differences in estimated data under the current and proposed methods.

(C) Permanent changes to all covered product data monitoring or calculation methods must be submitted to ARB pursuant to section 95103(m)(2), except in the circumstances described in section 95103(m)(4).

(2) Alternative Methods. If an operator or supplier identifies a situation where conventional metering or methods are not feasible, the operator may submit a request to the Executive Officer for approval of an alternative measurement/monitoring method that achieves accuracy at an equivalent level to the ±5 percent required by section 95103(k)(6) ~~When proposing a permanent change in a monitoring or calculation method to the Executive Officer,~~. The request must include ~~an operator or supplier must indicate~~ a description of why the change in method is being proposed, include a detailed description of ~~what~~the data that are affected by the alternative measurement/monitoring method~~procedure~~, and include a demonstration of differences in estimated data under the ~~two~~ current and proposed methods. ARB will make an approval determination based on the necessity of the alternative method and whether the operator or supplier can sufficiently demonstrate accuracy of the method during verification.

The alternative method request must be provided to ARB prior to January 1 of the year for which the new method would be implemented for data collection, and must be approved by the Executive Officer. If ARB approves the alternative method, and upon request by the reporting entity, ARB may also determine whether the methodology can be applied to the current data year based on the information submitted pursuant to this section. In order to apply the method to the current data year, the reporting entity must show that they

have collected the necessary data to apply the method for the entire current reporting year.

(3) When permitted under sections 95103(m)(1) and (2), a change in the calculation or monitoring method must be made ~~after the completion of monitoring~~ for an entire data year and apply to the start of a~~the subsequent~~ data year, except in the circumstances described in ~~part~~ section 95103(m)(4).

(4) Use of a Temporary Methodology. The operator or supplier is permitted to temporarily modify the emissions or product data monitoring or calculation method when necessary for the avoidance of missing data or to comply with the missing data provisions of this article. For emissions data, i~~I~~n the event of an unforeseen breakdown in fuel analytical data monitoring equipment or CEMS equipment, operators and suppliers must use the procedures in section 95129(h) and section 95129(i), respectively, for seeking approval of interim data collection procedures. For all other instances that temporary methods are used, ARB must be notified by the reporting deadline of the following information: a description of the temporary method, the affected data, and the duration that the temporary method was used. A temporary method may be used for a period not to exceed 365 days unless the method is concurrently or subsequently submitted and approved by the Executive Officer as a permanent method per the requirements in ~~parts~~ section 95103(m)(1)(B) or (2)~~ (3)~~. Operators and suppliers must be able to demonstrate during verification that the temporary method provides data accuracy within ± 5~~%~~ percent as specified in section 95103(k)(6). Covered product data that does not meet the required accuracy specification must be excluded using the procedure in section 95103(l) to avoid an adverse verification statement.

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(n) *Changes in Ownership or Operational Control*. If a reporting entity undergoes a change of ownership or operational control, the following requirements apply regarding notifications to ARB and reporting responsibilities.

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(2) *Reporting Responsibilities.* Except as specified in section 95103(n)(2)(D), ~~T~~the owner or operator of record at the time of a reporting or verification deadline specified in this article has the responsibility for complying with the requirements of this article, including certifying that the emissions data report is accurate and complete, obtaining verification services, and completing verification.

(A) Except as specified in section 95103(n)(2)(D), ~~T~~The owner or operator of record at the time of a reporting deadline is responsible for submitting the emissions data report covering the complete calendar year data.

(B) Except as specified in section 95103(n)(2)(D), ~~I~~if an ownership change takes place during the calendar year, reported data must not be split or subdivided for the year, based on ownership. A single annual data report

must be submitted for the entity by the current owner or operator. This report must represent required data for the entire, calendar year.

(C) Previous owners or operators are required to provide data and records to new owners or operators that is necessary and required for preparing annual emissions data reports required by this article.

(D) Fuel suppliers that cease to have reportable emissions as a result of an ownership change that affects supplier operations retain the responsibility for complying with the requirements of this article, including certifying that the emissions data report is accurate and complete, obtaining verification services, and completing verification, for the emissions from all fuel transactions that occurred prior to the date of the change of ownership.

(o) *Addresses*. The following address shall be substituted for the addresses provided in 40 CFR §98.9, and used for any necessary notifications or materials that are not submitted by other means ~~for both U.S. mail and package deliveries~~:

Manager, Climate Change Reporting Section~~Executive Officer~~
Climate Change Program Planning and Monitoring Branch
Industrial Strategies Division
~~Attn: Emission Inventory Branch~~
California Air Resources Board
P.O. Box 2815
Sacramento, CA 95812

NOTE: Authority cited: Sections 38510, 38530, 39600, 39601, 39607, 39607.4 and 41511, Health and Safety Code. Reference: Sections 38530, 39600 and 41511, Health and Safety Code.

§ 95104. Emissions Data Report Contents and Mechanism.

The reporting entities specified in section 95101 must develop, submit, and certify greenhouse gas emissions data reports to the Air Resources Board each year in accord with the following requirements.

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(d) *Facility Level Energy Input and Output.* The operator must include in the emissions data report information about the facility's energy acquisitions and energy provided or sold as specified below. For the purpose of reporting under this paragraph, the operator may exclude any electricity that is generated outside the facility and delivered into the facility with final destination outside of the facility. The operator may also exclude electricity consumed by operations or activities that do not generate any emissions, energy outputs, or products that are covered by this article, and that are neither a part of nor in support of electricity generation or any industrial activities covered by this article. The operator must report this information for the calendar year covered by the emissions data report, pro-rating purchases as necessary to include information for the full months of January and December.

(1) Electricity purchases or acquisition from sources outside of the facility boundary (MWh) and the name and ARB identification number of each electricity provider, as applicable.

(A) Facilities with a NAICS code listed in Table 8-1 of the cap-and-trade regulation must report the MWh from each electrical distribution utility that provides transmission and/or distribution service and the MWh from each electricity generation provider.

(2) Thermal energy purchases or acquisitions from sources outside of the facility boundary (MMBtu) and the name and ARB identification number of each energy provider, as applicable. If the operator acquires thermal energy from a PURPA Qualifying Facility and vents, radiates, wastes, or discharges more than 10~~%~~ percent of the acquired thermal energy before utilizing the energy in any industrial process, operation, or heating/cooling application, the operator must report the amount of thermal energy actually needed and utilized, in addition to the amount of thermal energy received from the provider.

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(f) *Increases and Decreases in Facility Emissions*. The operator of a facility identified in section 95101(a)(1)(A)-(B) that is subject to the cap-and-trade regulation must include the following information in the emissions data report:

(1) Whether a change in the facility's operations or status resulted in an increase or decrease of more than five percent in emissions of greenhouse gases in relation to the previous data year.

~~(2) Specify which of the following reason(s) would be the cause of the increase or decrease in greenhouse gas emissions:~~

~~(A) Change in production;~~

~~(B) Changes in facility operations in order to comply with:~~

~~1. The cap-and-trade regulation;~~

~~2. Other air pollution regulations;~~

~~3. Other regulations, not related to air pollution or greenhouse gases;~~

~~(C) Changes in efficiency due to:~~

~~1. Process or material changes;~~

~~2. The addition of control equipment;~~

~~3. Other efficiency measures;~~

~~(D) Other.~~

(2~~3~~) If there is an increase or decrease of more than five percent in emissions of greenhouse gases in relation to the previous year, the operator must provide a ~~A~~ brief narrative description of what ~~how each reason identified in section 95104(f)(2)~~ caused the increase or decrease in emissions. Include in this description any changes in your air permit status.

(34) Verifiers must ensure the information reported pursuant to section 95104(f)(1) is reported in conformance with this article. ~~This s~~Section 95104(f)(2), the narrative description, is not subject to the third-party verification requirements of this article.

NOTE: Authority cited: Sections 38510, 38530, 39600, 39601, 39607, 39607.4 and 41511, Health and Safety Code. Reference: Sections 38530, 39600 and 41511, Health and Safety Code.

§ 95105. Recordkeeping Requirements.

Each reporting entity that is required to report greenhouse gases under this article, except as provided in section 95103(a)(9), must keep records as required by 40 CFR §98.3(g)-(h) with the following qualifications.

(a) *Duration*. Reporting entities with a compliance obligation under the cap-and-trade regulation in any year of the current compliance period must maintain all records specified in 40 CFR §98.3(g), and records associated with revisions to emissions data reports as provided under 40 CFR §98.3(h), for a period of ten years from the date of emissions data report certification. The retained documents, including GHG emissions data and input data;~~,~~ covered product data and associated inputs; data associated with thermal energy provided, sold, purchased, or acquired; and, data associated with electricity provided, sold, purchased, or acquired, must be sufficient to allow for verification of each emissions data report. Reporting entities that do not have a compliance obligation under the cap-and-trade regulation during any year of the current compliance period must maintain required~~such~~ records for a period of five years from the date of certification.

(b) *ARB Requests for Records.* Copies of any records or other materials maintained under the requirements of 40 CFR Part 98 or this article must be made available to the Executive Officer upon request, within ~~twenty~~~~ten~~14 days of receipt of such request by the designated representative of the reporting entity, unless a different schedule is agreed to by ARB. This includes, but is not limited to, information used to quantify or report emissions and product data in the emissions data report, underlying monitoring and metering data, invoices of receipts or deliveries, sales transaction data, calculation methods, protocols used, analysis results, calibration records, electricity transaction data, and other relevant information.

(c) *GHG Monitoring Plan for Facilities and Suppliers*. Each facility operator or supplier that reports under 40 CFR Part 98, each facility operator or supplier with emissions equal to or exceeding 25,000 $MTCO_2e$ (including biomass-derived CO_2 emissions and geothermal emissions), and each facility operator or supplier with a compliance obligation under the cap-and-trade regulation in any year of the current compliance period, must complete and retain for review by a verifier or ARB a written GHG Monitoring Plan that meets the requirements of 40 CFR §98.3(g)(5). For facilities, the Plan must also include the following elements, as applicable:

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(3) ~~Identification of measurement device location, and the location of any additional devices or sampling ports~~ Reference to o~~O~~ne or more ~~diagrams (~~simplified block ~~flow or piping and instrumentation~~ diagrams~~)~~ that provide a clear visual representation of the relative ~~the~~ locations and ~~relative~~ positions of ~~all~~ measurement devices and sampling locations, as applicable, required for calculating covered emissions and covered product data (e.g. temperature, total pressure, HHV, fuel consumption). The diagram(s) must include ~~and label~~ fuel sources, combustion emissions, and production processes, as applicable.

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(d) *GHG Inventory Program for Electric Power Entities that Import or Export Electricity.* In lieu of a GHG Monitoring Plan, electric power entities that import or export electricity must prepare GHG Inventory Program documentation that is maintained and available for verifier review and ARB audit pursuant to the recordkeeping requirements of this section. The following information is required:

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(6) Reference to other independent or internal data management systems and records, including written power contracts and associated verbal or electronic records, full or partial ownership, invoices, and settlements data used to document whether reported transactions are specified or unspecified and whether the requirements for adjustments to covered emissions pursuant to sections 95852(b)(1)(B), 95852(b)(4) and 95852(b)(5) of the cap-and-trade regulation are met, specifically how the entity determined that the electricity associated with the RECs claimed for the RPS adjustment was not directly delivered to California, if reporting an RPS adjustment;

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NOTE: Authority cited: Sections 38510, 38530, 39600, 39601, 39607, 39607.4 and 41511, Health and Safety Code. Reference: Sections 38530, 39600 and 41511, Health and Safety Code.

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Subarticle 2. Requirements for the Mandatory Reporting of Greenhouse Gas Emissions from Specific Types of Facilities, Suppliers, and Entities

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§ 95111. Data Requirements and Calculation Methods for Electric Power Entities.

The electric power entity who is required to report under section 95101 of this article must comply with the following requirements.

(a) *General Requirements and Content for GHG Emissions Data Reports for Electricity Importers and Exporters.*

(1) *Greenhouse Gas Emissions.* The electric power entity must report GHG emissions separately for each category of delivered electricity required, in metric tons of CO_2 equivalent (MT of CO_2e), according to the calculation methods in section 95111(b).

(2) *Delivered Electricity.* The electric power entity must report imported, exported, and wheeled electricity in MWh disaggregated by ~~generation source, when known, or by~~ first point of receipt (POR) or final point of delivery, as applicable, and must also separately report imported and exported electricity from unspecified sources and from each specified source. Substitute electricity defined pursuant to section 95102(a) must be separately reported for each specified source, as applicable. First points of receipt ~~(POR) and final points of delivery (POD)~~ must be reported using the standardized code used in NERC e-Tags, as well as the full name of the POR/POD.

(3) *Imported Electricity from Unspecified Sources.* When reporting imported electricity from unspecified sources, the electric power entity must report for each ~~generation source, or~~ first point of receipt ~~if the generation source is unknown,~~ the following information:

(A) Whether the ~~generation source, or~~ first point of receipt ~~if the generation source is unknown,~~ is located in a linked jurisdiction published on the ARB ~~Mandatory Reporting~~ website;

(B) The amount of electricity from unspecified sources as measured at the first point of delivery in California; and

(C) GHG emissions, including those associated with transmission losses, as required in section 95111(b).

(4) *Imported Electricity from Specified Facilities or Units.* The electric power entity must report all direct delivery of electricity as from a specified source for facilities or units in which they are a generation providing entity (GPE) or have a written power contract to procure electricity. A GPE must report imported electricity as from a specified source when the importer is a GPE of that facility. When reporting imported electricity from specified facilities or units, the electric power entity must disaggregate electricity deliveries and associated GHG emissions ~~by facility or unit and~~ by ~~generation source~~ first ~~point of receipt~~, as applicable. The reporting entity must also report total GHG emissions and MWh from specified sources and the sum of emissions from specified sources explicitly listed as not covered pursuant to section 95852.2 of the cap-and-trade regulation. Seller Warranty: The sale or resale of specified source electricity is permitted among entities on the e-tag market path insofar as each sale or resale is for specified source electricity in which sellers have purchased and sold specified source electricity, such that each seller warrants the sale of specified source electricity from the source through the market path.

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(5) *Imported Electricity Supplied by Asset-Controlling Suppliers.* The reporting entity must separately report imported electricity supplied by asset-controlling suppliers recognized by ARB. The reporting entity must:

(A) Report the asset-controlling supplier standardized purchasing-selling entity (PSE) acronym or code, full name, and the ARB identification number;

(B) Report asset-controlling supplier power that was not acquired as specified power, as unspecified power;

(C) Report delivered electricity from asset-controlling suppliers as measured at the first point of delivery in the state of California; and,

(D) Report GHG emissions calculated pursuant to section 95111(b), including transmission losses.

(E) *Tagging ACS Power*. To claim power from an asset-controlling supplier, the asset-controlling supplier must be identified on the physical path of the NERC e-Tag as the PSE at the ~~generation source~~ first point of ~~receipt~~, or in the case of asset controlling suppliers that are exclusive marketers, as the PSE immediately following the associated generation owner.

(6) *Exported Electricity.* The electric power entity must report exported electricity in MWh and associated GHG emissions in MT of CO_2e for unspecified sources disaggregated by each final point of delivery outside the state of California, and for each specified source disaggregated by each final point of delivery outside the state of California, as well as the following information:

(A) Exported electricity as measured at the last point of delivery located in the state of California, if known. If unknown, report as measured at the final point of delivery outside California.

(B) Do not report estimated transmission losses.

(C) Report whether the final point of delivery is located in a linked jurisdiction published on the ARB ~~Mandatory Reporting~~ website.

(D) Report GHG emissions calculated pursuant to section 95111(b).

~~(E) Separately report qualified exports as defined in section 95102(a).~~

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(8) *Electricity Wheeled Through California.* The electric power entity who is the PSE on the last physical path segment that crosses the border of the State of California on the NERC e-tag must separately report electricity wheeled through California, aggregated by first point of receipt, and must exclude wheeled power transactions from reported imports and exports. When reporting electricity wheeled through California, the electric power entity must include the quantities of electricity wheeled through California as measured at the first point of delivery inside the state of California. Only an electric power

entity, as defined in section 95102(a), must report wheeled electricity through California.

***

(12) *Electrical Distribution Utility Sales into CAISO.* All electrical distribution utilities (EDU) except IOUs must report the annual MWh of all electricity sold into the CAISO markets for which an EDU or generator receiving EDU-allocated allowances has a compliance obligation under the Cap-and-Trade Regulation~~, beginning with calendar years 2013 and 2014 reported in 2015~~. This reporting requirement also applies to CAISO sales from a generator to whose compliance account the reporting EDU directed ARB to deposit allocated allowances pursuant to section 95892(b)(2)(A) of the cap-and-trade regulation; in this case, the reporting requirement is on the EDU that directed ARB to deposit allocated allowances.

(A) EDUs must report MWh by source of generation (if known), of the electricity sold into the CAISO markets and for which the EDU or generator receiving EDU-allocated allowances has a compliance obligation, and the emission factor (if known) for each source of generation, as follows:~~.~~

1. For emissions associated with CAISO sales from a specified source located outside of California, the reporting EDU must use the emissions factors calculated by ARB pursuant to section 95111(b)(2).

2. For known in-State resources that are the source of CAISO sales:

   i. If the EDU is the GPE, or has verifiable information related to the annual emissions and electricity production associated of the in-State resource, the EDU must calculate an emission factor for the resource. This calculation is subject to verifier review.

   ii. If the EDU does not know the emissions and electricity production associated with the in-State resource, the EDU must use the default emission factor for unspecified electricity set forth in section 95111(b)(1).

3. For sales into CAISO for which the source of generation is unknown or unspecified, the reporting EDU must use the default emission factor for unspecified electricity set forth in section 95111(b)(1).

(B) This requirement does not apply to EDUs that have had all of their directly allocated allowances allocated for the data year placed in their limited use holding account pursuant to section 95892(b)(2) of the Cap-and-Trade Regulation. Verifiers must contact the Air Resources Board directly to confirm that a specific EDU is not subject to this requirement.

(C) Excess electricity for non-native load. An EDU must report whether any electricity from any resource in its portfolio, for which an EDU has a compliance obligation, was sold into CAISO markets to ultimately serve any non-native load, in accordance with CAISO Fifth Replacement Tariff section 11.29(a)(iii) dated May 1, 2014. Excess electricity that does not serve an EDU's native load, and meets the other requirements in this section, is reportable as CAISO sales, even if the generation resource causing the excess electricity is funded by municipal tax-exempt debt.

(D) Netting of electricity across intervals is prohibited in the calculation of reportable CAISO sales. Excess electricity sold into the CAISO markets in any interval cannot be netted against the electricity purchased from the CAISO markets a different interval.

(E) The data sources and procedures used to report CAISO sales and emission factors must be specified in the GHG inventory plan documentation required by section 95105(d).

(b) *Calculating GHG Emissions.*

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(2) *Calculating GHG Emissions from Specified Facilities or Units.* For electricity from specified facilities or units, the electric power entity must calculate emissions using the following equation:

$$CO_2e = MWh \times TL \times EF_{sp}$$

Where:

CO_2e = Annual CO_2 equivalent mass emissions from the specified electricity deliveries from each facility or unit claimed (MT of CO_2e).

MWh = Megawatt-hours of specified electricity deliveries from each facility or unit claimed.

EF_{sp} = Facility-specific or unit-specific emission factor published on the ARB Mandatory Reporting website and calculated using total emissions and transactions data as described below. The emission factor is based on data from the year prior to the reporting year.

EF_{sp} = 0 MT of CO_2e for facilities below the GHG emissions compliance threshold for delivered electricity pursuant to the cap-and-trade regulation during the first compliance period.

TL = Transmission loss correction factor.

TL = 1.02 to account for transmission losses associated with generation outside of a California balancing authority.

TL = 1.0 if the reporting entity provides documentation that demonstrates to the satisfaction of a verifier and ARB that transmission losses (1) have been accounted for, (2) are supported by a California balancing authority, or (3) are compensated by using electricity sourced from within California.

The Executive Officer shall calculate facility-specific or unit-specific emission factors and publish them on the ARB Mandatory Reporting website using the following equation:

$EF_{sp} = E_{sp} / EG$

Where:

E_{sp} = CO_2e emissions for a specified facility or unit for the report year (MT of CO_2e).

EG = Net generation from a specified facility or unit for the report year shall be based on data reported to the Energy Information Administration (EIA).

~~If order t~~To register a specified unit(s) source of power pursuant to section 95111(g)(1), the reporting entity must provide to ARB unit level GHG emissions consistent with the data source requirements of this section and net generation data as reported to the EIA, along with contracts for delivery of power from the specified unit(s) to the reporting entity, and proof of direct delivery of the power by the reporting entity as an import to California.

(A) For specified facilities or units whose operators are subject to this article or whose owners or operators voluntarily report under this article, E_{sp} shall be equal to the sum of CO_2e emissions reported pursuant to section 95112.

(B) For specified facilities or units whose operators are not subject to reporting under this article or whose owners or operators do not voluntarily report under this article, but are subject to the U.S. EPA GHG Mandatory Reporting Regulation, E_{sp} shall be based on GHG emissions reported to U.S. EPA pursuant to 40 CFR Part 98. For GHG emissions reported to U.S. EPA pursuant to 40 CFR Part 98, if it is not possible to isolate the emissions that are directly related to electricity production, ARB may calculate E_{sp} based on EIA data. Emissions from combustion of biomass-derived fuels will be based on EIA data until such time the emissions are reported to U.S. EPA.

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(E) Meter Data Requirement. For verification purposes, electric power entities shall retain meter generation data to document that the power claimed by the reporting entity was generated by the facility or unit at the time the power was directly delivered.

1. ~~This provision~~ A lesser of analysis is applicable to imports from specified sources, including imported electricity under EIM, for which ARB has calculated an emission factor of zero, and for imports from California Renewable Portfolio Standard (RPS) eligible resources, excluding the following: (1) ~~contract or~~

~~ownership agreements, known as grandfathered contracts that meet California RPS program requirements in Public Utilities Code Section 399.16(d) or California Code of Regulations, Title 20 Section 3202(a)(2)(A); (2) dynamically tagged power deliveries; (3) untagged power deliveries, including EIM imports; (4)~~ nuclear power; (~~5~~2) asset controlling supplier power; and (~~6~~3) imports from hydroelectric facilities for which an entity's share of metered output on an hourly basis is not established by power contract.~~. Accordingly, a~~A lesser of analysis is required pursuant to the following equation:

Sum of Lesser of MWh = ΣHM_{sp} min(MG_{sp}, TG_{sp})(S_{sp})

Where:

ΣHM_{sp} = Sum of the Hourly Minimum of MG_{sp} and TG_{sp} (MWh).
MG_{sp} = metered facility or unit net generation (MWh).
S_{sp} = entity's share of metered output, if applicable.
TG_{sp} = tagged or transmitted energy at the transmission or sub-transmission level imported to California (MWh).

2. An EPE may conduct the lesser of analysis voluntarily for those resources excluded in section 95111(b)(2)(E)(1.).

***

(5) Calculation of Covered Emissions. For imported electricity with covered emissions as defined pursuant to section 95102(a), the electric power entity must calculate ~~and report~~ covered emissions pursuant to the equation in 95852(b)(1)(B) of the cap-and-trade regulation. $CO_2e_{RPS\ adjustment}$ is calculated based on the following equation: ~~and include the following information:~~

~~$CO_2e_{covered}$ = Sum of covered emissions defined pursuant to section 95102(a) and calculated pursuant to the equation in section 95852(b)(1)(B) of the cap-and-trade regulation (MT of CO_2e).~~

~~CO_2e_{unsp} = Sum of CO_2 equivalent mass emissions from imported electricity from unspecified sources (MT of CO_2e).~~

~~CO_2e_{sp} = Sum of CO_2 equivalent mass emissions from imported electricity that meets the requirements in section 95111(g) for reporting electricity from specified sources (MT of CO_2e).~~

~~$CO_2e_{sp\text{-}not\ covered}$ = Sum of CO_2 equivalent mass emissions from imported electricity that meets the requirements in section 95111(g) for reporting electricity from specified sources and is explicitly listed as emissions without a compliance obligation pursuant to section 95852.2 of the cap-and-trade regulation (MT of CO_2e).~~

$CO_2e_{RPS\ adjustment}$ = Sum of CO_2 equivalent mass emissions adjustment is calculated using the following equation for electricity generated by each

eligible renewable energy resource located outside the ~~s~~State of California and registered with ARB by the reporting entity pursuant to section 95111(g)(1), but not directly delivered as defined pursuant to section 95102(a). Electricity included in the RPS adjustment must meet the requirements pursuant to section 95852(b)(4) of the cap-and-trade regulation (MT of CO_2e).

$$CO_2e_{RPS_adjustment} = MWh_{RPS} \times EF_{unsp} \cancel{unsp} \ (MTCO_2e/MWh)$$

Where:

MWh_{RPS} = Sum of MWh generated by each eligible renewable energy resource located outside of the ~~s~~State of California, registered with ARB pursuant to section 95111(g)(1), and meeting requirements pursuant to section 95852(b)(4) of the cap-and-trade regulation.

EF_{unsp} = Default emission factor for unspecified sources calculated consistent with section 95111(b)(1) ($MTCO_2e/MWh$).

~~$CO_2e_{QE\ adjust}$ = Sum of CO_2 equivalent mass emissions adjustment for qualified exports as defined in section 95102(a) and that meet the requirements pursuant to section 95852(b)(5) of the cap-and-trade regulation (MT of CO_2e).~~

~~CO_2e_{linked} = Sum of CO_2e mass emissions recognized by ARB pursuant to linkage under subarticle 12 of the cap-and-trade regulation (MT of CO_2e).~~

(c) *Additional Requirements for Retail Providers, excluding Multi-jurisdictional Retail Providers.* Retail providers must include the following information in the GHG emissions data report for each report year, in addition to the information identified in sections 95111(a)-(b) and (g).

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(3) For facilities or units located outside California in a jurisdiction where a GHG emissions trading system has not been approved for linkage pursuant to subarticle 12 of the cap-and-trade regulation, that are fully or partially owned by a retail provider that have GHG emissions greater than the default emission factor for unspecified imported electricity based on the most recent GHG emissions data report submitted to ARB or U.S. EPA, the retail provider must include:

(A) Information required in section 95111(g)(1) in data years with no reported imported electricity from the facility or unit;

(B) The quantity of electricity from the facility or unit sold by the retail provider or on behalf of the retail provider having a final point of delivery outside California, as measured at the busbar.

(C) *High GHG-Emitting Facilities or Units.* For facilities or units that are operated by a retail provider or fully or partially owned by a retail provider, excluding multi-jurisdictional retail providers, and that have emissions greater than the default emission factor for unspecified electricity based on the most recent GHG emissions data report submitted to ARB or to

U.S.EPA, the retail provider must report the following information:

1. When the product of net generation (MWh) and ownership share is greater than imported electricity (MWh), emissions associated with electricity not imported into California must be reported as

$CO_2e_{\text{not imported}} = (EG_{sp}*OS - I_{sp})*EF_{sp.}$

Where:

EG_{sp} = facility or unit net generation, MWh.
OS = fraction ownership share.
Isp = imported electricity, MWh.
EFsp. = facility or unit-specific emission factor, MT of CO2e/MWh.

2. List the replacement generation sources, locations, and whether they are new units when I_{sp}< 90~~%~~ percent of EG_{sp}*OS and when a facility specified in the previous report year has no imported electricity in the current report year.

***

(f) *Additional Requirements for Asset-Controlling Suppliers.* Owners or operators of electricity generating facilities or exclusive marketers for certain generating facilities may apply for an asset-controlling supplier designation from ARB. Approved asset-controlling suppliers may request that ARB calculate a supplier-specific emission factor pursuant to section 95111(b)(3). ~~To apply for asset-controlling supplier designation, the applicant must:~~

To apply for asset-controlling supplier designation, the applicant must:

(1) Meet the requirements in this article, including reporting pursuant to section 9511~~2~~1 as applicable for each generating facility or unit in the supplier's fleet;

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(g) Requirements for Claims of Specified Sources of Electricity, and for Eligible Renewable Energy Resources in the RPS Adjustment.

Each reporting entity claiming specified facilities or units for imported or exported electricity must register its anticipated specified sources with ARB pursuant to subsection 95111(g)(1) ~~and~~ by February 1 following each data year to obtain associated emission factors calculated by ARB for use in the emissions data report required to be submitted by June 1 of the same year. If an operator fails to register a specified source by the June 1 reporting deadline specified in section 95103(e), the operator must use the emission factor provided by ARB for a specified facility or unit in the emissions data report required to be submitted by June 1 of the same year. Each reporting entity claiming specified facilities or units for imported or exported electricity must also meet requirements pursuant to subsection 95111(g)(2)-(5) in the emissions data report. Each reporting entity claiming an RPS adjustment, as defined in section 95111(b)(5), pursuant to section 95852(b)(4) of the cap-and-trade regulation must include registration information for the eligible

renewable energy resources pursuant to subsection 95111(g)(1) in the emissions data report. Prior registration and subsection 95111(g)(2)-(5) do not apply to RPS adjustments. Registration information and the amount of electricity claimed in the RPS adjustment must be fully reconciled and corrections must be certified within 45 days following the emissions data report due date. ~~Information related to the RPS adjustment is no longer required to be reported beginning with 2021 data reported in 2022.~~

(1) *Registration Information for Specified Sources and Eligible Renewable Energy Resources in the RPS Adjustment.* The following information is required:

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(M) Provide the primary facility name, total number of Renewable Energy Credits (RECs), the vintage year and month, and serial numbers of the RECs as specified below:

1. RECs associated with electricity procured from an eligible renewable energy resource and reported as an RPS adjustment as well as whether the RECs have been placed in a retirement subaccount and designated as retired for the purpose of compliance with the California RPS program.

2. RECs associated with electricity procured from an eligible renewable energy resource and reported as an RPS adjustment in a previous emissions data report year that were subsequently withdrawn from the retirement subaccount, or modified the associated emissions data report year the RPS adjustment was claimed, and the date of REC withdrawal or modification.

3. RECs associated with electricity generated, directly delivered, and reported as specified imported electricity and whether or not the RECs have been placed in a retirement subaccount. Failure to report REC serial numbers associated with specified source imported electricity from an eligible renewable energy resource represents a nonconformance with this article and in itself will not result in an adverse verification statement. In such cases, the specified source emission factors assigned by ARB must still be used to calculate emissions associated with the imported electricity.

(2) *Emission Factors.* The emission factor published on the ARB Mandatory Reporting website, calculated by ARB according to the methods in section 95111(b), must be used when reporting GHG emissions for a specified source of electricity.

(3) *Delivery Tracking Conditions Required for Specified Electricity Imports.* Electricity importers ~~may~~must claim a specified source when the electricity delivery meets any of the criteria for direct delivery of electricity defined in section 95102(a), and one of the following sets of conditions:

(A) The electricity importer is a GPE; or

(B) The electricity importer has a written power contract for electricity generated by the facility or unit, subject to meeting all other specified source requirements.

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(5) Substitute electricity. Report substitute electricity received from specified and unspecified sources pursuant to the requirements of this section.

(h) Reporting requirements for Imported Electricity in the Energy Imbalance Market (EIM)~~*the California Independent System Operator (CAISO).* Annually, CAISO will calculate, report, and cause to be verified, the information listed here:~~

(1) *Calculation of EIM Outstanding Emissions*. Each year after the verification deadline in section 95103(f), ARB will calculate "EIM Outstanding Emissions" using information reported annually by CAISO and Participating Resource Scheduling Coordinators with imported electricity in EIM. Annual information reported by CAISO and Participating Resource Scheduling Coordinators must be based on data f~~F~~or each 5-~~-~~minute interval~~, CAISO will calculate the following:~~.

(A) "~~Remaining~~EIM Outstanding emissions" ~~=~~equals "Total California EIM ~~dispatch e~~Emissions" less "Deemed Delivered EIM Emissions"~~– emissions~~ associated with electricity imported by EIM Participating Resource Scheduling Coordinators deemed delivered to California by the EIM optimization model.

Where "Total California EIM ~~dispatch e~~Emissions" equals the amount of emissions calculated by CAISO pursuant to section 95111(h)(1)(B)~~ EIM transfers (Mwh) identified by CAISO to serve California load multiplied by the unspecified emission factor;~~.

(B) Calculating Total California EIM Emissions. Annually, based on each 5-minute interval, CAISO must calculate, report and cause to be verified, the CO_2 equivalent mass emissions associated with imported electricity in EIM using the following equation:

$$CO_2e = MWh \times EF_{unsp} \times TL$$

Where:

CO_2e = CO_2 equivalent mass emissions from Total California EIM electricity (MT of CO_2e).

MWh = Megawatt-hours of EIM imports identified by CAISO to serve California load.

EF_{unsp} = 0.428 MT of CO_2e/MWh

TL = 1.02 (transmission loss factor).

(C) *Deemed Delivered EIM Emissions*. Annually, based on each 5-minute interval, each EIM Participating Resource Scheduling Coordinator must calculate, report, and cause to be verified, emissions associated with

electricity imported as deemed delivered to California by the EIM optimization model.

(2) Annually, CAISO will report, and cause to be verified, the following information:

(A) ~~Annual sum of the "remaining emissions" calculated in section 95111(h)(1);~~*Annual State-Wide Total for EIM Imports and Exports*. Total annual imports and exports into and out of California in MWh, consistent with the results of the EIM optimization based on Real-Time Dispatch (RTD), and associated with (1) Total California EIM Emissions, and (2) Deemed Delivered EIM Emissions;

(B) ~~Names of entities meeting California imbalances from EIM transfers and annual quantity of purchased MWh for each entity based on 5-minute interval data;~~*Annual State-Wide Total for EIM Imports By Entity*. Total annual imports into California in MWh, consistent with the results of the EIM optimization model based on Real-Time Dispatch (RTD), and associated with (1) Total California EIM Emissions, and (2) Deemed Delivered emissions, for each Participating Resource Scheduling Coordinator (PRSC) and for CAISO;

(C) *Annual State-Wide Total for EIM Exports*. Report total annual exports out of California in MWh, consistent with the results of the EIM optimization model based on Real-Time Dispatch (RTD), for each Participating Resource Scheduling Coordinator (PRSC) and for CAISO.

(3) The data provided in this section ~~95111(h)(2)~~ must be verified per section 95103(f).

NOTE: Authority cited: Sections 38510, 38530, 39600, 39601, 39607, 39607.4 and 41511, Health and Safety Code. Reference: Sections 38530, 39600 and 41511, Health and Safety Code.

§ 95112. Electricity Generation and Cogeneration Units.

The operator of a facility who is required to report under section 95101 of this article, and who is not eligible for abbreviated reporting under section 95103(a), must report as specified below and comply with Subparts C and D of 40 CFR Part 98 (§§98.30 to 98.48), as applicable, in reporting emissions and other data from electricity generating and cogeneration units to ARB, except as otherwise provided in this section. Notwithstanding the above, the operator of a facility with total facility nameplate generating capacity of less than 1 MW may elect to follow section 95115 in reporting electricity generating units as general combustion sources, in lieu of the requirements of section 95112. If engineering estimation is used to report disposition of generated energy or energy flow data that are not used directly to determine emissions, facility operators must demonstrate accuracy of the chosen engineering estimation method.

(a) *Information About the Electricity Generating Facility.* Notwithstanding any limitations in 40 CFR Parts 75 or 98, the operator of an electricity generating facility is required

to include in the emissions data report the information listed in this paragraph, unless otherwise specified in paragraphs (e) and (g) of this section for geothermal facilities and facilities with renewable energy generation. Reporting of information specified in section 95112(a)(4)-(6) is optional for facilities that do not provide or sell any generated energy outside of the facility boundary. However, facility operators that are applying for or receiving the legacy contract transition assistance under the cap-and-trade regulation, or that are applying for or receiving the limited exemption for emissions from the production of qualified thermal output under the cap-and-trade regulation, must report the information in sections 95112(a)(4)-(6), even if they do not provide or sell any generated energy outside of the facility boundary.

(4) The disposition of generated electricity in MWh, reported at the facility-level, including for each of the following disposition categories, if applicable:

(A) *Generated Electricity For Grid.* Generated electricity provided or sold to a retail provider or electricity marketer who distributes the electricity over the electric power grid for wholesale or retail customers of the grid. The operator must report the name of the retail provider or electricity marketer.~~;~~

(B) *Generated Electricity For Other Users.* Generated electricity provided or sold directly to particular end-users (as defined in section 95102). A reportable end-user includes any entity, under the same or different operational control, that is not a part of the facility. Report each end-user's facility name, NAICS code, and ARB ID if applicable.~~;~~

1. In addition to reporting the overall amount of electricity provided or sold directly to end users, separately quantify and report the subset of generated electricity used to produce cooling energy (e.g., chilled water) to end-users outside of the facility boundary.

(C) *Generated Electricity For On-Site Industrial Applications Not Related to Electricity Generation.* If the facility includes industrial processes or operations that are neither in support of or a part of the power generation system, report the total amount of generated electricity used by those on-site industrial processes or operations.

1. In addition to reporting the overall amount of electricity used for on-site industrial applications not related to electricity generation, also ~~S~~separately quantify and report the subset~~amount~~ of generated electricity that is used to produce cooling energy used on-site ~~if:~~

~~1. The facility provides cooling energy (e.g., chilled water) to a particular end-user outside of the facility boundary; or~~

~~2. The facility includes on-site industrial processes or operations~~ that ~~are~~ is neither in support of nor a part of the power generation system~~, and a portion of the generated electricity is used to produce cooling energy for such on-site industrial process or operations~~.

If the facility includes equipment that utilizes generated electricity to produce cooling (e.g., absorption chiller) for the sole purpose of

maintaining temperature in the electricity generation or cogeneration system, account for such electricity as a part of the difference between gross generation and net generation (parasitic load) pursuant to section 95112(b)(2).

If a facility includes more than one electricity generating unit or cogeneration system, and each unit/system or each group of units generate electricity for different particular end-users or retail providers or electricity marketers, the operator must separately report the disposition of generated electricity by unit/system or by group of units. For the purpose of separate reporting of disposition, the operator may group similar units together if the generated electricity from the group of units is provided to the same destination.

(5) The operator of a cogeneration or bigeneration unit must report the disposition of the thermal energy (MMBtu) generated by the cogeneration unit or bigeneration unit ("generated thermal energy"), reported at the facility-level, including for each of the following disposition categories, if applicable:

(A) *Generated Thermal Energy For Other Users.* Thermal energy provided or sold to particular end-users (as defined in section 95102). A reportable end-user includes any entity, under the same or different operational control, that is not a part of the facility. Report each end-user's facility name, NAICS code, ARB ID if applicable, and the types of thermal energy product provided. Exclude from this quantity the amount of thermal energy that is vented, radiated, wasted, or discharged before the energy is provided to the end-user.

1. In addition to reporting the overall amount of generated thermal energy for other users, separately quantify and report the subset of generated thermal energy that is used to produce cooling energy (e.g., chilled water) or distilled water for a particular end-user outside of the facility boundary.

***

(C) *Generated Thermal Energy For On-Site Industrial Applications Not Related to Electricity Generation.* If the facility includes other industrial processes or operations that are neither in support of or a part of the electricity generation or cogeneration system, report the total amount of generated thermal energy that is used by those on-site industrial processes or operations and heating or cooling applications. Exclude from this quantity the amount of thermal energy that is vented, radiated, wasted, or discharged before it is utilized at industrial processes or operations. This quantity does not include the amount of thermal energy generated by equipment that is not an integral part of the cogeneration unit.

1. In addition to reporting the overall amount of thermal energy for on-site industrial applications not related to electricity generation, also

~~S~~separately quantify and report the subset~~amount~~ of generated thermal energy that is used on-site to produce cooling energy or distilled water ~~if:~~

~~1. The facility provides cooling energy (e.g., chilled water) or distilled water to a particular end-user outside of the facility boundary, or~~

~~2. The facility includes on-site industrial processes or operations~~ that ~~are~~ is neither in support of or a part of the power generation system~~, and a portion of the generated thermal energy is used to produce cooling energy or distilled water for such on-site industrial process or operations~~.

If the facility includes equipment that utilizes generated thermal energy to produce cooling (e.g., absorption chiller) for the sole purpose of maintaining temperature in the electricity generation or cogeneration system, follow section 95112(a)(5)(B) in reporting such use of generated thermal energy.

If a facility includes more than one cogeneration or bigeneration unit/system, and each unit/system or each group of units generate thermal energy for different particular end-users or on-site industrial processes or operations, the operator must report the disposition of generated thermal energy by unit/system or by group of units with the same dispositions. For the purpose of separate reporting of disposition, the operator may group similar units together if the generated thermal energy from the group of units is provided to the same destination.

***

(b) *Information About Electricity Generating Units.* Notwithstanding any limitations in 40 CFR Parts 75 or 98, the operator of an electricity generating unit must include in the emissions data report the information listed in this paragraph. For aggregation of electricity generating units, the operator must meet the applicable criteria in 40 CFR *§*98.36(c)(1)-(4), unless otherwise specified in sections 95115(h) and 95112(b). For an electricity generation system (a cogeneration system, a bigeneration system, a combined cycle electricity generation system, or a system with boilers and steam turbine generators), the operator may aggregate all the units that are integrated into the system for the purpose of reporting data to ARB. Operators of Part 75 units may also aggregate units to the system level according to this paragraph, notwithstanding the limitation in 40 CFR *§*98.36(d)(1)(i). If there is more than one system present at the facility, each system must be reported separately. For electricity generating units that are not part of an integrated generation system, aggregation of electricity generating units is limited to units of the same type, as specified in section 95115(h). Operators of geothermal facilities, hydrogen fuel cells, and renewable electricity generating units must follow paragraph (e), (f), or (g) of this section, whichever is applicable, instead of paragraph (b) of this section. For bottoming cycle cogeneration units, the operator is not required to report the data specified in section 95112(b)(4)-(6) except for any fuels combusted for supplemental firing as specified in section 95112(b)(7).

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(3) If the unit is a cogeneration or bigeneration unit, the operator must report the total thermal output (MMBtu), as defined in section 95102, that was generated by the unit and can be potentially utilized in other industrial operations that are not electricity generation, including thermal energy that is vented, radiated, wasted, or discharged. Exclude from this quantity the heat content of returned condensate and makeup water and steam used to drive a steam turbine generator for electricity generation. The total thermal output quantity represents the amount of generated thermal energy that can be provided to the thermal energy disposition categories in section 95112(a)(5).

***

(e) *CO_2 and CH_4 Emissions from Geothermal Facilities.* Operators of geothermal generating facilities must report CO_2 and CH_4 emissions from geothermal energy sources, the amount of geothermal steam utilized (MMBtu) if steam quantity is used in calculating emissions, and applicable requirements in section 95112(a)(1)-(4), (b)(1)(A)-(C), and (b)(2). Operators of geothermal generating facilities must also report whether the source is, (i) a geothermal binary cycle plant or closed loop system, or (ii) a geothermal steam plant or open loop system.

The operator must calculate annual emissions of CO_2 and CH_4 from geothermal energy sources using source specific emission factors derived from a measurement plan approved by the ARB. The operator must submit to the Executive Officer a measurement plan at least 45 days prior to the first test date. The measurement plan must include testing at least annually, and more frequently as needed. Upon approval of the measurement plan by the Executive Officer, the test procedures in that plan must be performed as specified in the plan. ~~The Executive Officer and the local air pollution control officer must be notified at least 20 days in advance of subsequent tests.~~

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(i) *Additional Reporting Requirements for Legacy Contract Applicants*. The additional requirements in section 95112(i) apply to every facility operator that is applying for legacy contract transition assistance under the cap-and-trade regulation. A legacy contract generator with an industrial ~~or electrical distribution utility~~ counterparty ~~and a legacy contract generator without an industrial counterparty~~ must submit a simplified block diagram in every year that the facility operator applies for legacy contract transition assistance. Legends or attachments may be used when labeling the diagram. If any of the amounts requested are sums of measurements made by different devices, the amounts for each device must be shown in the diagram and the summation described in an attachment.

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NOTE: Authority cited: Sections 38510, 38530, 39600, 39601, 39607, 39607.4 and 41511, Health and Safety Code. Reference: Sections 38530, 39600 and 41511, Health and Safety Code.

§ 95113. Petroleum Refineries.

The operator of a facility who is required to report under section 95101 of this article, and who is not eligible for abbreviated reporting under section 95103(a), must comply with Subpart Y of 40 CFR Part 98 (40 CFR §§98.250 to 98.258) in reporting emissions and other data from petroleum refineries to ARB, except as otherwise provided in this section. Petroleum refinery operators and refiners are considered separate reporting entities for the purposes of this article.

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(k) *Missing Data Substitution Procedures.* The operator must comply with 40 CFR §98.255 when substituting for missing data, except as otherwise provided in paragraphs (1)-(2) below.

(1) To substitute for missing data for emissions reported under section 95115 of this article (stationary combustion units and units using continuous emissions monitoring systems), the operator must follow the requirements of section 95129 of this article.

(2) For all other data required for emissions calculations in this section, the operator must follow the requirements of paragraphs (A)-(~~B~~C) below.

(A) If the analytical data capture rate is at least 90 percent for the data year, the operator must substitute for each missing value using the best available estimate of the parameter, based on all available process data.

(B) If the analytical data capture rate is at least 80 percent but not at least 90 percent for the data year, the operator must substitute for each missing value with the highest quality assured value recorded for the parameter during the given data year, as well as the two previous data years.

(C) If the analytical data capture rate is less than 80 percent for the data year, the operator must substitute for each missing value with the highest quality assured value recorded for the parameter in all records kept according to section 95105(a).

(l) Additional Product and Process Data.

(1) ~~*Primary refinery products*~~*Refinery Products*. ~~The~~For each material in Table 2-1, as defined in the U.S. Energy Information Administration Glossary (May 27, 2016), which is hereby incorporated by reference, the operator must report the annual on-site production ~~quantities~~amount ~~of each primary refinery product for the data year by EIA number. The operator must also report for the data year by EIA number the quantity of each primary refinery product and blending component that was~~ and the annual amount of product produced elsewhere and brought on-site. Amounts must be reported in standard cubic feet for gaseous products, barrels for liquid products, and short tons for solid products. The methods for reporting production and receipts on Part 5 of the federal Energy Information Agency's Form EIA-810 that are described by the Monthly Refinery Report Instructions for Form EIA-810 (Revised 2013), which is hereby incorporated by reference, must be used to report on-site production

amounts and amounts produced elsewhere and brought on-site. These reported on-site production quantities and quantities of material produced elsewhere and brought on-site are not covered product data and will not be subject to review for material misstatement under the requirements of section 95131(b)(12).~~Liquid products must be reported in barrels, and solid products must be reported in short tons. When reporting the production quantity of a primary refinery product, sales data may be used, but must be adjusted by the change in inventory during the data year to accurately reflect the amount of material actually produced during the data year. Sales data may be used to report quantities of primary refinery product and blending component produced elsewhere and brought on-site. For each primary refinery product and blending component that was produced elsewhere and brought on-site, the operator must designate if any was used for a purpose other than blending into a primary refinery product, such as being used as a fuel or as a process unit feedstock. The quantity of primary refinery product or blending component that is produced elsewhere and brought on-site may not be included in the reported on-site production quantity of primary refinery product, unless the reporter has identified that the quantity of primary refinery product or blending component that is produced elsewhere and brought on-site is used for a purpose other than blending into a primary refinery product.~~

(2) *Calcined coke*. The operator must report the ~~production quantity for the data year~~annual mass (metric tons) of calcined coke produced on-site during the data year~~(metric tons)~~. The operator must specify whether the calciner is integrated with the petroleum refinery operation.

~~(3) *Finished Products.* The operator must report production quantities for the data year of each petroleum product listed in Table C-1 of 40 CFR Part 98 each additional transportation fuel product listed in Table MM-1 of 40 CFR Part 98 (standard cubic feet for gaseous products, barrels for liquid products, short tons for solid products). These products will not be subject to review for material misstatement under the requirements of section 95131(b)(12). Primary products will be evaluated for conformance and assessment of material misstatement through 2014 data year verifications. Beginning with 2015 data reported in 2016, primary refinery products will be evaluated for conformance only and will not be evaluated for material misstatement.~~

~~(4) *Energy Intensity Index*. For refineries that participate in the Solomon Energy Reviews, the operator must report its most current Solomon EII values for the applicable data year. Each refinery operator must demonstrate to the verifier that the Solomon EII value reported is the correct value by providing documentation from Solomon & Associates.~~

(~~5~~3) *Complexity Weighted Barrel (CWB) Calculation*.

(A) *Reporting CWB Throughputs*. The operator must report the annual throughput for each CWB unit in Table ~~1~~2-2 of this section using the ~~appropriate~~ units ~~listed~~specified in ~~column 3 of~~ Table ~~1~~2-2 of this section. Liquid throughput volumes must be reported at standard

conditions of 60 °F and atmospheric pressure. The volume correction from nonstandard conditions must be calculated by the methods described in the American Petroleum Institute (API) Manual of Petroleum Measurement Standards Chapter 11 – Physical Properties Data (May 2004), the American Society of Testing and Materials Standard Guide for Use of the Petroleum Measurement Tables, ASTM D1250-08 (Reapproved 2013)) or the American Petroleum Institute Technical Data Book (-- Petroleum Refining (Sixth Edition, April 1997), all three of which are hereby incorporated by reference, or by comparable means that can be demonstrated to a verifier to be consistent with these standard methods. Reported throughputs based on feed must include only fresh feed and exclude recycled streams, except for reported throughputs for the CWB units "C4 Isomer Production" and "C5/C6 Isomer Production – including ISOSIV," which may include recycled material. The coke-on-catalyst volume percent also must be reported for each catalytic cracking unit. Beginning with data year 2013, CWB throughputs are ~~is~~ considered covered product data and subject to the accuracy requirements of section 95103(k)~~material misstatement~~.

(B) *Total facility CWB.* The total facility CWB production must be calculated according to the following formula.

$$CWB_{Total} = CWB_{Process} + CWB_{Off-Sites} + CWB_{Non-Crude\ Sensible\ Heat}$$

Where CWB_{Total} is the total complexity weighted barrels for a petroleum refinery, and $CWB_{Process}$, $CWB_{Off\text{-}Sites}$, and $CWB_{Non\text{-}Crude\ Sensible\ Heat}$ must be calculated as follows:

$CWB_{Process} = \sum(CWB_{Factor} \times Throughput)$

$CWB_{Off\text{-}Sites}$ = (0.327) x (*Total Refinery Input* in thousands of barrels per year) + (0.0085) x ($CWB_{Process}$)

$CWB_{Non\text{-}Crude\ Sensible\ Heat}$ = (0.44) x (*Non-Crude Input* in thousands of barrels per year)

In these equations, CWB_{Factor} is the CWB Factor for a CWB unit from Table ~~1~~2-2 of this section. *Throughput* is the process throughput for each CWB unit identified in Table ~~1~~2-2 of this section reported pursuant to section 95113(l)(3)(A). *Total Refinery Input* and *Non-Crude Input* are the annual volumes of raw materials as defined in section 95102(c)~~.~~ ~~Total Refinery Input and Non-Crude Input must each be~~ and must be reported in units of thousands of barrels per year ~~and must exclude hydrogen, natural gas, and any input to a hydrogen production plant~~. Total facility CWB is covered product data and subject to material misstatement evaluation during verification.

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(E) *Measurement Accuracy.* All throughputs must follow the accuracy requirements outlined in sections 95103(k)(1)-(10). No single refinery activity may be reported under more than one CWB function. ~~For 2014 data reported in 2015, postponement requests for a CWB meter or device pursuant to sections 95103(k)(8)-(9) must be received by the 2014 reporting deadline in section 95103(e) instead of the timeframe in section 95103(k)(9)(A)~~.

(m) *Reporting to Support the Cost of Implementation Fee Regulation*. The operator must report the ~~quantity~~volume of:

(1) CARBOB ~~produced and imported~~, as defined by "California reformulated gasoline blendstock for oxygenate blending" in section 95202 of the AB 32 Cost of Implementation Fee Regulation, produced and imported for use in California and the designated volume of oxygenate associated with the reported CARBOB;

(2) Finished California gasoline ~~produced and imported~~, as defined by "California gasoline" in section 95202 of the AB 32 Cost of Implementation Fee Regulation, produced and imported for use in California; and

(3) California Diesel ~~produced and imported~~, as defined by "California diesel fuel" in section 95202 of the AB 32 Cost of Implementation Fee Regulation, produced and imported for use in California and the volume of biodiesel and/or renewable diesel associated with the reported fuels.

Table 2-1. Refinery Products

Product	EIA Product Code
Petroleum Coke, Marketable	021
Still Gas	045
NGPL and LRG – Ethane/Ethylene, TOTAL (includes EIA Product Codes 631 and 641)	108
Finished Aviation Gasoline	111
Aviation Gasoline Blending Components	112
Motor Gasoline Blending Components – Gasoline Treated as Blendstock	117
Motor Gasoline Blending Components – Reformulated Blendstock for Oxygenate Blending (RBOB)	118
Finished Motor Gasoline – Reformulated, Blended with Fuel Ethanol	125
Finished Motor Gasoline – Reformulated, Other	127
Finished Motor Gasoline – Conventional, Other	130
Motor Gasoline Blending Components – All Other Motor Gasoline Blending Components	138

Product	EIA Product Code
Motor Gasoline Blending Components – Conventional Blendstock for Oxygenate Blending (CBOB)	139
Renewable Fuels – Fuel Ethanol	141
Finished Motor Gasoline – Conventional, Blended with Fuel Ethanol (Greater than Ed55)	149
Finished Motor Gasoline – Conventional, Blended with Fuel Ethanol (Ed55 and Lower)	166
Renewable Fuels – Biomass-Based Diesel Fuel	203
Renewable Fuels – Other Renewable Diesel Fuel	205
Renewable Fuels – Other Renewable Fuels	207
Kerosene-Type Jet Fuel, TOTAL (includes EIA Product Codes 217 and 218)	213
NGPL and LRG* – Pentanes Plus	220
NGPL and LRG* – Butane/Butylene, TOTAL (includes EIA Product Codes 249, 633, and 643)	244
NGPL and LRG* – Isobutane/Isobutylene, TOTAL (includes EIA Product Codes 247, 634 and 644)	245
NGPL and LRG* – Propane/Propylene, TOTAL (includes EIA Product Codes 632 and 642)	246
Kerosene	311
Distillate Fuel Oil – Ultra Low Sulfur (sulfur content < 15 ppm)	465
Distillate Fuel Oil – Low Sulfur (15 ppm ≤ sulfur content ≤ 500 ppm)	466
Distillate Fuel Oil – High Sulfur (sulfur content > 500 ppm)	467
Residual Fuel Oil, TOTAL (includes EIA Product Codes 508, 509, and 510)	511
Unfinished Oils – Naphthas and Lighter	820
Petrochemical Feedstocks – Naphtha, end-point < 401 °F	822
Petrochemical Feedstocks – Other Oils, end-point ≥ 401 °F	824
Unfinished Oils – Kerosene and Light Gas Oils	830
Unfinished Oils – Heavy Gas Oils	840
Unfinished Oils – Residuum	850
Lubricants, TOTAL (includes EIA Product Codes 852 and 853)	854
Asphalt and Road Oil	931

* NGPL and LRG = Natural Gas Plant Liquids and Liquefied Refinery Gases

Table 2-2~~1~~. CWB Units~~Functions~~ and Factors

CWB ~~u~~Unit	Throughput Basis	Unit of Measure	CWB Factor	EIA Number	Process Subtypes
Atmospheric Crude Distillation	Feed	thousands of barrels/year	1	401	Mild Crude Unit, Standard Crude Unit

CWB ~~u~~Unit	Throughput Basis	Unit of Measure	CWB Factor	EIA Number	Process Subtypes
Vacuum Distillation	Feed	thousands of barrels/year	0.91	402	Mild Vacuum Fractionation, Standard Vacuum Column, Vacuum Fractionating Column, Vacuum Flasher Column,
					Heavy Feed Vacuum Unit
Visbreaker	Feed	thousands of barrels/year	1.6	403	Processing Atmospheric Residual (w/o a Soaker Drum), Processing Atmospheric Residual (with a Soaker Drum), Processing Vacuum Bottoms Feed (w/o a Soaker Drum), Vacuum Bottoms Feed (with a Soaker Drum)
Delayed Coker	Feed	thousands of barrels/year	2.55	405	Delayed Coking
Fluid Coker	Feed	thousands of barrels/year	10.3	404	Fluid Coking
Flexicoker	Feed	thousands of barrels/year	23.6		Flexicoking
Fluid Catalytic Cracking	Feed	thousands of barrels/year	1.150,	407	Fluid Catalytic Cracking (Feed ConCarbon <2.25 wt%)
			Coke-on-Catalyst Factor = 1.041		
Mild Residual FCC	Feed	thousands of barrels/year	0.6593,		Mild Residualuum Catalytic Cracking (Feed ConCarbon 2.25-3.5 wt %)
			Coke-on-Catalyst Factor = 1.1075		
Other FCC	Feed	thousands of barrels/year	4.65		Houdry Catalytic Cracking
Other FCC	Feed				Thermofor Catalytic Cracking
Thermal Cracking	Feed	thousands of barrels/year	2.95	406	Thermal Cracking
Naphtha/Distillate Hydrocracker	Feed	thousands of barrels/year	3.15	439 / 440	Mild Hydrocracking (Normally less than 1,500 psig and consumes between 100 and 1,000 SCF H2/~~b~~)
					Severe Hydrocracking
					Naphtha Hydrocracking
Residual Hydrocracker (H-Oil; LC-Fining and Hycon)	Feed	thousands of barrels/year	4.4	441	H-Oil
					LC-Fining™ and Hycon
Naphtha Hydrotreater	Feed	thousands of barrels/year	0.91	420/425/426	Benzene Saturation
					Desulfurization of C4–C6 Feeds
					Conventional Naphtha Hydrotreating
					Diolefin to Olefin Saturation of Gasoline
					FCC ~~g~~Gasoline ~~h~~Hydrotreating with ~~m~~Minimum ~~o~~Octane ~~l~~Loss
					Olefinic Alkylation of Thio Sulfur

CWB ~~u~~Unit	Throughput Basis	Unit of Measure	CWB Factor	EIA Number	Process Subtypes
					Selective Hydrotreating of Pyrolysis Gasoline/Naphtha Combined with Desulfurization
					Pyrolysis Gasoline/Naphtha Desulfurization
					Selective Hydrotreating of Pyrolysis Gasoline/Naphtha Combined with Desulfurization
					Reactor for Selective Hydrotreating
					S-Zorb™ Process
Kerosene Hydrotreater	Feed	thousands of barrels/year	0.75	421	Aromatic Saturation of Kerosene
					Conventional Hydrotreating of Kerosene/Jet Fuel
					High Severity Hydrotreating Kerosene/Jet Fuel
Diesel/Selective Hydrotreater	Feed	thousands of barrels/year	0.9	422 / 423	Aromatic Saturation of Distillates
					Conventional Distillate Hydrotreating
					High Severity Distillate Hydrotreating
					Ultra-High Severity Hydrotreating
					Middle Distillate Dewaxing
					S-Zorb™ Process
					Diolefin to Olefin Saturation of Alkylation Feed
					Selective Hydrotreating of C3-C5 Streams for Alkylation
Residual Hydrotreater	Feed	thousands of barrels/year	1.8	424	Desulfurization of Atmospheric Residual
					Desulfurization of Vacuum Residual
VGO Hydrotreater	Feed	thousands of barrels/year	1	413	Hydrodesulfurization/denitrification
					Hydrodesulfurization
Reformer - including AROMAX	Feed	thousands of barrels/year	3.5	430 / 431	Continuous Regeneration, Cyclic, Semi-Regenerative, and AROMAX
Solvent Deasphalter	Feed	thousands of barrels/year	2.8	432	Conventional Solvent, Supercritical Solvent
Alkylation/Poly/Dimersol	C5+ Alkylate	thousands of barrels/year	5	415	Alkylation with Hydrofluoric Acid
					Alkylation with Sulfuric Acid
	C5+ Product				Polymerization C3 Olefin Feed
					Polymerization C3/C4 Feed
					Dimersol
C4 Isomer Production	Feed	thousands of barrels/year	1.25	615/644	C4 Isomerization
C5/C6 Isomer Production - including ISOSIV	Feed	thousands of barrels/year	1.8	438	C5/C6 Isomerization
					ISOSIV

CWB ~~u~~Unit	Throughput Basis	Unit of Measure	CWB Factor	EIA Number	Process Subtypes
POX Syngas for Fuel	Product	millions of standard cubic feet/year~~1~~[1]	2.75		POX Syngas for Fuel
POX Syngas for Fuel					Air Separation Unit
Sulfur Recovery	Product Sulfur	thousands of long tons/year	140	435	~~s~~Sulfur Recovery Unit
					Tail Gas Recovery Unit
	Sulfur Sprung				H2S Springer Unit
Aromatics Production (All)	Feed	thousands of barrels/year	3.3	437	Aromatics Solvent Extraction: Extraction Distillation
					Aromatics Solvent Extraction: Liquid/Liquid Extraction
					Aromatics Solvent Extraction: Liq/Liq w/ Extr. Distillation
					Benzene Column
					Toluene Column
					Xylene Rerun Column
					Heavy Aromatics Column
Hydrodealkylation	Feed	thousands of barrels/year	2.5		Hydrodealkylation
Toluene Disproportionation/ Transalkylation	Feed	thousands of barrels/year	1.9		Toluene Disproportionation / Transalkylation
Cyclohexane production	Cyclohexane Product	thousands of barrels/year	2.8		Cyclohexane
Xylene Isomerization	Feed	thousands of barrels/year	1.9		Xylene Isomerization
Paraxylene Production	Paraxylene Product	thousands of barrels/year	6.5		Paraxylene Adsorption
		thousands of barrels/year			Paraxylene Crystallization
	Feed	thousands of barrels/year			Xylene Splitter
		thousands of barrels/year			Orthoxylene Rerun Column
Ethylbenzene ~~p~~Production	Ethylbenzene Product	thousands of barrels/year	1.6		Ethylbenzene Manufacture
	Feed	thousands of barrels/year			Ethylbenzene Distillation
Cumene ~~p~~Production	Cumene Product	thousands of barrels/year	5		Cumene
Lubricant ~~s~~Solvent ~~e~~Extraction	Feed	thousands of barrels/year	2.2	815/854	Extraction: Solvent is Duo-Sol, Furfural, NMP, Phenol, or SO2
Lubricant ~~s~~olvent ~~d~~Dewaxing	Feed	thousands of barrels/year	4.55		Dewaxing: Solvent is Chlorocarbon, MEK/Toluene, MEK/MIBK, or Propane
Lubricant Catalytic Dewaxing	Feed	thousands of barrels/year	1.6		Catalytic Wax Isomerization and Dewaxing, Selective Wax Cracking

CWB ~~u~~Unit	Throughput Basis	Unit of Measure	CWB Factor	EIA Number	Process Subtypes
Lubricant Hydrocracking	Feed	thousands of barrels/year	2.5		Lube Hydrocracker with Multi-fraction Distillation, Lube Hydrocracker with Vacuum Stripper
Lubricant Wax Deoiling	Product	thousands of barrels/year	11.8		Deoiling: Solvent is Chlorocarbon, MEK/Toluene, MEK/MIBK, or Propane
Lubricant and Wax Hydrofining	Feed	thousands of barrels/year	1.15		Lube Hydrofinishing with Vacuum Stripper
					Lube Hydrotreating with Multi-Fraction Distillation, Lube Hydrotreating Vacuum Stripper
					Wax Hydrofinishing with Vacuum Stripper, Wax Hydrotreating with Multi-Fraction Distillation, Wax Hydrotreating with Vacuum Stripper
Asphalt Production	Total Asphalt Production	thousands of barrels/year	2.7	931	Asphalt Production
Oxygenates	Product	thousands of barrels/year	4.9		Distillation Units
					Extraction Units
					ETBE
					TAME
Methanol Synthesis	Product	thousands of barrels/year	-36		Methanol Synthesis
Desalination	Product	millions of gallons/year	32.7		Desalination
	(Water)				
Special Fractionation	Feed	thousands of barrels/year	0.8		All Special Fractionation ex Solvents, Propylene, and Aromatics
Propane/Propylene Splitter (Propylene Production)	Feed	thousands of barrels/year	2.1		Chemical Grade
					Polymer ~~g~~Grade
Fuel Gas Sales Treating & Compression (hp)	Horsepower	hp	0.92		Fuel Gas Sales Treating & Compression
~~Sulfuric Acid Regeneration~~	~~Product~~	~~thousands of short tons/year~~	~~37.8~~		~~Sulfuric Acid Regeneration~~
Ammonia Recovery Unit	Product	thousands of short tons/year	453		Ammonia Recovery Unit: PHOSAM
Cryogenic LPG Recovery	Feed	millions of standard cubic feet/year	0.25		Cryogenic LPG Recovery
Flare Gas Recovery	Feed	millions of standard cubic feet/year	0.13		Flare Gas Recovery

CWB ~~u~~Unit	Throughput Basis	Unit of Measure	CWB Factor	EIA Number	Process Subtypes
Flue Gas Desulfurizing	Feed	millions of standard cubic feet/year	0.02		Flue Gas Desulfurizing
CO2 Liquefaction	CO2 product	thousands of short tons/year	-160	.	CO2 ~~l~~Liquefaction
[1] Standard cubic feet are dry @ 60° F and 14.696 psia or 15 °C and 1 atmosphere.					

NOTE: Authority cited: Sections 38510, 38530, 39600, 39601, 39607, 39607.4 and 41511, Health and Safety Code. Reference: Sections 38530, 39600 and 41511, Health and Safety Code.

§ 95114. Hydrogen Production.

The operator of a facility who is required to report under section 95101 of this article, and who is not eligible for abbreviated reporting under section 95103(a), must comply with Subpart P of 40 CFR Part 98 (40 CFR §§98.160 to 98.168) in reporting emissions and other data from molecular hydrogen production to ARB, except as otherwise provided in this section. GHG emissions and output associated with hydrogen production must be reported separately from other emissions and output associated with a petroleum refinery.

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(d) *CO_2 ~~Process~~ Emissions from Hydrogen Production Units.* When calculating CO_2 emissions from hydrogen production units under the fuel and feedstock material balance approach specified at 40 CFR §98.163(b), the operator must apply the weighted ~~-~~average carbon content values ~~obtained~~ (the term CC_n in Equations P-1 through P-3) and, for gaseous fuels and feedstocks, the weighted average molecular weight values obtained according to the frequencies specified in section 95114(e)(2).

~~(e) *Sampling Frequencies.* When monitoring GHG emissions as specified at 40 CFR §98.163, and reporting data as specified at §98.166, the operator must report the following:~~

~~(1) Carbon, atomic hydrogen, and molecular hydrogen content for each feedstock using engineering estimates based on measured data as specified below:~~

~~(A) For gaseous feedstock the operator must use weighted average carbon content, atomic hydrogen content (excluding hydrogen atoms contained in steam), and molecular hydrogen content from the results of one or more analyses for month n for natural gas or a standardized fuel or feedstock specified in Table 1 of section 95115, or from monthly analysis for other gaseous fuels and feedstocks such as refinery fuel gas;~~

~~(B) For liquid feedstock the operator must use weighted average carbon~~

~~content and atomic hydrogen content from the results of one or more analyses for month n for a standardized fuel or feedstock specified in Table 1 of section 95115, or from monthly sampling for other liquid fuels or feedstocks;~~

~~(C) For solid feedstock the operator must use weighted average carbon content and atomic hydrogen content from the results of monthly sampling.~~

~~(2) When monitoring GHG emissions without a CEMS as specified in 40 CFR §98.163(b), the operator must determine the carbon content and molecular weight values for fuels and feedstocks according to the frequencies specified below:~~

~~(A) When reporting CO_2 emissions for gaseous fuel and feedstock the operator must use a weighted average carbon content from the results of one or more analyses for month n for natural gas or a standardized fuel or feedstock specified in Table 1 of section 95115, or from daily sampling for month n for other gaseous fuels or feedstocks such as refinery fuel gas.~~

~~(B) When reporting CO_2 emissions for liquid fuel and feedstock, the operator must use a weighted average carbon content from the results of one or more analyses for month n for a standardized fuel or feedstock specified in Table 1 of section 95115, or from daily sampling for month n for other liquid fuels or feedstocks. Daily liquid samples may be combined to generate a monthly composite sample for carbon analysis.~~

~~(C) When reporting CO_2 emissions for solid fuel and feedstock, the operator must use the weighted average carbon content from the results of monthly sampling for month n for a standardized fuel or feedstock specified in Table 1 of section 95115, or from daily sampling for month n for other solid fuels and feedstock. Daily solid samples may be combined to generate a monthly composite sample for carbon analysis.~~

(e) *Fuel and Feedstock Contents*. For each hydrogen production unit, operators must report the following information:

(1) When monitoring GHG emissions with a CEMS as specified in 40 CFR §98.163(a), the operator must report the monthly carbon content, atomic hydrogen content (excluding hydrogen atoms contained in steam), and molecular hydrogen content for each feedstock. The reported values must be weighted averages from the results of one or more analyses per month.

(2) When monitoring GHG emissions without a CEMS as specified in 40 CFR §98.163(b), the operator must report the monthly weighted average atomic hydrogen content (excluding hydrogen atoms contained in steam) and weighted average molecular hydrogen content for each feedstock from the results of one or more analyses per month. The operator must also report the monthly carbon content for each fuel and feedstock, and the molecular weight for each gaseous fuel and feedstock as follows:

(A) The reported values must be weighted averages from the results of one or more analyses per month for natural gas or standardized materials specified in Table 2-3 of section 95115.

(B) The reported values must be weighted averages from the results of daily sampling for each month for nonstandard materials not specified in Table 2-3 of section 95115, such as refinery fuel gas. For liquid and solid fuels and feedstocks, daily samples may be combined to generate a monthly composite sample for carbon content analysis.

***

(i) *Transferred CO_2.* The operator must calculate and report the mass of all CO_2 captured, transferred off-site, and reported by the hydrogen production facility as a supplier of CO_2 using reporting provisions found in section 95123. Refineries and hydrogen production facilities must subtract this reported mass of CO_2 that is captured and sold or transferred off-site from their facility emissions report to avoid double counting.

(j) *Additional Product Data.* Operators must report the total annual mass of on-purpose and by-product gaseous hydrogen ~~gas~~ produced (metric tons) and total annual mass of liquid hydrogen sold (metric tons). Operators must report all gaseous and liquid hydrogen sold or otherwise transferred (metric tons) to petroleum refineries and hydrogen vehicle fueling stations and include the name of the purchaser (or receiver) and the quantity sold or transferred to each facility. ~~For hydrogen gas produced, annual masses of on-purpose hydrogen gas and by-product hydrogen gas produced must be reported (metric tons).~~ Operators must also specify if the hydrogen plant is an integrated refinery operation. Hydrogen plants integrated in refinery operations must also report any sales or transfers of hydrogen as specified in this subsection~~. Operators must report all hydrogen sold or otherwise transferred to another facility and include the purchaser (or receiver) and quantity sold or transferred to each facility.~~

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NOTE: Authority cited: Sections 38510, 38530, 39600, 39601, 39607, 39607.4 and 41511, Health and Safety Code. Reference: Sections 38530, 39600 and 41511, Health and Safety Code.

§ 95115. Stationary Fuel Combustion Sources.

The operator of a facility who is required to report under section 95101 of this article, and who is not eligible for abbreviated reporting under section 95103(a), must comply with Subpart C of 40 CFR Part 98 (§§98.30 to 98.38) in reporting stationary fuel combustion emissions and related data to ARB, except as otherwise provided in this section.

***

(c) *Choice of Tier for Calculating CO_2 Emissions.* Notwithstanding the provisions of 40 CFR §98.33(b), the operator's selection of a method for calculation of CO_2

emissions from combustion sources is subject to the following limitations by fuel type and unit size. The operator is permitted to select a higher tier than that required for the fuel type or unit size as specified below.

(1) The operator may select the Tier 1 or Tier 2 calculation method specified in 40 CFR §98.33(a) for any fuel listed in Table 2-3~~1~~ of this section that is combusted in a unit with a maximum rated heat input capacity of 250 MMBtu/hr or less, subject to the limitation at 40 CFR §98.33(b)(1)(iv), or for biomass-derived fuels listed in Table C-1 of 40 CFR Part 98 when these emissions are not subject to a compliance obligation under the cap-and-trade regulation, except as limited by section 95115(e).

(2) The operator may select the Tier 2 calculation method specified in 40 CFR §98.33(a)(2) for natural gas when it is pipeline quality as defined in section 95102 of this article, and for distillate fuels listed in Table 2-3~~1~~ of this section. Tier 1 may be selected when the fuel supplier is providing pipeline quality natural gas measured in units of therms or million Btu. Equation C-2c of 40 CFR §98.33(a) may be selected for the units specified in paragraph (a) of this section.

***

(h) *Aggregation of Units.* Facility operators may elect to aggregate units according to 40 CFR §98.36(c), except as otherwise provided in this paragraph. Facility operators that are reporting under more than one source category in paragraphs 95101(a)(1)(A)-(B) and that elect to follow 40 CFR §98.36(c)(1), (c)(3) or (c)(4), must not aggregate units that belong to different source categories. For the purpose of unit aggregation, units subject to 40 CFR 98 Subpart C that are associated with one source category must not be grouped with other Subpart C units associated with another source category, except when 40 CFR §98.36(c)(2) applies. Aggregation of stationary fuel combustion units is limited to units of the same type, where the unit type categories are: boiler, reciprocating internal combustion engine, turbine, process heater, and other (none of the above). When reporting under the provisions of 40 CFR §98.36(c)(1) for an aggregation of units or (c)(3) for common pipe configurations, the requirements can be met by separately reporting the fuel use by fuel type as a percentage of the aggregated fuel consumption attributed to each individual unit or each group of units of the same type. Units subject to section 95112 must use the criteria for aggregation in section 95112(b). Facility operators that choose to aggregate units according to the common stack provision in 40 CFR §98.36(c)(2) using CEMS may report emissions according to 40 CFR §98.36(c)(2), but they must separately report the fuel use by fuel type as a percentage of the aggregated fuel consumption attributed to each individual unit or each group of units of the same type, such that the grouping of units still meets the limitations for unit aggregation specified elsewhere in this paragraph.

***

(n) *Additional Product Data.* Operators of the following types of facilities must also report the production quantities indicated below.

***

(2) *[Staff is reviewing the benchmark for this product and may propose a revision to this definition as a result. Any proposed revision would be circulated for a 15-day comment period.]* The operator of a soda ash manufacturing facility must report the quantity of soda ash, biocarb, borax, V-Bor, DECA, PYROBOR, boric acid, and sulfate produced in the data year (short tons).

***

(10) The operator of a tomato processing facility must report the quantity of aseptic tomato paste (short ton of 31~~%~~ percent TSS), aseptic whole and diced tomato (short ton), non-aseptic tomato paste and tomato puree (short ton of 24~~%~~ percent TSS), non-aseptic whole and diced tomato (short ton), and non-aseptic tomato juice (short ton) produced in the data year.

***

(14) *[Staff is reviewing the benchmark for this product and may propose a revision to this definition as a result. Any proposed revision would be circulated for a 15-day comment period.]* The operator of a facility mining or processing freshwater diatomite filter aids must report the production of freshwater diatomite filter aids in the data year (short tons).

(15) *[Staff is reviewing the benchmark for this product and may propose a revision to this definition as a result. Any proposed revision would be circulated for a 15-day comment period.]* The operator of a performing forging facility must report the production of seamless rolled ring during the data year (short tons).

(16) The operator of a dairy product facility must report the production of ~~milk, buttermilk, skim milk, cream,~~ fluid milk product, butter, condensed milk, buttermilk powder, intermediate dairy ingredients, ~~dairy product solids for animal feed,~~ lactose, whey protein concentrate (WPC), deproteinized whey, cheese by cheese type, ~~nonfat dry milk and skimmed~~ milk powder by the type of heat treatment (low heat, medium heat, or high heat), anhydrous milkfat, and milk protein concentrate ~~, and ultrafiltered milk products~~ by product type during the data year (short tons). Butter re-melted and re-introduced to the manufacturing process may be reported as fluid milk production. Buttermilk powder and nonfat dry milk and skimmed milk powder that is re-constituted and re-introduced to the manufacturing process may be reported as production. The operator must report the production of total WPC and -WPC with high protein concentration using diafiltration process during the data year (short tons). The operator must also report the amount of imported protein. *[Staff is reviewing the benchmark for this product and may propose a revision to this definition as a result. Any proposed revision would be circulated for a 15-day comment period.]*

(17) ~~The operator of an almond or pistachio processing facility must report the sum of pistachios hulled and dried and/or flavored and packaged (short tons) where the hulling and drying, flavoring and packaging is a continuous process, and~~

~~the sum of almonds pasteurized, blanched and/or flavored and dried (short tons) where flavoring and drying is a continuous process.~~

~~(18)~~ The operator of a wet corn milling facility must report the production of corn entering wet milling process during the data year (short tons).

(18~~9~~) The operator of a winery must report the production of distilled spirits (proof gallons), dry color concentrate (short tons), grape juice concentrate (gallons), grape seed extract (short tons), and liquid color concentrate (gallons) during the data year.

(19) The operator of a sulfuric acid regeneration facility must report the production of sulfuric acid produced (short tons).

Table 2-3~~1~~: Petroleum Fuels For Which Tier 1 or Tier 2 Calculation Methodologies May Be Used Under Section 95115(c)(1)

Fuel Type	*Default High Heat Value*	*Default CO_2 Emission Factor*
	MMBtu/gallon	*kg CO_2 /MMBtu*
Distillate Fuel Oil No. 1	0.139	73.25
Distillate Fuel Oil No. 2	0.138	73.96
Distillate Fuel Oil No. 4	0.146	75.04
Kerosene	0.135	75.20
Liquefied petroleum gases (LPG)[1]	0.092	62.98
Propane	0.091	61.46
Propylene	0.091	65.95
Ethane	0.096	62.64
Ethylene	0.100	67.43
Isobutane	0.097	64.91
Isobutylene	0.103	67.74
Butane	0.101	65.15
Butylene	0.103	67.73
Natural Gasoline	0.110	66.83
Motor Gasoline (finished)	0.125	70.22
Aviation Gasoline	0.120	69.25
Kerosene-Type Jet Fuel	0.135	72.22

[1]Commercially sold as "propane" including grades such as HD5.

NOTE: Authority cited: Sections 38510, 38530, 39600, 39601, 39607, 39607.4 and 41511, Health and Safety Code. Reference: Sections 38530, 39600 and 41511, Health and Safety Code.

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§ 95117. Lime Manufacturing.

The operator of a facility who is required to report under section 95101 of this article, and who is not eligible for abbreviated reporting under section 95103(a), must comply with Subpart S of 40 CFR Part 98 (§§98.190 to 98.198) in reporting stationary combustion and process emissions and related data from lime manufacturing to ARB, except as otherwise provided in this section.

***

(d) *Additional Product Data.* The operator of a lime manufacturing facility must report the annual quantity of ~~lime and~~ dolime produced (short tons).

***

NOTE: Authority cited: Sections 38510, 38530, 39600, 39601, 39607, 39607.4 and 41511, Health and Safety Code. Reference: Sections 38530, 39600 and 41511, Health and Safety Code.

§ 95118. Nitric Acid Production.

The operator of a facility who is required to report under section 95101 of this article, and who is not eligible for abbreviated reporting under section 95103(a), must comply with Subpart V of 40 CFR Part 98 (§§98.220 to 98.228) in reporting stationary combustion and process emissions and related data from nitric acid production to ARB, except as otherwise provided in this section.

***

(d) Additional Product Data. ~~Staff is considering potential changes to this benchmark and associated reporting.~~ The operator of a nitric acid manufacturing facility must report the annual production of nitric acid (HNO_3) and calcium ammonium nitrate solution (short tons). Reporting the annual production of calcium ammonium nitrate solution is no longer required beginning in 2019 for reporting of 2018 data.

(e) *Site-Specific Emission Factor and Production Data.* The operator of a nitric acid manufacturing facility that determines N_2O process emissions per the requirements 40 CFR §98.223(a)(1), must conduct performance tests for each nitric acid train as specified in 40 CFR §98.223(b)(1) at least twice per calendar year, with at least four months between testing events. The results of each testing event for each nitric acid train shall be arithmetically averaged (non-weighted) to compute an annual average site-specific N_2O emission factor for each nitric acid train, and applied to equation V-1 of 40 CFR §98.223(c) to compute annual N_2O process emissions.

NOTE: Authority cited: Sections 38510, 38530, 39600, 39601, 39607, 39607.4 and 41511, Health and Safety Code. Reference: Sections 38530, 39600 and 41511, Health and Safety Code.

§ 95119. Pulp and Paper Manufacturing.

The operator of a facility who is required to report under section 95101 of this article, and who is not eligible for abbreviated reporting under section 95103(a), must comply with Subpart AA of 40 CFR Part 98 (40 CFR §§98.270 to 98.278) in reporting stationary combustion and process emissions and related data from pulp and paper manufacturing to ARB, except as otherwise provided in this section.

***

(d) *Additional Product Data.* In addition to the information required by 40 CFR §98.276, the operator must report the annual production (air dried short tons) of recycled boxboard, recycled linerboard, and recycled medium~~, and the annual saleable production of tissue (air dried short tons) by type (bathroom tissue, facial tissue, delicate task wipers, and/or paper towels). The operator producing tissue products must also report:~~

~~(1) A description of the process used to produce tissue, such as through use of an air dryer.~~

~~(2) Water absorption capacity of each bathroom tissue product with a distinct water absorption capacity manufactured in the data year, measured at least once during the data year using the methodology specified by ISO 12625-8:2010, except the humidity and temperature conditions, which shall be 50% relative humidity ±2%, and 23 degrees C ±1 degree C, respectively.~~

~~(3) For bathroom tissue, material misstatement shall be assessed using the following equation:~~

~~Material misstatement for bathroom tissue =~~

$$\sum_{i=1}^{n} O_i WAC_i$$

~~Where:~~

~~Oi = annual product output in air dried saleable ton for each tissue product (i) with a distinct water absorption capacity; and~~
~~WACi = water absorption capacity for each tissue product (i) with a distinct water absorption capacity.~~

~~All other pulp and paper manufacturing products shall be assessed on the reported air dried short tons.~~

NOTE: Authority cited: Sections 38510, 38530, 39600, 39601, 39607, 39607.4 and 41511, Health and Safety Code. Reference: Sections 38530, 39600 and 41511, Health and Safety Code.

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§ 95121. Suppliers of Transportation Fuels.

Any position holder, refiner, or enterer, or biofuel production facility who is required to report under section 95101 of this article must comply with Subpart MM of 40 CFR Part 98 (§§98.390 to 98.398) in reporting emissions and related data to ARB, except as otherwise provided in this section.

(a) *GHGs to Report.*

(1) In addition to the CO_2 emissions specified under 40 CFR §98.392, all refiners that produce liquefied petroleum gas must report the CO_2, CH_4, N_2O and CO_2e emissions that would result from the complete combustion or oxidation of the annual quantity of liquefied petroleum gas sold or delivered, except for fuel for which a final destination outside California can be demonstrated.

(2) Refiners, position holders of fossil fuels and biomass-derived fuels that supply fuel at California terminal racks, and enterers that import fossil transportation fuels for distribution outside the bulk transfer/terminal system~~, and biofuel production facilities that produce and deliver biomass-derived fuels outside the bulk transfer/terminal system in California~~ must report the CO_2, CO_2 from biomass-derived fuels, CH_4, N_2O, and CO_2e emissions that would result from the complete combustion or oxidation of each Blendstock, Distillate Fuel Oil or biomass-derived fuel (Biomass-Based Fuel and Biomass) listed in Table 2-4 of this section. However, emissions reporting is not required for fuel in which a final destination outside California, ~~or~~ where a use in exclusively aviation or marine applications can be demonstrated, or for fossil transportation fuels that can be demonstrated to have been previously delivered by a position holder or refiner out of an upstream California terminal or refinery rack prior to delivery out of a second terminal rack. The volume of all Blendstocks, Distillate Fuel Oils, and biomass-derived fuels that are excluded from emissions reporting based on the criteria in this paragraph must be reported pursuant to the requirements in section 95121(d)(9). No fuel shall be reported as finished fuel. Fuels must be reported as the individual Blendstock, Distillate Fuel Oil or biomass-derived fuel listed in Table 2-4 of this section. For purposes of this article, CARBOB blendstocks are reported as RBOB blendstocks.

(b) *Calculating GHG emissions.*

(1) Refiners, position holders at California terminals, and enterers that import ~~fuel~~ fossil transportation fuels for distribution outside the bulk transfer system~~, and biofuel production facilities who produce and deliver fuel outside the bulk transfer/terminal system in California~~ must use Equation MM-1 as specified in 40 CFR §98.393(a)(1) to estimate the CO_2 emissions that would result from

the complete combustion of the fuel. Emissions must be based on the quantity of fuel removed from the rack (for refiners and position holders), fuel imported ~~or produced and not delivered to~~ for distribution outside the bulk transfer/terminal system (by enterers ~~and biofuel production facilities~~), and fuel sold to unlicensed entities as specified in section 95121(d)(3) (by refiners). For fuels that are blended, emissions must be reported for each individual Blendstock, Distillate Fuel Oil or biomass-derived fuel listed in Table 2-5 of this section separately, and not as motor gasoline (finished), biofuel blends, or other similar finished fuel. Emissions from denatured fuel ethanol must be calculated as 100~~%~~ percent ethanol only. The volume of denaturant is assumed to be zero and is not required to be reported. Emission factors must be taken from column C of 40 CFR 98 Table MM-1 or MM-2 as specified in Calculation Method 1 of 40 CFR §98.393(f)(1), except that the emission factor for renewable diesel is equivalent to the emission factor for Distillate No. 2. If a position holder in diesel or biodiesel fuel does not have sealed or financial transaction meters at the rack, and the position holder is the sole position holder at the terminal, the position holder must calculate emissions based on the delivering entity's invoiced volume of fuel or a meter that meets the requirements of section 95103(k) either at the rack or at a point prior to the fuel going into the terminal storage tanks.

***

(3) Refiners, position holders at California terminals, and enterers identified in this section ~~and biofuel production facilities that deliver fuel outside of the bulk transfer/terminal system~~ must estimate and report CH_4 and N_2O emissions using Equation C–8 and Table C-2 as described in 40 CFR §98.33(c)(1), except that the emission factors in Table 2-4~~1~~ of this section will be used for each fuel required to be reported in section 95121(a)(2) above.

Table 2-4~~1~~. Transportation Fuel CH_4 and N_2O emission factors

Fuel	CH_4 (g/bbl)	N_2O (g/bbl)
Blendstock	20	20
Distillate	2	1
Ethanol	37	27
Biodiesel and Renewable Diesel	2	1

(4) All fuel suppliers in this section must estimate CO_2e emissions using the following equation:

$$CO_2e = \sum_{i=1}^{n} GHG_i \times GWP_i$$

Where:

CO_2e = Carbon dioxide equivalent, metric tons/year.

GHG_i = Mass emissions of CO_2, CH_4, N_2O from fuels combusted or oxidized.

GWP_i = Global warming potential for each greenhouse gas as specified in the "global warming potential" definition of this article~~from Table A-1 of 40 CFR Part 98~~.

n = Number of greenhouse gases emitted.

***

d) *Data Reporting Requirements.* In addition to reporting the information required in 40 CFR §98.3(c), the following entities must also report the information identified below:

(1) California position holders must report the annual quantity in barrels, as reported by the terminal operator, of each Blendstock, Distillate Fuel Oil, or biomass-derived fuel listed in Table 2-5 of this section, that is delivered across the rack in California, except for fuel for which a final destination outside California, where use in exclusively aviation or marine applications can be demonstrated, or for fossil transportation fuels that can be demonstrated to have been previously delivered by a position holder or refiner out of an upstream California terminal or refinery rack prior to delivery out of a second terminal rack. ~~can be demonstrated.~~ Denatured fuel ethanol will be reported with the entire volume as 100~~%~~ percent ethanol only. The volume of denaturant is assumed to be zero and is not required to be reported.

(2) California position holders that are also terminal operators and refiners must report the annual quantity in barrels delivered across the rack of each Blendstock, Distillate Fuel Oil, or biomass-derived fuel listed in Table 2-4 of this section, except for fuel for which a final destination outside California, where a use in exclusively aviation or marine applications can be demonstrated, or for fossil transportation fuels that can be demonstrated to have been previously delivered by a position holder or refiner out of an upstream California terminal or refinery rack prior to delivery out of a second terminal rack. ~~can be demonstrated.~~ Denatured fuel ethanol will be reported with the entire volume as 100~~%~~ percent ethanol only. The volume of denaturant is assumed to be zero and is not required to be reported. If there is only a single position holder at the terminal, and only diesel or biodiesel is being dispensed at the rack then the position holder must report the annual quantity of fuel using a meter meeting the requirements of section 95103(k) or billing invoices from the entity delivering fuel to the terminal.

(3) Refiners that supply fuel within the bulk transfer system to entities not licensed by the California Board of Equalization as a fuel supplier must report the annual quantity in barrels delivered of each Blendstock, Distillate Fuel Oil, or biomass-derived fuel listed in Table 2-5 of this section, except for fuel for which a final destination outside California or where a use in exclusively aviation or marine applications can be demonstrated. Denatured fuel ethanol will be reported with the entire volume as 100~~%~~ percent ethanol only. The volume of denaturant is assumed to be zero and is not required to be reported.

(4) Enterers ~~and biofuel production facilities~~ delivering fossil transportation fuels for distribution outside the bulk transfer/terminal system must report the annual quantity in barrels, as reported on the bill of lading or other shipping documents of each Blendstock, Distillate Fuel Oil, or biomass-derived fuel listed in Table 2-5 of this section that is imported as a blended component of a finished transportation fuel, except for fuel for which a final destination outside California or where a use in exclusively aviation or marine applications can be demonstrated. The d~~D~~enatured fuel ethanol component of a finished transportation fuel ~~will~~ must be reported with the entire denatured ethanol volume as 100~~%~~ percent ethanol only. The volume of denaturant is assumed to be zero and is not required to be reported. Biodiesel or renewable diesel blends containing no more than one percent petroleum diesel by volume ~~will be reported~~are considered to be ~~as~~ 100~~%~~ percent biodiesel or renewable diesel. Biomass-derived fuels are not reported by enterers unless they are a blended component of an imported finished transportation fuel.

***

(9) Fuel suppliers identified in this section must report the total quantity in barrels of each Blendstock, Distillate Fuel Oil, or biomass-derived fuel listed in Table 2-4 of this section that is excluded from emissions reporting due to demonstration of final destination outside California or use in exclusively aviation or marine applications, or demonstration that the fuel was previously delivered by a position holder or refiner out of an upstream California terminal or refinery rack prior to delivery out of a second terminal rack.

***

Table 2-5
Blendstocks, Distillate Fuel Oils, and Biomass-Derived Fuels
Subject to Reporting under section 95121

CBOB—Summer
Regular
Midgrade
Premium
CBOB—Winter
Regular
Midgrade
Premium
RBOB (CARBOB)—Summer
Regular
Midgrade
Premium
RBOB (CARBOB)—Winter
Regular
Midgrade
Premium
Distillate Fuel Oils
Distillate No. 1
Distillate No. 2
Liquefied Petroleum Gas (LPG)
Ethane
Ethylene
Propane
Propylene
Butane
Butylene
Isobutane
Isobutylene
Pentanes Plus
Biomass-Derived Fuel
Ethanol (100%)
Biodiesel (≥99%, methyl ester)
Renewable Diesel (≥99%)
Rendered Animal Fat
Vegetable Oil

NOTE: Authority cited: Sections 38510, 38530, 39600, 39601, 39607, 39607.4 and 41511, Health and Safety Code. Reference: Sections 38530, 39600 and 41511, Health and Safety Code.

§ 95122. Suppliers of Natural Gas, Natural Gas Liquids, Liquefied Petroleum Gas, Compressed Natural Gas, and Liquefied Natural Gas.

Any supplier of natural gas or natural gas liquids who is required to report under section 95101 must comply with Subpart NN of 40 CFR Part 98 (§§98.400 to 98.408) in reporting emissions and related data to ARB, except as otherwise provided in this section.

(a) *GHGs to Report.*

(1) In addition to the CO_2 emissions specified under 40 CFR §98.402(a), natural gas liquid fractionators must report the CO_2, CH_4, N_2O and CO_2e emissions that would result from the complete combustion or oxidation of liquefied petroleum gas sold or delivered to others that was produced on-site, except for products for which a final destination outside California can be demonstrated.

(2) In addition to the CO_2 emissions specified under 40 CFR §98.402(b), local distribution companies ~~including~~ and intrastate pipelines delivering gas to California end-users must report the CO_2, CO_2 from biomass-derived fuels, CH_4, N_2O, and CO_2e emissions from the complete combustion or oxidation of the annual volume of natural gas delivered to all entities on their distribution systems in California.

(3) The ~~California consignee for imported~~ importer of liquefied petroleum gas, compressed natural gas, or liquefied natural gas into California must report the CO_2, CH_4, N_2O and CO_2e emissions that would result from the complete combustion or oxidation of the annual quantity of liquefied petroleum gas, compressed natural gas, and liquefied natural gas imported into the state, except for products for which a final destination outside California can be demonstrated.

(4) Operators of facilities that make liquefied natural gas products or compressed natural gas products by liquefying or compressing natural gas received ~~production facilities that receive natural gas supply~~ from interstate pipelines must report the CO_2, CH_4, N_2O and CO_2e emissions that would result from the complete combustion or oxidation of all liquefied natural gas sold or delivered to others, except for product for which a final destination outside California can be demonstrated.

(b) *Calculating GHG Emissions.*

***

(5) Determination of pipeline quality natural gas is based on the annual weighted average HHV, determined according to Equation C-2b of 40 CFR §98.33(a)(2)(ii)(A), for natural gas from a single city gate, storage facility, or connection with an in-state producer, interstate pipeline, intrastate pipeline or

local distribution company. If the HHV is outside the range of pipeline quality natural gas, emissions will be calculated using the appropriate subparagraph of section 95122(a) replacing the default emission factor with either a reporter specific emission factor as calculated in 40 CFR §98.404(b)(2) or one determined as follows:

(A) For natural gas or biomethane with an annual weighted HHV below 970 Btu/scf and not exceeding 3~~%~~ percent of total emissions estimated under this section, the local distribution company may use the reporter specific weighted yearly average higher heating value and the default emission factor or an emission factor as determined in 40 CFR §98.404(c)(3). If emissions exceed 3~~%~~ percent of the total, then the Tier 3 method specified in 40 CFR §98.33(a)(3)(iii) must be used with monthly carbon content samples to calculate the annual emissions from the portion of natural gas that is below 970 Btu/scf.

(B) For natural gas or biomethane with an annual HHV above 1100 Btu/scf and not exceeding 3~~%~~ percent of total emissions estimated under this section, the local distribution company must use the reporter specific weighted yearly average higher heating value and a default emission factor of 54.67 kg CO_2/MMBtu or an emission factor as determined in 40 CFR §98.404(c)(3). If emissions exceed 3~~%~~ percent of the total, then the Tier 3 method specified in 40 CFR §98.33(a)(3)(iii) must be used with monthly carbon content samples to calculate the annual emissions from the portion of natural gas that is above 1100 Btu/scf.

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(8) Local distribution companies must separately and individually calculate end-user emissions of CH_4, N_2O, CO_2 from biomass-derived fuels, and CO_2e by replacing CO_2 in the equation in section 95122(b)(6) with CH_4, N_2O, CO_2 from biomass-derived fuels, and CO_2e. CO_2 emissions from biomass-derived fuel are based on the fuel the LDC has contractually purchased on behalf of and delivered to end users. LDCs can elect to report biomethane directly purchased by an end user and delivered by the LDC if the LDC can provide the information required by section 95103(j)(3), and can provide access during verification to the documentation necessary to identify the biomethane as exempt or non-exempt pursuant to section 95103(j). Emissions from contractually purchased biomethane are calculated using the methods for natural gas required by this section, including the use of the emission factor for natural gas found in 40 CFR§98.408, table NN-1. Biomass-derived fuels directly purchased by end users and delivered by the LDC must be reported as natural gas by the LDC, unless the LDC has elected to report the delivery as biomethane and can provide the necessary documentation during verification to determine exemption status as stated above.

(9) The ~~California consignee for imported~~importer of liquefied petroleum gas into California must use calculation methodology 2 described in 40 CFR §98.403(a)(2) for calculating CO_2 emissions except that for liquefied petroleum

gas table MM-1 of 40 CFR Part 98 must be used in place of Table NN-2. For liquefied petroleum gas, the ~~consignee~~ importer must sum the emissions from the individual components of the gas to calculate the total emissions. If the composition is not supplied by the producer, the ~~consignee~~ importer must use the default value for liquefied petroleum gas presented in Table C-1 of 40 CFR Part 98. The importer of ~~California consignee for~~ compressed natural gas or liquefied natural gas into California must estimate CO_2 using calculation methodology 1 as specified in 40 CFR §98.403(a)(1), except that the product of HHV and Fuel is replaced by the annual MMBtu of the imported compressed natural gas and liquefied natural gas.

(10) The ~~California consignee for imported~~importer of liquefied petroleum gas, compressed natural gas, or liquefied natural gas into California must estimate and report CH_4 and N_2O emissions using equation C-8 and Table C-2 as described in 40 CFR §98.33(c)(1).

(11) Operators of facilities that make liquefied natural gas products or compressed natural gas products as ~~production facilities~~ described in section 95122(a)(4) must estimate CO_2 using calculation methodology 1 as specified in 40 CFR §98.403(a)(1), except that the product of HHV and Fuel is replaced by the annual MMBtu of the liquefied natural gas sold or delivered in California.

(12) Operators of facilities that make liquefied natural gas products or compressed natural gas products as~~production facilities~~ described in section 95122(a)(4) must estimate and report CH_4 and N_2O emissions based on the MMBtu of liquefied natural gas sold or delivered using equation C-8 and Table C-2 as described in 40 CFR §98.33(c)(1).

(13) All fuel suppliers in this section must also estimate CO_2e emissions using the following equation:

$$CO_2e = \sum_{i=1}^{n} GHG_i \text{ x } GWP_i$$

Where:

CO_2e = Carbon dioxide equivalent, metric tons/year.

GHG_i = Mass emissions of CO_2, CH_4, N_2O from fuels combusted or oxidized.

GWP_i = Global warming potential for each greenhouse gas from as specified in the "global warming potential" definition of this article~~Table A-1 of 40 CFR Part 98~~.

n = Number of greenhouse gases emitted.

(c) *Monitoring and QA/QC Requirements.* For each emissions calculation method chosen under this section, the supplier must meet all monitoring and QA/QC requirements specified in 40 CFR §98.404, except as modified in sections 95103, 95115, and below.

(1) All natural gas suppliers must measure required values at least monthly.

(2) All natural gas suppliers must determine reporter specific HHV at least monthly, or if the local distribution company does not make its own measurements according to standard business practices it must use the delivering pipeline measurement.

(3) All natural gas liquid fractionators must sample for composition at least monthly.

(4) All ~~California consignees~~ importers of liquefied petroleum gas into California must record composition, if provided by the supplier, and quantity in barrels, corrected to 60 degrees Fahrenheit, for each shipment received.

(d) Data Reporting Requirements.

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(2) For the emissions calculation method selected under section 95122(b), local distribution companies must report all the data required by 40 CFR §98.406(b) subject to the following modifications:

(A) Publicly-owned natural gas utilities that report in-state receipts at the city gate under 40 CFR §98.406(b)(1) must also identify each delivering entity by name and report ~~the annual volumes received in Mscf and~~ the annual energy of natural gas received in MMBtu.

(B) Local distribution companies that report under 40 CFR §98.406(b)(1) through (b)(7) must also report the annual energy of natural gas in MMBtu associated with the volumes.

(C) In addition to the requirements in 40 CFR §98.406(b)(8), local distribution companies must also include CO_2, CO_2 from biomass-derived fuels, CH_4, N_2O, and CO_2e annual mass emissions in metric tons calculated in accordance with 40 CFR §98.403(a) and (b)(1) through (b)(3) as modified by section 95122(b).

(D) In lieu of reporting the information specified in 40 CFR §98.406(b)(6), local distribution companies~~, including~~ and intrastate pipelines that deliver natural gas to downstream gas pipelines and other local distribution companies, must report the ~~annual volumes in Mscf,~~ annual energy in MMBtu, and the information required in 40 CFR §98.406(b)(12). These requirements are in addition to the requirements of 40 CFR §98.406(b)(6).

(E) In lieu of reporting the information specified in 40 CFR §98.406(b)(7), local distribution companies ~~including~~ and intrastate pipelines must report the ~~annual volumes in Mscf,~~ annual energy in MMBtu, customer information required in 40 CFR §98.406(b)(12), and ARB ID number if available for all end-users registering supply equal to or greater than 188,500 MMBtu during the calendar year. In addition to reporting the information specified in 40 CFR §98.406(b)(13), local distribution companies ~~including~~ and intrastate pipelines that deliver to end users must report the annual energy in MMBtu delivered to the following end-

use categories: residential consumers; commercial consumers; industrial consumers; electricity generating facilities; and other end-users not identified as residential, commercial, industrial, or electricity generating facilities. Local distribution companies must also report the total energy in MMBtu delivered to all California end-users.

(F) Local distribution companies that report under 40 CFR §98.406(b)(9) must report annual CO_2, CO_2 from biomass-derived fuel, CH_4, N_2O, and CO_2e emissions (metric tons) that would result from the complete combustion or oxidation of the natural gas supplied to all entities calculated in accordance with section 95122(b).

(3) In addition to the information required in 40 CFR §98.3(c), the operator of an interstate pipeline, which is not a local distribution company, must report the customer name, address, and ARB ID along with ~~annual volumes of natural gas, in Mscf, and~~ the annual energy of natural gas in MMBtu for natural gas delivered to each customer, including themselves.

(4) In addition to the information required in 40 CFR §98.3(c), the operator of an intrastate pipeline that delivers natural gas directly to end users must follow the reporting requirements described under Subpart NN of 40 CFR Part 98 and this section for local distribution companies. In lieu of the city gate information specified by section 95122(b)(2), the intrastate pipeline operator must report the summed ~~volumes (Mscf) and~~ energy (MMBtu) of natural gas delivered to each entity receiving gas from the intrastate pipeline for purposes of estimating the CO_{2i} parameter as specified in section 95122(b)(6). Additionally, intrastate pipeline operators are required to estimate a value for CO_{2j} as specified in section 95122(b)(3) for natural gas delivered to local distribution companies, interstate pipelines, and other intrastate pipelines. The CO_{2l} parameter as specified in section 95122(b)(4) must have a value of 0 for calculating emissions as required by section 95122(b)(6).

(5) In addition to the information required in 40 CFR §98.3(c), the ~~California consignee for~~importer of liquefied petroleum gas into California must report the annual quantity of liquefied petroleum gas imported as the total volume in barrels as well as the volume of its individual components for all components listed in 40 CFR 98 Table MM-1, if supplied by the producer, and report CO_2, CH_4, N_2O, and CO_2e annual mass emissions in metric tons using the calculation methods in section 95122(b). All ~~California consignees~~importers of compressed or liquefied natural gas into California and liquefied natural gas production facilities as described in section 95122(a)(4) must report the annual quantities imported, ~~or~~ and delivered ~~and~~ or sold, respectively, in MMBtu, and report CO_2, CH_4, N_2O, and CO_2e annual mass emissions in metric tons separately for compressed natural gas and liquefied natural gas using the calculation methods in section 95122(b).

(6) In addition to the information required in 40 CFR §98.3(c), all local distribution companies that report biomass emissions from biomethane fuel that was contractually purchased by the LDC on behalf of and delivered to end users,

and all liquefied natural gas production facilities reporting biomass emission from biomethane, must report, for each contracted delivery, the information specified in section 95103(j)(3).

(7) All operators of facilities that make liquefied natural gas products as described in section 95122(a)(4) must report end-user information for deliveries of liquefied natural gas to industrial facilities and natural gas utility customers, including customer name, address, and the annual quantity of liquefied natural gas delivered to each customer in MMBtu.

(8) All natural gas liquid fractionators and importers of liquefied petroleum gas identified in this section must report the total quantity in barrels of liquefied petroleum gas that is excluded from emissions reporting due to demonstration of final destination outside California.

(e) *Procedures for estimating missing data.* Suppliers must follow the missing data procedures specified in 40 CFR §98.405. The operator must document and retain records of the procedure used for all missing data estimates pursuant to the recordkeeping requirements of section 95105.

NOTE: Authority cited: Sections 38510, 38530, 39600, 39601, 39607, 39607.4 and 41511, Health and Safety Code. Reference: Sections 38530, 39600 and 41511, Health and Safety Code.

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§ 95124. Lead Production.

The operator of a facility who is required to report under section 95101(a)(1)(B)(8.) of this article, and who is not eligible for abbreviated reporting under section 95103(a), must comply with Subpart R of 40 CFR Part 98 (§§98.180 to 98.188) in reporting stationary combustion and process emissions and related data from lead production to ARB, except as otherwise provided in this section.

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(d) *Additional Product Data.* ~~Staff is considering potential changes to this benchmark and associated reporting.~~ The operator of a lead production, recycling, recovery, or manufacturing facility must report production of lead and lead alloys during the data year (short tons).

NOTE: Authority cited: Sections 38510, 38530, 39600, 39601, 39607, 39607.4 and 41511, Health and Safety Code. Reference: Sections 38530, 39600 and 41511, Health and Safety Code.

Subarticle 3. Additional Requirements for Reported Data

§ 95129. Substitution for Missing Data Used to Calculate Emissions from Stationary Combustion and CEMS Sources.

In lieu of the requirements for estimating missing data in Subparts C and D of 40 CFR Part 98, the operator of a facility who is reporting emissions under section 95115 or 95112 of this article, and who is not eligible for abbreviated reporting under section 95103(a), must follow the applicable procedures of this section for estimating missing or invalid data. The operator must include the substituted data in the GHG emissions data report and maintain all records, calculations, and data used to estimate substituted data according to the requirements of section 95105 and 40 CFR Part 98. Alternatively, under the limited circumstances specified in this section for equipment breakdown, the operator may request approval of an interim data collection procedure as specified in section 95129(h)-(i). For units combusting pure biomass-derived fuels or for *de minimis* sources, the operator who is reporting emissions must follow either the requirements below or the requirements of 40 CFR §98.35. In the event that section 95129 becomes applicable to a source, compliance with the requirements of section 95129 does not relieve the operator from complying with other sections of this article.

(a) *Missing Data Substitution Procedures for Units Reporting Under 40 CFR Part 75.* The operator of a unit that is reporting CO_2 using 40 CFR Part 75 must follow the applicable missing data substitution procedures in Part 75 for CO_2 concentration, stack gas flow rate, fuel flow rate, high heat value, and fuel carbon content, except as otherwise provided in this section. Paragraphs (b) through (g) of this section do not apply to these units for CO_2 emissions~~,~~. The operator may use applicable Part 75 missing data procedures or the procedures in paragraphs (b) through (g) of this section ~~but do apply~~ for CH_4 and N_2O emissions that are not *de minimis* if data required for calculating CH_4 and N_2O emissions are missing or invalid.

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(c) *Missing Data Substitution Procedures for Fuel Characteristic Data.* When the applicable emissions estimation methods of this article require periodic collection of fuel characteristic data (including carbon content, high heat value, and molecular weight) the operator must demonstrate every reasonable effort to obtain a fuel characteristic data capture rate of 100 percent for each data year. When fuel characteristic data of a required fuel sample are missing or invalid, the operator must first attempt to either reanalyze the original sample or perform the fuel analysis on a backup sample, or replacement sample from the same collection period as specified in 40 CFR §98.34(a)(2)-(3), to obtain valid fuel characteristic data. If the sample collection period has elapsed and no valid fuel characteristic data can be obtained from a backup or replacement sample, the operator must substitute for the missing data the values obtained according to the procedures in section 95129(c)(1)-(3). The data capture rate for the data year must be calculated as follows for each type of fuel and each fuel characteristic parameter:

Data capture rate = S / T x 100%

Where:

S = Number of fuel samples for which valid fuel characteristic data were obtained according to the applicable sampling requirements (including sampling schedule)

T = Total number of fuel samples required by the applicable sampling requirements

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(3) If the operator is unable to obtain fuel characteristic data such that less than 80.0 percent of a fuel characteristic data element are directly accounted for, the operator must then substitute for each missed data point as follows:

(A) If historical fuel characteristics data are available and kept according to the requirements of section 95105, substitute with the greater of the following:

1. The highest valid value recorded for that type of fuel for all records kept under the requirements of section 95105, or

2. The default value in Table 3-1 of this section (for carbon content) or Table C-1 of 40 CFR Part 98 (for high heat value). If a substitute value is not available in Table 3-1 of this section or Table C-1 of 40 CFR Part 98, the operator must substitute the highest value recorded for that type of fuel for all records kept pursuant to the requirements of section 95105.

(B) For carbon content data, if historical fuel characteristics data are not available and a default value is not listed in Table 3-1 of this section, use 90~~%~~ percent for other liquid and gaseous fuels and 100~~%~~ percent for other solid fuels in substituting for missed carbon content data.

Table 3-1. Default Carbon Content

Parameter	***Missing Data Value***
Anthracite Coal	*90%*
Bituminous	*85%*
Subbituminous/Lignite	*75%*
Oil	*90%*
Natural Gas	*75%*

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(i) Procedure for Approval of Interim Data Collection Procedure During Breakdown for Units Equipped with CEMS.

(1) In the event of an unforeseen breakdown of CEMS equipment at a combustion unit where the operator uses the Tier 4 Calculation Methodology (40 CFR §98.33(a)(4)) to monitor and report emissions under this article, the operator may request approval from the Executive Officer to temporarily use the Tier 1

Calculation Methodology (40 CFR §98.33(a)(1)) for pipeline quality natural gas, or the Tier 2 Calculation Methodology (40 CFR §98.33(a)(2)) for pipeline quality natural gas, biomass, or municipal solid waste, or the Tier 3 Calculation Methodology (40 CFR §98.33(a)(3)) for other fuels, to calculate combustion emissions during the equipment breakdown period. For cement kiln units where the operator uses the Tier 4 Methodology to report both combustion and process emissions, the operator may request approval from the Executive Officer to temporarily use the clinker-based process emissions calculation methodology provided in 40 CFR §98.83(d). The operator must satisfactorily demonstrate to the Executive Officer that:

(A) The breakdown will result in a loss of more than 10 percent of the concentration, flow rate, or other information used to calculate and report annual emissions for the data year, and that back-up monitoring is unavailable;

(B) The affected monitoring equipment cannot be promptly repaired or replaced without shutting down a process unit significantly affecting facility operations, or the monitoring equipment must be replaced and replacement equipment is not immediately available; and,

(C) The interim procedure will not remain in effect longer than is reasonably necessary for repair or replacement of the malfunctioning monitoring equipment.

(2) The operator must collect fuel samples and comply with all applicable requirements of the Tier 2 or Tier 3 Calculation Methodology in 40 CFR §98.33(a)(2) or (3), as modified by section 95115 of this article, during the equipment breakdown period. Fuel characteristics data provided by the fuel suppliers can be used if available. The operator must, within sixty days of the monitoring equipment breakdown, submit a written request to the Executive Officer that includes all the following information:

(A) The proposed start date and end date of the interim procedure, including a demonstration that the interim procedure will not remain in effect longer than is reasonably necessary for repair or replacement of the malfunctioning equipment;

(B) A detailed description of what data are affected by the breakdown; and,

(C) An interim monitoring plan that meets the requirements of the Tiers 2 and 3 Calculation Methodologies as applicable by fuel type in section 95115, and, if applicable, the clinker-based process emissions calculation procedure (40 CFR §98.83(d)) used to report cement kiln process emissions.

(3) The Executive Officer may limit the duration of the interim data collection procedure to ensure the criteria in paragraph (i)(1) are met.

(4) The Executive Officer shall provide written notification to the operator of approval or disapproval of the interim data collection procedure within sixty

days of receipt of the request, or within thirty days of receipt of any additional information requested by the Executive Officer, whichever is later.

NOTE: Authority cited: Sections 38510, 38530, 39600, 39601, 39607, 39607.4 and 41511, Health and Safety Code. Reference: Sections 38530, 39600 and 41511, Health and Safety Code.

Subarticle 4. Requirements for Verification of Greenhouse Gas Emissions Data Reports and Requirements Applicable to Emissions Data Verifiers; Requirements for Accreditation of Emissions Data and Offset Project Data Report Verifiers

§ 95130. Requirements for Verification of Emissions Data Reports.

The reporting entity who is subject to verification must obtain the services of an accredited verification body for purposes of verifying each emissions data report submitted under this article, as specified in section 95103(f).

(a) Annual Verification.

(1) Reporting entities required to obtain annual verification services as specified in section 95103(f) are subject to full verification requirements in the first year that verification is required in each compliance period. Upon receiving a positive verification statement, or statements, if applicable, under full verification requirements, the reporting entity may choose to obtain less intensive verification services for the remaining years of the compliance period. Reporting entities subject to this section are also required to obtain full verification services if any of the following apply:

~~(A) The emissions data report is for the 2011 data year;~~

(A~~B~~) There has been a change in the verification body;

(B~~C~~) An adverse verification statement or qualified positive verification statement was issued for the previous year for either emissions data or product data, or both;

(C~~D~~) A change of operational control of the reporting entity occurred in the previous year.

(D~~E~~) Nothing in this paragraph shall be construed as preventing a verification body from performing a full verification in instances where there are changes in sources or emissions or covered products. The verification body must provide information on the causes of the emission changes and justification in the verification report if a full verification was not conducted in instances where the total reported GHG emissions differ by greater than 25 percent relative to the preceding year's emissions data report.

(2) Reporting entities subject to annual verification under section 95130 shall not use the same verification body or verifier(s) for a period of more than six

consecutive years, which includes any verifications conducted under this article and for the California Climate Action Registry; The Climate Registry; Climate Action Reserve; or other third-party verifications, validations, or audits conducted under impartiality provisions substantively equivalent to section 95133, which may include third-party certification of environmental management systems to the ISO 14001 standard or third-party certification of energy management systems to the ISO 50001 standard. This limitation applies only to those third-party verifications, validations, or audits that include the scope of activities or operations under the ARB identification number for the emissions data report.

The six-year period begins on the date the reporting entity or its agent first contracts for any third-party verifications, validations, or audits under any protocols, including ARB verification services, for the scope of activities or operations under the ARB identification number for the emissions data report, and ends on the date the final verification statement is submitted. Verification bodies may not provide verification services if the six year period ends prior to sixty days after the emissions data report is certified by the reporting entity, unless a verification plan is agreed to by the reporting entity, the verification body, and the Executive Officer. If the six-year time limit is exceeded, the reporting entity must engage a different verification body and meet the verification deadline. Even if these services are provided before the verification body or verifiers have received ARB accreditation, the six year period still begins when these services are contracted for, if accreditation is later received.

The six-year limit also applies to verification bodies and verifiers providing ARB or any other third-party verifications, validations, or audits that include the scope of activities or operations under the ARB identification number for the emissions data report and does not reset upon a change in reporting entity ownership or operational control.

(3) If a reporting entity is required or elects to contract with another verification body or verifier(s), the reporting entity may contract verification services from the previous verification body or verifier(s) only after not using the previous verification body or verifier(s) for at least three years.

(A) If a reporting entity is required to select a new verification body to verify an emissions data report(s) that has been set aside pursuant to section 95131(e), the reporting entity may continue to contract for verification services with its current verification body, subject to the six-year time limit.

NOTE: Authority cited: Sections 38510, 38530, 39600, 39601, 39607, 39607.4 and 41511, Health and Safety Code. Reference: Sections 38530, 39600 and 41511, Health and Safety Code.

§ 95131. Requirements for Verification Services.

Verification services shall be subject to the following requirements.

(a) *Notice of Verification Services.* After the Executive Officer has provided a determination that the potential for a conflict of interest is acceptable as specified in section 95133(f) and that verification services may proceed, the verification body shall submit a notice of verification services to ARB. The verification body may begin verification services for the reporting entity ~~ten working days~~ after the notice is received by the Executive Officer, but must allow 14 days advance notice of the site visit unless ~~or~~ an earlier ~~if~~ date is approved by the Executive Officer in writing. In the event that the conflict of interest statement and the notice of verification services are submitted together, verification services cannot begin until ten ~~working~~ days after the Executive Officer has deemed acceptable the potential for conflict of interest as specified in 95133(f). Verification services may not begin until the reporting entity certifies the emissions data report in Cal e-GGRT. The notice shall include the following information:

(1) A list of the staff who will be designated to provide verification services as a verification team, including the names of each designated staff member, the lead verifier, and all subcontractors, and a description of the roles and responsibilities each member will have during verification.

(2) Documentation that the verification team has the skills required to provide verification services for the reporting facility. This shall include a demonstration that a verification team includes at least one member accredited as a sector specific verifier that is not also the independent reviewer, when required below:

(A) For providing verification services to an electric power entity~~,~~; a supplier of petroleum products or biofuels~~,~~; a supplier of natural gas, natural gas liquids, or liquefied petroleum gas~~,~~; or a supplier of carbon dioxide, at least one verification team member must be accredited by ARB as a transactions specialist;

(B) For providing verification services to the operator of a petroleum refinery, hydrogen production unit or facility, or petroleum and natural gas system listed in section 95101(e), at least one verification team member must be accredited by ARB as an oil and gas systems specialist;

(C) For providing verification services to the operator of a facility engaged in cement production, glass production, lime manufacturing, pulp and paper manufacturing if process emissions are included in the scope of operations, iron and steel production, nitric acid production, or lead production, at least one verification team member must be accredited by ARB as a process emissions specialist.

(3) General information on the reporting entity, including:

(A) The name of the reporting entity and the facilities and other locations that will be subject to verification services, reporting entity contact, address,

telephone number, and e-mail address;

(B) The industry sector and the North American Industry Classification System (NAICS) code for the reporting facility;

(C) The date(s) of the on-site visit, if required in section 95130(a)(1), with facility address and contact information;

(D) A brief description of expected verification services to be performed, including expected completion date.

(4) If any of the information under section 95131(a)(1) or 95131(a)(3) changes after the notice is submitted to ARB, the verification body must notify ARB by submitting an updated conflict of interest self-evaluation form and updated notice of verification services as soon as the change is made~~, but at least five working days before the verification services start date. If any information submitted under section 95131(a)(1) or 95131(a)(3) changes during the verification services, the verification body must notify ARB. In either instance, t~~The conflict of interest must be reevaluated pursuant to section 95133(f) and ARB must approve any changes in writing.

(b) Verification services shall include, but are not limited to, the following*:*

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(2) *Planning Meetings with the Reporting Entity.* The verification team shall discuss with the reporting entity the scope of the verification services and request any information and documents needed for initial verification services. The verification team shall create a draft sampling plan and verification plan prior to the site visit during full verification. The verification team shall also review the documents submitted and plan and conduct a review of original documents and supporting data for the emissions data report.

(3) *Site Visits.* At least one accredited verifier in the verification team, including the sector specific verifier, if applicable, shall at a minimum make one site visit, during each year full verification is required, to each facility for which an emissions data report is submitted. The verification team member(s) shall visit the headquarters or other location of central data management when the reporting entity is a retail provider, marketer, or fuel supplier. During the site visit, the verification team member(s) shall conduct the following:

(A) The verification team member(s) shall check that all sources specified in sections 95110 to 95123, and 95150 to 9515~~7~~8, as applicable to the reporting entity are identified appropriately.

(B) The verification team member(s) shall review and understand the data management systems used by the reporting entity to track, quantify, and report greenhouse gas emissions and, when applicable, product data, and electricity and fuel transactions. The verification team member(s) shall evaluate the uncertainty and effectiveness of these systems.

(C) The verification team shall carry out tasks that, in the professional judgment of the team, are needed in the verification process, including

the following:

1. Interviews with key personnel, such as process engineers and metering experts, as well as staff involved in compiling data and preparing the emissions data report;
2. Making direct observations of equipment for data sources and equipment supplying data for sources determined in the sampling plan to be high risk;
3. Assessing conformance with measurement accuracy, data capture, and missing data substitution requirements, as well as ARB-approved alternate methods, temporary methods, and ARB-approved meter calibration postponements;
4. Reviewing financial transactions to confirm fuel, feedstock, product data and electricity purchases and sales, and confirming the complete and accurate reporting of required data such as facility fuel suppliers, fuel quantities delivered, and if fuel was received directly from an interstate pipeline.

(4) *Review of Reporting Entity's Operations, Product Data and Emissions.* The verification team shall review facility operations to identify applicable greenhouse gas emissions sources and product data. This shall include a review of the emissions inventory and each type of emission source to ensure that all sources listed in sections 95110 to 95123 and sections 95150 to 9515~~7~~8 of this article are properly included in the emissions data report. This shall also include a review of the product data to ensure that all product data listed in sections 95110 to 95123 and sections 95150 to 9515~~7~~8 of this article are included in the emissions data report as required by this article. The verification team shall also ensure that the reported current primary and any secondary (if reported) NAICS code~~(s)~~ reported pursuant to section 95104(c) accurately represent~~s~~ the NAICS-associated ~~a~~Activities (a) listed~~noted~~ in Table 8-1 of the Cap-and-Trade Regulation~~, as applicable~~. Review of these NAICS codes and associated activities must be documented in the verification team's sampling plan.

(5) *Other Reporting Entity Information.* Reporting entities shall make available to the verification team all information and documentation used to calculate and report emissions, product data, fuels and electricity transactions, and other information required under this article, as applicable.

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(7) *Sampling Plan.* As part of confirming emissions data, product data, electricity transactions, or fuel transactions, the verification team shall develop a sampling plan that meets the following requirements:

(A) The verification team shall develop a sampling plan based on a strategic analysis developed from document reviews and interviews to assess the likely nature, scale and complexity of the verification services for a reporting entity. The analysis shall review the inputs for the development

of the submitted emissions data report, the rigor and appropriateness of data management systems, and the coordination within the reporting entity's organization to manage the operation and maintenance of equipment and systems used to develop emissions data reports.

(B) The verification team shall include in the sampling plan a ranking of emissions sources by amount of contribution to total CO_2 equivalent emissions for the reporting entity, and a ranking of emissions sources with the largest calculation uncertainty. The verification team shall also include in the sampling plan a ranking of the product data by units specified in the appropriate section of this article and a ranking of the product data with the largest uncertainty. As applicable and deemed appropriate by the verification team, fuel and electricity transactions shall also be ranked or evaluated relative to the amount of fuel or power exchanged and uncertainties that may apply to data provided by the reporting entity including risk of incomplete reporting.

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(8) *Data Checks.* To determine the reliability of the submitted emissions data report, the verification team shall use data checks. Such data checks shall focus on the largest and most uncertain estimates of emissions, product data and fuel and electricity transactions, and shall include the following:

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(F) The verification team is responsible for ensuring via data checks that there is reasonable assurance that the emissions data report conforms to the requirements of this article. In addition, and as applicable, the verifier's review of conformance must confirm the following information is correctly reported:

1. For facilities that combust natural gas, natural gas supplier customer account number, service account identification number, or other primary account identifier(s) reported pursuant to section 95115(k);

2. For suppliers of natural gas, end-user names, account identification numbers, and natural gas deliveries in MMBtu, reported pursuant to section 95122(d)(4);

3. Energy generation and disposition information reported pursuant to section 95104(d), 95112(a), 95112(b) and electricity and thermal energy purchases and acquisitions reported pursuant to 95104(d)(1) and 95104(d)(2), if any of the following apply:

   a. The facility belongs to an industry sector (e.g., reported a NAICS code) listed in Table 8-1 of section 95870 of the cap-and-trade regulation;

   b. The facility is applying for legacy contract transition assistance under the cap-and-trade regulation; or

   c. The facility is ~~applying~~eligible for ~~the~~a limited exemption of

emissions from the production of qualified thermal output pursuant to sections 95852(j),95870(e)(5), and 95870(e)(6) and of the cap-and-trade regulation.

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(9) *Emissions Data Report Modifications.* As a result of data checks by the verification team and prior to completion of a verification statement(s), the reporting entity must fix all correctable errors that affect covered emissions~~, non-covered emissions,~~ or covered product data in the submitted emissions data report, and submit a revised emissions data report to ARB. Failure to do so will result in an adverse verification statement. Failure to fix misreported data ~~correctable errors~~ that do not affect covered emissions~~, non-covered emissions,~~ or covered product data represents a ~~non-conformance~~nonconformance with this article but does not, absent other errors, result in an adverse verification statement. The reporting entity shall maintain documentation to support any revisions made to the initial emissions data report. Documentation for all emissions data report submittals shall be retained by the reporting entity for ten years pursuant to section 95105.

The verification team shall use professional judgment in the determination of correctable errors as defined in section 95102(a), including whether differences are not errors but result from truncation or rounding or averaging.

If the verification team determines that the reported NAICS code(s) reviewed pursuant to section 95131(b)(4) is inaccurate, and the reporting entity does not submit a revised emissions data report to correct the current NAICS code(s), the result will be an adverse verification statement.

The verification team must document the source of any difference identified, including whether the difference results in a correctable error or whether the difference does not require further investigation because it is the result of truncation, rounding, or averaging.

***

(11) *Log of Issues.* The verification team must keep a log of any issues identified in the course of verification activities that may affect determinations of material misstatement and nonconformance, whether identified by the verifier or by the reporter regarding the original or subsequent certified reports, or identified by ARB staff. The issues log must identify the regulatory section related to the nonconformance or potential nonconformance, if applicable, and indicate if the issues were corrected by the reporting entity prior to completing the verification. Any other concerns that the verification team has with the preparation of the emissions data report, including with any *de minimis* method calculations, must be documented in the issues log and communicated to the reporting entity during the course of verification activities. The log of issues must indicate whether each issue has a potential bearing on material misstatement, nonconformance, or both and whether an adverse verification statement may result if not addressed.

(12) *Material Misstatement Assessment.* Assessments of material misstatement are conducted independently on total reported covered emissions and total reported covered product data (units from the applicable sections of this article)~~; except when multiple types of covered product data are reported by the same facility with different reporting units (e.g., wineries (NAICS code 312130) reporting in units of proofs gallons, short tons, and gallons); and except for covered product data reported pursuant to 95156(a)(7) and 95156(a)(8) reported for data year 2019 and subsequent years. For entities reporting multiple types of covered product data with different reporting units, starting with 2017 data reported in 2018, a separate material misstatement calculation shall be performed for each covered product data type reported using the same units (e.g., products reported in proof gallons shall have one material misstatement assessment, products reported in shorts tons shall have another material misstatement assessment, and products reported in gallons shall have yet another material misstatement assessment). Starting with data year 2019, separate material misstatement assessments must be calculated for covered product data reported pursuant to section 95156(a)(7) and covered product data reported pursuant to section 95156(a)(8). If a facility reports covered product data under sections 95156(a)(7), 95156(a)(8), and another section that requires reporting covered product data, three separate covered product data material misstatement assessments must be completed and three separate product data verification statements must be issued~~.

(A) In assessing whether an emissions data report contains a material misstatement, the verification team must separately determine whether the total reported covered emissions and total reported covered product data contain a material misstatement using the following equation(s):

$$Percent\ error\ (emissions) = \sum \frac{[Discrepancies + Omissions + Misreporting\ ]x\ 100\%}{Total\ reported\ covered\ emissions}$$

or

$$Percent\ error\ (product\ data) = \sum \frac{[Discrepancies + Omissions + Misreporting\ ]x\ 100\%}{Total\ covered\ product\ data}$$

Where:
"Discrepancies" means any differences between the reported covered emissions or covered product data and the verifier's review of covered emissions or covered product data for a data source or product data subject to data checks in section 95131(b)(8).

"Omissions" means any covered emissions or covered product data the verifier concludes must be part of the emissions data report, but were not included by the reporting entity in the emissions data report.

"Misreporting" means duplicate, incomplete or other covered emissions the verifier concludes should, or should not, be part of the emissions data report or duplicate or other product data the verifier concludes should not be part of the emissions data report.

"Total reported covered emissions or covered product data" means the total annual reporting entity covered emissions or total reported covered product data for which the verifier is conducting a material misstatement assessment.

For instances in which an entity reports covered product data in different units of measurement or reports covered product data subject to sections 95156(a)(7) and 95156(a)(8), the verifier must conduct a material misstatement evaluation according to the requirements of sections 95131(b)(12)(D) and (E), respectively~~See section 95131(b)(12) ("Material Misstatement Assessment") for clarification on the meaning of of "Total covered product data" in the context of entities reporting pursuant to both sections 95156(a)(7) and 95156(a)(8), and entities reporting multiple types of covered product data that have different reporting units~~.

(B) When evaluating material misstatement, verifiers must deem correctly substituted missing data to be accurate, regardless of the amount of missing data.

(C) The omissions variable described in section 95131(b)(12)(A) does not apply to excluded covered product data as described in section 95103(l), such that excluded covered product data is not considered in the material misstatement assessment.

(D) Beginning with 2017 data reported in 2018, if multiple types of covered product data are reported with different units of measurement, the verifier shall conduct a separate material misstatement evaluation for each product, (for example, wineries (NAICS code 312130) with products reported in proof gallons shall have one material misstatement assessment, products reported in shorts tons shall have another material misstatement assessment, and products reported in gallons shall have another material misstatement assessment), except as provided in section 95131(b)(12)(E).

(E) Beginning with 2019 data reported in 2020, the verifier shall conduct a separate material misstatement evaluation for covered product data reported pursuant to section 95156(a)(7) and covered product data reported pursuant to section 95156(a)(8). If a facility reports covered product data under sections 95156(a)(7), 95156(a)(8), and another section(s) that requires reporting covered product data, three (or more) separate covered product data material misstatement assessments must be completed and three (or more) separate product data verification statements must be issued.

(13) *Review of Missing Data Substitution.* If a source selected for a data check was affected by a loss of data used to calculate GHG emissions for the data year:

(A) The verification team shall confirm that the reported emissions for that source were calculated using the applicable missing data procedures, or that an approved interim data collection procedure was used for the source.

(B) If 20 percent or less of any single data elements used to calculate emissions are missing, and emissions are correctly calculated using the missing data requirements in sections 95110 to 95123, 95129, and 95150 to 95158 these emissions will be considered accurate and as meeting the reporting requirements for that source.

(C) If greater than 20 percent of any single data element used to calculate emissions are missing or any combination of data elements are missing that would result in more than ~~5%~~ percent of a facility's emissions being calculated using missing data requirements in sections 95110 to 95123, 95129, and 95150 to 95158, the verifier must include a finding of ~~non-conformance~~nonconformance with the required emissions calculation methodology as part of the verification statement.

(D) The verifier must note the date, time and source of any missing data substitutions discovered during the course of verification in the verification report.

(14) *Review of Product Data.* The verifier's review of product data must include the following, where applicable.

(A) Verifiers must confirm that data substitutions were not used for covered product data.

(B) ~~Verifiers must confirm that each separate type (e.g., total CWB) and sub-type (e.g., each CWB unit) of covered product data conforms to the definitions, metering requirements, and other reporting requirements of MRR. For product data reported by operators of petroleum refineries subject to section 95113,:~~Verifiers must confirm that all covered product data specified in sections 95110-95124 and 95156 of this article conforms to the reporting requirements of MRR, including, but not limited to, meeting the applicable product data definitions, and meter accuracy and calibrations requirements. Covered product data subject to this confirmation include underlying product data that are measured and reported to support the calculation of other covered product data (e.g., CWB throughputs reported by refineries pursuant section 95113(l)(5) that are used to calculate the total facility CWB). Verifiers shall describe in their sampling plan how they determined that reported covered product data conforms to the requirements of MRR.

~~1. Verifiers must evaluate conformance and material misstatement for 2013 primary refinery products data reported in 2014. For the 2014~~

~~data year, the total on-site production quantity of primary refinery product for a refinery that has not reported a Solomon EII value pursuant to 95113(l)(4) ("non-EII refinery") is covered product data and verifiers must evaluate conformance and material misstatement. For non-EII refineries in the 2014 data year, the quantity of each primary refinery product and blending component produced elsewhere and brought on-site and that is used for a purpose other than blending into a primary refinery product is not covered product data and is not subject to material misstatement. For the 2014 data year and subsequent years, the total on-site production quantity of primary refinery product for a refinery that has reported a Solomon EII value pursuant to 95113(l)(4) ("EII refinery"), and the quantities of primary refinery product and blending component produced elsewhere and brought on-site by an EII refinery, are not covered product data and verifiers only evaluate for conformance. For the 2015 data year and subsequent years, primary refinery product data are not covered product data for any refinery and verifiers only evaluate for conformance.~~

~~2. Verifiers must evaluate conformance for Solomon Energy Intensity Index (EII), if applicable, for all data years.~~

~~3. Verifiers must separately evaluate conformance and separately assess material misstatement for the total facility complexity weighted barrel beginning with 2013 data reported in 2014~~

~~4. Verifiers must submit two product data verification statements for 2013 and 2014 data reports:~~

~~a. A verification statement that includes the evaluation of primary refinery products and the Solomon EII, as applicable, as well as non-covered product data;~~

~~b. A verification statement for the evaluation of complexity weighted barrel.~~

~~5. Beginning with 2015 data reported in 2016, only the verification statement for the complexity weighted barrel is submitted. Evaluation of other product data conformance is included in the verification statement for complexity weighted barrel.~~

(c) Completion of verification services must include:

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(3) *Completion of Findings and Verification Report.* The verification body is required to provide each reporting entity with the following:

***

(C) The verification body shall provide the verification statement(s) to the reporting entity and the ARB, attesting whether the verification body has found the submitted emissions data report to be free of material

misstatements, and whether the emissions data report is in conformance with the requirements of this article. For every qualified positive verification statement, the verification body shall explain the ~~non-conformance~~nonconformances contained within the emissions data report and shall cite the section(s) in this article that corresponds to the ~~non-conformance~~nonconformance and why the ~~non-conformance~~nonconformances do not result in a material misstatement. For every adverse verification statement, the verification body must explain all ~~non-conformance~~nonconformances and material misstatements leading to the adverse verification statement and shall cite the section(s) in this article that corresponds to the ~~non-conformance~~nonconformance(s) and material misstatements.

***

(4) *Adverse Verification Statement and Petition Process.* Prior to the verification body providing an adverse verification statement for emissions or product data, or both, to ARB, the verification body shall notify the reporting entity and the reporting entity shall be provided at least ~~ten working~~ 14 days to modify the emissions data report to correct any material misstatements or nonconformance found by the verification team. The verification body must ~~also~~ provide notice to ARB of the potential for an adverse verification statement(s) at the same time it notifies the reporting entity, and include a preliminary issues log. The modified report and verification statement(s) must be submitted to ARB before the verification deadline, even if the reporting entity makes a request to the Executive Officer as provided below in section 95131(c)(4)(A).

(A) If the reporting entity and the verification body cannot reach agreement on modifications to the emissions data report that result in a positive verification statement or qualified positive verification statement for the emissions or product data because of a disagreement on the requirements of this article, the reporting entity may petition the ARB Executive Officer before the verification deadline and before the verification statement is submitted to make a final decision as to the verifiability of the submitted emissions data report. The reporting entity may petition either emissions or product data verification statements, or both. At the same time that the reporting entity petitions the Executive Officer, the reporting entity must submit all information it believes is necessary for the ARB Executive Officer to make a final decision.

(B) The Executive Officer shall make a final decision no later than October 10 following the submission of a petition pursuant to section 95131(c)(4)(A). If at any point ARB requests information from the verification body or the reporting entity, the information must be submitted to ARB within ten~~five working~~ days. ARB will notify both the reporting entity and the verification body of its determination, which may also include an assigned emissions level calculated pursuant to section 95131(c)(5), if applicable.

(5) *Assigned Emissions Level.* When a reporting entity fails to receive a verification statement for a data year by the applicable deadline or receives an adverse emissions data verification statement, the Executive Officer shall develop an assigned emissions level for the data year for the reporting entity. Within ten~~five~~ ~~working~~ days of a written request by the Executive Officer, the verification body (if applicable) shall provide any available verification services information or correspondence related to the emissions data. Within ten~~five~~ ~~working~~ days of a request by the Executive Officer, the reporting entity shall provide the data that is required to calculate GHG emissions for the entity according to the requirements of this article, the preliminary or final detailed verification report prepared by the verification body (if applicable), and other information requested by the Executive Officer, including the operating days and hours of the reporting entity during the data year. The reporting entity shall also make available personnel who can assist the Executive Officer's determination of an assigned emissions level for the data year.

***

(f) Upon request by the Executive Officer, the reporting entity shall provide the data used to generate an emissions data report, including all data available to a verifier in the conduct of verification services, within 14~~five20 working~~ days.

(g) Upon request of the Executive Officer, the verification body shall provide ARB the full verification report given to the reporting entity, as well as the sampling plan, contracts for verification services, and any other supporting documents and calculations, within 14~~five20 working~~ days.

***

(i) *Verifying Biomass-derived Fuels.* In the absence of certification of the biomass-derived fuel by an accredited certifier of biomass-derived fuels, the verification body is subject to the requirements of subarticle 4 of this article as modified below when verifying biomass-derived fuel:

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(2) Specific biomass-derived fuel verification requirements.

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(D) For biomethane and biogas, the verifier must:

1. Examine all nomination, invoice, scheduling, allocation, transportation, storage, in-kind fuel purchase and balancing reports from the producer to the reporting entity and have reasonable assurance that the reporting entity is receiving the identified fuel;

2. Determine that~~a contract is in place for the purchase of~~the biogas or biomethane ~~that~~ meets all requirements of sections 95852.1.1 and 95852.2 of the cap-and-trade regulation and that no fossil-derived fuel is used to supplement the biomass-derived fuel deliveries except for documented fuel purchases to avoid loss of metered volumes in connection with the transportation of the biomethane to the reporting

entity. Where one or more contracts is used to procure biogas or biomethane, ensure all applicable contracts meet the requirements of section 95852.1.1(a);

3. Ensure any discrepancies in the fuel volumes, heat values and/or energies will be carried over into the evaluation of material misstatement for the reporting entity;

(3) *Assessment.* If the reporting entity is unable to demonstrate that the biomass-derived fuel is consistent with the requirements in sections 95852.1.1 and 95852.2 of the cap-and-trade regulation, the emission data report must be revised to list these biomass CO_2 emissions as non-exempt biomass-derived CO_2.

NOTE: Authority cited: Sections 38510, 38530, 39600, 39601, 39607, 39607.4 and 41511, Health and Safety Code. Reference: Sections 38530, 39600 and 41511, Health and Safety Code.

§ 95132. Accreditation Requirements for Verification Bodies, Lead Verifiers, and Verifiers of Emissions Data Reports and Offset Project Data Reports.

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(b) The Executive Officer may issue accreditation to verification bodies, lead verifiers, and verifiers that meet the requirements specified in this section.

(1) *Verification Body Accreditation Application.* To apply for accreditation as a verification body, the applicant shall submit the following information to the Executive Officer:

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(D) The applicant shall provide a demonstration that the body has policies and mechanisms in place to prevent conflicts of interest and to identify and resolve potential conflict of interest situations if they arise. The applicant shall provide the following information:

1. Identification of services provided by the verification body, the industries that the body serves, and the locations where those services are provided;

2. A detailed organizational chart that includes the verification body, its management structure, and any related entities;

3. The verification body's internal conflict of interest policy that identifies activities and limits to monetary or non-monetary gifts that apply to all employees and procedures to monitor, assess, and notify ARB of potential conflicts of interest.

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(2) *Lead Verifier Accreditation Application*. To apply for accreditation as a lead verifier, the applicant shall submit documentation to the Executive Officer that

provides the evidence specified in section 95132(b)(2)(A), and section 95132(b)(2)(B), or (C):

***

(C) Evidence that ~~at the time of the verification training examination,~~ the applicant has worked as a project manager or lead person for not less than four years, of which two may be graduate level work:

1. In the development of GHG or other air emissions inventories; ~~-~~or,

2. As a lead environmental data or financial auditor ~~in the private sector~~.

***

(4) The applicant must take an ARB approved general verification training and receive a passing score of greater than an unweighted 70~~%~~ percent on an exit examination. If the applicant does not pass the exam after the training, they may retake the exam a second time. Only one retake of the examination is allowed before the applicant is required to retake the ARB approved general verification training course. Training under the previous version of the regulation does not qualify an applicant to retake an exam under this version without first taking the training for this revised regulation.

(5) Sector Specific and Offset Project Specific Verifiers.

(A) *Sector Specific Verifier*. The applicant seeking to be accredited as a sector specific verifier as specified in section 95131(a)(2) must, in addition to meeting the requirements for accredited lead verifier or verifier qualification, have at least two years of professional experience related to the sector in which they are seeking accreditation, take ARB sector specific verification training and receive a passing score of greater than an unweighted 70~~%~~ percent on an exit examination. If the applicant does not pass the exam after the training, they may retake the exam a second time. Only one retake of the examination is allowed before the applicant is required to retake the ARB approved sector specific verification training.

(B) *Offset Project Specific Verifier*. The applicant seeking to be accredited as an offset project specific verifier as specified in the cap-and-trade regulation must, in addition to meeting the requirements for accredited lead verifier or verifier qualification, meet one of the following requirements:

1. Have at least two years of professional experience related to developing emission inventories, conducting technical analyses, or environmental audits of the offset project type, and take general ARB offset verification training and ARB offset project specific verification training for an offset project type, and receive a passing score of greater than an unweighted 70~~%~~ percent on an exit examination. If the applicant does not pass the exam after the training, they may retake the exam a second time. Only one retake of the examination

is allowed before the applicant is required to retake the applicable ARB-approved offset verification training; or,

2. Be a verifier in good standing for the Climate Action Reserve prior to October 28, 2011, taken Climate Action Reserve project specific verifier training, have performed at least two project verifications for a project type by October 28, 2011, and have taken general ARB offset verification training, and receive a passing score of greater than an unweighted 70~~%~~ percent on an exit examination. If the applicant does not pass the exam after the training, they may retake the exam a second time. Only one retake of the examination is allowed before the applicant is required to retake the ARB approved general ARB offset verification training and offset project specific verification training.

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(c) *ARB Accreditation*.

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(3) Within 45 days following completion of the application process and all applicable training and examination requirements, the Executive Officer shall act to withhold accreditation or issue an Executive Order to grant ~~or withhold~~ accreditation for the verification body, lead verifier, sector specific verifier, offset project specific verifier or verifier.

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~~(6) The Executive Officer and the applicant may mutually agree to longer time periods than those specified in subsections 95132(c)(1) or 95132(c)(3), and the applicant may submit additional supporting documentation before a decision has been made by the Executive Officer.~~

(6~~7~~) Within 20~~15 working~~ days of being notified of any nonconformance ~~corrective action~~ in another voluntary or mandatory GHG program, an ARB accredited verification body, lead verifier, sector specific verifier, offset project specific verifier, or verifier shall provide written notice to the Executive Officer of the corrective action. That notification shall include reasons for the corrective action and the type of corrective action. The verification body or verifier must provide additional information to the Executive Officer upon request.

~~(8) Verifiers shall take ARB approved training to continue to provide verification services after January 1, 2012. The verifier must receive a passing score of greater than an unweighted 70% on the exit examination.~~

(d) *Modification, Suspension, or Revocation of an Executive Order Approving a Verification Body, Lead Verifier, or Verifier, and Voluntary Withdrawal from the Accreditation Program.* The Executive Officer may review and, for good cause, including any violation of subarticle 4 of this article or any similar action in an analogous GHG system, modify, suspend, or revoke an Executive Order providing accreditation to a verification body, lead verifier, or verifier. The Executive Officer

shall not revoke an Executive Order without affording the verification body, lead verifier, or verifier the opportunity for a hearing in accordance with the procedures specified in title 17, California Code of Regulations, section 60055.1 et seq.

***

(2) Within ten~~five working~~ days of suspension or revocation of accreditation, a verification body must notify all reporting entities, offset project operators, or authorized project designees for whom it is providing verification services, or has provided verification services within the past 6 months of its suspension or revocation of accreditation.

(3) A reporting entity, offset project operator, or authorized project designee who has been notified by a verification body of a suspended or revoked accreditation must contract with a ~~new~~different verification body for verification services.

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NOTE: Authority cited: Sections 38510, 38530, 39600, 39601, 39607, 39607.4 and 41511, Health and Safety Code. Reference: Sections 38530, 39600 and 41511, Health and Safety Code.

§ 95133. Conflict of Interest Requirements for Verification Bodies.

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(f) *Conflict of Interest Determinations.* The Executive Officer must review the self-evaluation submitted by the verification body and determine whether the verification body is authorized to perform verification services for the reporting entity.

(1) The Executive Officer shall notify the verification body in writing when the conflict of interest evaluation information submitted under section 95133(e)~~95132(e)~~ is deemed complete. Within ~~30 working~~ 20 days of deeming the information complete, the Executive Officer shall determine whether the verification body is authorized to proceed with verification and must so notify the verification body.

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(g) Monitoring Conflict of Interest Situations.

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(2) The verification body shall continue to monitor arrangements or relationships that may be present for a period of one year after the completion of verification services. During that period, within 30 days of the verification body or any verification team member entering into any contract with the reporting entity or related entity for which the body has provided verification services, the verification body shall notify the Executive Officer of the contract and the nature of the work to be performed, and revenue received. The Executive

Officer, within 30 ~~working~~ days, will determine the level of conflict using the criteria in section 95133(a)-(d), if the reporting entity must reverify their emissions data report, and if accreditation revocation is warranted.

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NOTE: Authority cited: Sections 38510, 38530, 39600, 39601, 39607, 39607.4 and 41511, Health and Safety Code. Reference: Sections 38530, 39600 and 41511, Health and Safety Code.

Subarticle 5. Reporting Requirements and Calculation Methods for Petroleum and Natural Gas Systems.

§95150. Definition of the Source Category.

(a) This source category consists of the following industry segments:

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(2) *Onshore petroleum and natural gas production.* Onshore petroleum and natural gas production means all equipment on a well-pad or associated with a well pad (including compressors, generators, dehydrators, storage vessels, and portable non-self-propelled equipment which includes well drilling and completion equipment, workover equipment, gravity separation equipment, auxiliary non-transportation-related equipment, and leased, rented or contracted equipment) used in the production, extraction, recovery, lifting, stabilization, separation or treating of petroleum and/or natural gas (including condensate). Onshore natural gas processing equipment as defined in section 95150(a)(3) that is owned and/or operated by the facility owner/operator and located within the same basin is considered "associated with a well pad" and is included with the onshore petroleum and natural gas production facility, unless such equipment is required to be reported as part of a separate onshore petroleum and natural gas processing facility. Gas processing plants that have an annual average throughput of 25 MMscf per day or greater are not included in this segment.

This equipment also includes associated storage or measurement vessels and all enhanced oil recovery (EOR) operations (both thermal and non-thermal), and all petroleum and natural gas production equipment located on islands, artificial islands, or structures connected by a causeway to land, an island, or an artificial island. Crude oil and associated gas that is piped to an onshore production facility as an emulsion as defined in section 95102(a) must follow the requirements of section 95156(a)(7)-(10) and meet the metering requirements of section 95103(k) by measuring the emulsion before the first separation tank at the onshore production facility and not at the platform.

(3) *Onshore natural gas processing.* Natural gas processing means the separation of natural gas liquids (NGLs) or non-methane gases from produced natural gas, or the separation of NGLs into one or more component mixtures. Separation includes one or more of the following: forced extraction of natural gas liquids, sulfur and carbon dioxide removal, fractionation of NGLs, or the capture of CO_2 separated from natural gas streams. This segment also includes all residue gas compression equipment owned or operated by the natural gas processing plant. This industry segment includes processing plants that have an annual average throughput of 25 MMscf per day or greater.~~, and~~ This industry segment also includes fractionation facilities that have no petroleum and gas production activity within the same basin.~~This industry segment includes processing plants that fractionate gas liquids, and~~

~~processing plants that do not fractionate gas liquids but have an annual average throughput of 25 MMscf per day or greater. This industry segment also includes all booster stations owned and/or operated by the facility owner/operator.~~

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NOTE: Authority cited: Sections 38510, 38530, 39600, 39601, 39607, 39607.4 and 41511, Health and Safety Code. Reference: Sections 38530, 39600 and 41511, Health and Safety Code.

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§ 95153. Calculating GHG Emissions.

The operator of a facility must calculate and report annual GHG emissions as prescribed in this section. The facility operator who is a local distribution company reporting under section 95122 of this article must comply with section 95153 for reporting emissions from the applicable source types in section 95152(i) of this article.

(a) *Metered Natural Gas Pneumatic Device and Pneumatic Pump Venting*. The operator of a facility who is subject to the requirements of sections 95153(a) and (b) must calculate emissions from a natural gas powered continuous high bleed control device and pneumatic pump venting using the method specified in paragraph (a)(1) below when the natural gas flow to the device is metered. By January 1, 2015, natural gas consumption must be metered for all of the operator's pneumatic continuous high bleed devices and pneumatic pumps. The operator may choose to also meter flow to any or all low bleed and intermittent bleed natural gas powered devices. By January 1, 2019, all continuous bleed pneumatic devices must meet the accuracy requirements of section 95103(k) by installation of metering or by measuring, at least annually, the volume of natural gas emitted in cubic feet per hour using a temporary meter, or calibrated bag, or high volume sampler according to the methods set forth in sections 95154(b), (c), and (d) respectively. The operator must calculate the annual natural gas volumetric emissions at standard conditions using calculations in paragraph (r) of this section and calculate both CH_4 and CO_2 volumetric and mass emissions from volumetric natural gas emissions using the calculations in paragraphs (s) and (t) of this section. For unmetered devices the operator must use the method specified in section 95153(b). Vented emissions from natural gas driven pneumatic pumps covered in paragraph (d) of this section do not have to be reported under paragraph (a) of this section.

***

(b) *Non-metered Natural Gas Pneumatic Device Venting*. Through calendar year 2018, t~~T~~he operator must calculate CH_4 and CO_2 emissions from all un-metered natural gas powered pneumatic intermittent bleed and continuous low and high bleed devices using the following method:

$$E_{nm,i,x} = \sum_1^i \sum_1^x EF_i * T_{i,x} \quad \text{(Eq. 2)}$$

Where:

$E_{nm,i,x}$ = Annual natural gas emissions at standard conditions for all unmetered natural gas powered devices and pumps (in scf).

i = Total number of unmetered component types.

x = Total number of component type i.

EF_i = Population emission factor for natural gas pneumatic device type i (scf/hour/component) listed in Tables 1A, 3, and 4 of Appendix A for onshore petroleum and natural gas production, onshore natural gas transmissions compression, and underground natural gas facilities, respectively.

$T_{i,x}$ = Total number of hours type i component x was in service. Default is 8760 hours.

***

(2) Beginning January 1, 2019, the operator must continue to use Equation 2 of this section to quantify emissions from all intermittent bleed devices.

(c) *Acid gas removal (AGR) vents.* For AGR vents (including processes such as amine, membrane, molecular sieve or other absorbents and adsorbents), the operator must calculate emissions for CO_2 only (not CH_4) vented directly to the atmosphere or emitted through a flare, engine (e.g. permeate from a membrane or de-adsorbed gas from a pressure swing adsorber used as fuel supplement), or sulfur recovery plant using the applicable calculation methodologies described in paragraphs (c)(1)-(c)(10) below.

***

(5) If continuous gas analyzer is not available on the vent stack, either install a continuous gas analyzer or take ~~quarterly~~ gas samples from the vent gas stream to determine Vol_{CO2} according to methods set forth in section 95154(b). Samples must be collected once during each three-month period of the calendar year, with at least 30 days between successive samples.

(6) If a continuous gas analyzer is installed on the inlet gas stream, then the continuous gas analyzer results must be used. If continuous gas analyzer is not available, either install a continuous gas analyzer or take ~~quarterly~~ gas samples from the inlet gas stream to determine Vol_I according to methods set forth in section 95154(b). Samples must be collected once during each three-month period of the calendar year, with at least 30 days between successive samples.

(7) Determine volume fraction of CO_2 content in natural gas out of the AGR unit using one of the methods specified in paragraph (c)(7) of this section.

***

(B) If a continuous gas analyzer is not available or installed, ~~quarterly~~ gas samples may be taken from the outlet gas stream to determine Vol_O

according to methods set forth in section 95154(b). Samples must be collected once during each three-month period of the calendar year, with at least 30 days between successive samples.

***

(f) *Gas well venting during well completions and well workovers*. Using one of the calculation methodologies in this paragraph (f)(1) through (f)(5) below, operators must calculate CH_4, CO_2 and N_2O (when flared) annual emissions from gas well venting during both conventional completions and completions involving hydraulic fracturing in wells and during both conventional well workovers and well workovers involving hydraulic fracturing.

***

(4) Determine if the backflow gas from the well completion or workover is recovered with purpose designed equipment that separates natural gas from the backflow, and sends this natural gas to a flow-line (*e.g.,* reduced emissions completion or workover).

(A) Use the factor V_{SG} in Equation ~~8~~12 of this section to adjust the emissions estimated in paragraphs (f)(1) through (f)(4) of this section by the magnitude of emissions captured using purpose designed equipment that separates saleable gas from the backflow as determined by engineering estimate based on best available data.

***

(j) *Well testing venting and flaring.* Calculate CH_4, CO_2 and N_2O (when flared) gas and oil well testing venting and flaring emissions as follows:

(1) Determine the total gas-to-oil ratio (GOR) of the hydrocarbon production from all oil well(s) tested. Determine the production rate from all gas well(s) tested.

(2) If total GOR cannot be determined from available data, then the facility operator must measure quantities reported in this section according to one of the two procedures in paragraph (j)(2) of this section to determine total GOR.

(A) The facility operator may use an appropriate standard method published by a consensus-based standards organization if such a method exists, including ARB's sampling methodology and flash liberation test procedure in Appendix B of this regulation (if flash liberation testing is representative of all produced associated gas); or

(B) The facility operator may use an industry standard practice as described in section 95154(b).

(3) Estimate venting emissions using Equation 15 (for oil wells) or Equation 16 (for gas wells) of this section.

$$\cancel{E_{S,n} = GOR * FR * D}$$

$$E_{S,n} = Total\ GOR * FR * D \qquad \text{(Eq. 15)}$$

$$E_{a,n} = PR * D \qquad \text{(Eq. 16)}$$

Where:

$E_{S,n}$ = Annual volume of gas emissions from well(s) testing in standard cubic feet ~~under actual conditions~~.

$E_{a,n}$ = Annual volumetric natural gas emissions from well(s) testing in cubic feet under actual conditions.

Total GOR = Gas-to-oil ratio, for well p in basin q, in standard cubic feet of gas per barrel of oil; oil here refers to hydrocarbon liquids produced of all API gravities.

FR = Annual average flow rate in barrels of oil per day for the oil well(s) being tested.

PR = Average annual production rate in actual cubic feet per day for the gas well(s) being tested.

D = Number of days during the year the well(s) is tested.

***

(k) *Associated gas venting and flaring.* Calculate CH_4, CO_2 and N_2O (when flared) associated gas venting and flaring emissions not in conjunction with well testing as follows:

(1) Determine the total GOR of the hydrocarbon production from each well whose associated natural gas is vented or flared. If total GOR from each well is not available, the total GOR from a cluster of wells in the same basin shall be used.

(2) If total GOR cannot be determined from available data, then use one of the two procedures in paragraph (k)(2) of this section to determine total GOR.

(A) Use an appropriate standard method published by a consensus-based standards organization if such a method exists, including ARB's sampling methodology and flash liberation test procedure in Appendix B of this regulation (if flash liberation testing is representative of all produced associated gas); or

(B) The facility operator may use an industry standard practice as described in section 95154(b).

(3) Estimate venting emissions using Equation 17 of this section.

$$\cancel{E_{a,n} = \sum_{p=1}^{x} GOR_{p,q} * V_{p,q}}$$

$$E_{a,n} = \sum_{p=1}^{x} Total\ GOR_{p,q} * V_{p,q} \qquad \text{(Eq.17)}$$

Where:

$E_{a,n}$ = Annual volumetric natural gas emissions, at the facility level, from associated gas venting ~~under actual conditions,~~ in standard cubic feet.

Total $GOR_{p,q}$ = Gas-to-oil ratio, for well p in basin q, in standard cubic feet of gas per barrel of oil; oil here refers to hydrocarbon liquids produced of all API gravities.

$V_{p,q}$ = Volume of oil produced, for well p in basin q, in barrels in the calendar year during which associated gas was vented or flared.

x = Total number of wells in the basin that vent or flare associated gas.

~~(4) Calculate natural gas volumetric emissions at standard conditions using calculations in paragraph (r) of this section.~~

(~~5~~4) Calculate both CH_4 and CO_2 volumetric and mass emissions from volumetric natural gas emissions using calculations in paragraphs (s) and (t) of this section.

(~~6~~5) Calculate emissions from associated gas to flares as follows:

(A) Use the associated natural gas volume and composition as determined in paragraph (k)(1) through (k)(4~~2~~3) of this section.

***

(l) *Flare stack or other destruction device emissions.* Calculate CO_2, CH_4 and N_2O emissions from a flare stack or other destruction device as follows:

***

(2) If a continuous flow measurement device is installed on the flare or destruction device, the measured flow volumes must be used to calculate the flare gas emissions. If all of the gas or liquid sent to the flare or destruction device is not measured by the existing flow measurement device, then the flow not measured can be estimated using engineering calculations based on best available data or company records. If a continuous flow measurement device is not installed on the flare or destruction device, a flow measuring device can be installed on the flare or destruction device or engineering calculations based on process knowledge, company records, or best available data may be used to quantify the flare volume.

***

(m) *Centrifugal compressor venting.* Calculate CH_4, CO_2 and N_2O (when flared) emissions from both wet seal and dry seal centrifugal compressor vents as follows:

***

(4) To determine Y_i, use gas composition data from a continuous gas analyzer if a continuous gas analyzer is installed, or ~~quarterly~~ measurements of gas composition where a continuous gas analyzer is not installed. Samples must be collected once during each three-month period of the calendar year, with at least 30 days between successive samples.

***

(n) *Reciprocating compressor venting.* Calculate CH_4 and CO_2, and N_2O (when flared) emissions from all reciprocating compressor vents as follows:

***

(4) To determine Y_i, use gas composition data from a continuous gas analyzer if a continuous gas analyzer is installed, or ~~quarterly~~ measurements of gas composition where a continuous gas analyzer is not installed. Samples must be collected once during each three-month period of the calendar year, with at least 30 days between successive samples.

(5) Estimate annual emissions using the flow measurement and Equation 23 of this section.

$$E_{s,i,m} = \sum_m MT_m * T_m * Y_i * (1 - CF) \qquad \text{(Eq. 23)}$$

Where:

$E_{s,i,m}$ = Annual GHG_i (either CH_4 or CO_2) volumetric emissions ~~at standard conditions~~, in standard cubic feet.

MT_m = Measured gas emissions in standard cubic feet per hour during operating mode m as described in sections (n)(1)(A) through (n)(1)(C).

T_m = Total time the compressor is in the mode for which $E_{s,i,m}$ is being calculated, in the calendar year in hours.

Y_i = Mole fraction of GHG_i in the vent gas.

CF = Fraction of reciprocal compressor vent gas that is sent to vapor recovery or fuel gas as determined by keeping logs of the number of operating hours for the vapor recovery system and the amount of gas that is directed to the fuel gas or vapor recovery system.

***

(v) *Crude Oil, Condensate, and Produced Water Dissolved CO_2 and CH_4*. The operator must calculate dissolved CO_2 and CH_4 in crude oil, condensate, and produced water. This reporting requirement includes emissions from hydrocarbon liquids and water produced using EOR operations. Emissions must be reported for crude oil, condensate, and produced water sent to storage tanks, ponds, and holding facilities. The facility operator must also report the volume of produced water in barrels per year.

(1) Calculate CO_2 and CH_4 emissions from crude oil, condensate, and produced water using Equation 33A:

***

(A) S (the mass of CO_2 or CH_4 per barrel of crude oil, condensate, or produced water) shall be determined using one of the following methods:

1. Flash liberation test. Measure the amount of CO_2 and CH_4 liberated from crude oil, condensate, or produced water when the crude oil, condensate, or produced water changes temperature and pressure from well stream to standard atmospheric conditions, using ARB's sampling methodology and flash liberation test procedure entitled "Flash Emissions of Greenhouse Gases and Other Compounds from Crude Oil and Natural Gas Separator and Tank Systems," which is

included as Appendix B of this article. The flash liberation test results must provide the metric tons of CO_2 and CH_4 liberated per barrel of crude oil, condensate, or produced water. The test results from the flash liberation test must be submitted to ARB as part of the emissions data report. When required to quantify emissions, flash liberation test samples must be collected at least annually. Flash liberation test samples may be collected from a single location/separator system, or from multiple locations; however, the sample(s) must be reasonably representative of the liquids to which the results are applied. A sufficient number of samples must be collected to reasonably represent the ratio of gas-to-oil, water, and condensate that are separated at multiple locations within a facility.

***

(w) *Pipeline dig-ins.* For reporting pipeline dig-in emissions as specified in section 95152(i)(11), operators may either use measured data or use engineering estimation based on best available data to quantify the volume of natural gas released from pipeline dig-in events. Volumetric emissions must be converted into mass emissions of CO_2 and CH_4 using the applicable methods in paragraphs (r), (s), and (t) of this section. If the natural gas escaping from a pipeline dig-in ignites, the operator is not required to quantify and report the GHG emissions from the combustion of the escaping gas.

***

(y) *Onshore petroleum and natural gas production and natural gas distribution combustion emissions.* Calculate CO_2, CH_4, and N_2O combustion-related emissions from stationary or portable equipment, except as specified in paragraph (y)(3) and (y)(4) of this section as follows:

***

(2) For fuel combustion units that combust field gas, process vent gas, a blend containing field gas or process vent gas, or natural gas that is not of pipeline quality, calculate combustion emissions as specified below:

***

(C) Calculate GHG volumetric emissions at actual conditions using Equations 35 and 36 of this section:

$$E_{a,CO2} = \sum_{n=1}^{12}\left[(V_a * Y_{CO2}) + \eta \sum_{j=1}^{5} V_a * Y_j * R_j\right] \quad \text{(Eq. 35)}$$

$$E_{a,CH4} = \sum_{n=1}^{12}[V_a * (1-\eta) * Y_{CH4}] \quad \text{(Eq. 36)}$$

Where:

$E_{a,CO2}$ = Contribution of annual CO_2 emissions from portable or stationary fuel combustion sources in cubic feet, under actual conditions.

V_a = Volume of fuel gas sent to combustion unit in cubic feet, during the month.

Y_{CO2} = Monthly concentration of CO_2 constituent in gas sent to combustion unit.

$E_{a,CH4}$ = Contribution of annual CH_4 emissions from portable or stationary fuel combustion sources in cubic feet, under actual conditions.

Ƞ = Fraction of gas combusted for portable and stationary equipment. ~~determined using an engineering estimation. For internal combustion devices, a default of 0.995 can be used.~~ A default value of 0.995 can be used for all internal and external combustion devices. The operator may use an alternative engineering estimation value based on chemical analysis data, equipment-specific specifications, or industry standard references demonstrating the combustion efficiency of the unit type (e.g. boiler, heater, etc.).

Y_j = Monthly concentration of gas hydrocarbon constituent j (such as methane, ethane, propane, butane and pentanes plus) in gas sent to combustion unit.

R_j = Number of carbon atoms in the gas hydrocarbon constituent j; 1 for methane, 2 for ethane, 3 for propane, 4 for butane, and 5 for pentanes plus, in gas sent to combustion unit.

Y_{CH4} = Monthly concentration of methane constituent in gas sent to combustion unit.

n = Month of the year

Calculate CO_2 and CH_4, volumetric emissions at standard conditions using the provisions of section 95153(r). Use the provisions in sections 95153(s) and (t) to convert volumetric gas emissions to GHG volumetric and GHG mass emissions respectively.

(D) Calculate N_2O mass emissions using Equation 37 of this section.

$$Mass_{N2O} = (1\ x\ 10^{-3}) * Fuel * HHV * EF \qquad \text{(Eq. 37)}$$

Where:

$Mass_{N2O}$ = Annual N_2O emissions from the combustion of a particular type of fuel (metric tons N_2O).

Fuel = Mass or volume of the fuel combusted (mass or volume per year, choose appropriately to be consistent with the units of HHV).

HHV = For the higher heating value for field gas or process vent gas, use either a weighted average of ~~quarterly~~ measurements of HHV or a default value of 1.235 x 10^{-3} MMBtu/scf for HHV. Samples must be collected once during each three-month period of the calendar year, with at least 30 days between successive samples.

EF = Use 1.0 x 10^{-4} kg N_2O/MMBtu.

1 x 10^{-3} = Conversion factor from kilograms to metric tons.

***

(5) If the chemical reaction between the acid gas and the sorbent produces CO_2 emissions, when a unit is a fluidized bed boiler, is equipped with a wet flue gas desulfurization system, or uses other acid gas emission controls with sorbent injection to remove acid gases, c~~C~~alculate sorbent CO_2 emissions ~~from fluidized bed boilers with flue gas desulfurization~~ using the methods found in §98.33(d). This calculation method is not required when the CO_2 emissions are monitored by CEMS.

NOTE: Authority cited: Sections 38510, 38530, 39600, 39601, 39607, 39607.4 and 41511, Health and Safety Code. Reference: Sections 38530, 39600 and 41511, Health and Safety Code.

***

§ 95156. Additional Data Reporting Requirements.

***

(a) In addition to the data required by section 95157, the operator of an onshore or offshore petroleum and natural gas production facility must report the following data for the facility, disaggregated within the basin by sub-facility :

***

(9) Heat energy (MMBtu) of associated gas produced using thermal enhanced oil recovery. This includes the associated gas fraction piped as an emulsion as defined in section 95102(a). Associated gas may be quantified using production or sales meters as appropriate. Associated gas may also be quantified by multiplying the barrels of crude oil produced during the data year by a representative GOR measurement plus the representative GWR measurement multiplied by the produced water volume. When GOR and GWR measurements are used for quantifying associated gas, these measurements must be the most disaggregated data available (e.g., field or tank farm level). The annual weighted average HHV of the produced gas must be multiplied by the data year volume to determine the annual heat content in MMBtu. HHV measurements must be collected and averaged consistent with the frequency requirements in 95153(y)(2)(D);

(10) Heat energy (MMBtu) of associated gas produced using non-thermal enhanced oil recovery. This includes the associated gas fraction piped as an emulsion as defined in section 95102(a). Associated gas may be quantified using production or sales meters as appropriate. Associated gas may also be quantified by multiplying the barrels of crude oil produced during the data year by a representative GOR measurement plus the representative GWR

measurement multiplied by the annual produced water volume. When GOR and GWR measurements are used for quantifying associated gas, these measurements must be the most disaggregated data available (e.g., field or tank farm level). The annual weighted average HHV of the produced gas must be multiplied by the data year volume to determine the annual heat content in MMBtu. HHV measurements must be collected and averaged consistent with the frequency requirements in 95153(y)(2)(D).

(b) For dry gas production, the operator of an onshore petroleum and natural gas production facility must report its annual heat energy of dry gas produced (MMBtu). The annual weighted average HHV of the produced gas must be multiplied by the data year volume to determine the heat energy in MMBtu. HHV measurements must be collected and averaged consistent with the frequency requirements in 95153(y)(2)(D);

(c) The operator of a natural gas liquid fractionating facility, or a natural gas processing facility, or an onshore petroleum and natural gas production facility with a natural gas processing plant that processes less than 25 MMscf per day must report the annual production of the following natural gas liquids in barrels corrected to 60 degrees Fahrenheit:

***

(d) Onshore natural gas processing facilities that have an annual average throughput of 25 MMscf per day or greater must also report the heat energy of associated gas, waste gas, and natural gas processed (MMBtu). The annual weighted average HHV of the produced gas must be multiplied by the data year volume to determine the heat energy in MMBtu. Facility operators may quantify the volume of gas processed as either the annual output volume or the annual throughput volume of the gas processed at the facility. HHV measurements must be collected and averaged consistent with the frequency requirements in 95153(y)(2)(D).

NOTE: Authority cited: Sections 38510, 38530, 39600, 39601, 39607, 39607.4 and 41511, Health and Safety Code. Reference: Sections 38530, 39600 and 41511, Health and Safety Code.

§95157. Activity Data Reporting Requirements.

***

(c) Report the information listed in this paragraph for each applicable source type in metric tons for each GHG type. If a facility operates under more than one industry segment, each piece of equipment should be reported under the unit's respective majority use segment. When a source type listed under this paragraph routes gas to flare, separately report the emissions that were vented directly to the atmosphere without flaring, and the emissions that resulted from flaring of the gas. Both the vented and flared emissions will be reported under respective source types and not

under flare source type.

***

(13) For each centrifugal compressor:

(A) For compressors with wet seals in operational mode (refer to Equation 21 and 22 of section 95153(m)), report the following for each degassing vent:

1. Number of wet~~s~~ seals connected to the degassing vent.

2. Fraction of vent gas recovered for fuel or sales or flared.

***

(15) For each component type (major equipment type for onshore production) that uses emission factors for estimating emissions (refer to sections 95153(o) and (p)).

***

(19) For onshore petroleum and natural gas production and natural gas distribution combustion emissions, report the following:

***

(H) Annual volume of associated gas produced ~~MMBtu)~~ in Mscf using thermal enhanced oil recovery and non-thermal enhanced oil recovery.

***

(e) For onshore petroleum and natural gas production, report the best available estimate of API gravity, best available estimate of total gas-to-oil ratio, and best available estimate of average low pressure separator pressure for each oil basin category.

NOTE: Authority cited: Sections 38510, 38530, 39600, 39601, 39607, 39607.4 and 41511, Health and Safety Code. Reference: Sections 38530, 39600 and 41511, Health and Safety Code.

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Subarticle 6. Reporting Requirements and Calculation Methods for Electricity Generating Units Subject to the Clean Power Plan

§ 95160. Definition of Source Category and Applicability.

(a) U.S. EPA Clean Power Plan Rule. This subarticle incorporates the following specific provisions of the U.S. EPA Clean Power Plan Final Rule, Subpart UUUU—Emission Guidelines for Greenhouse Gas Emissions and Compliance Times for Electric Utility Generating Units; 40 Code of Federal Regulations (CFR) Part 60, Subpart UUUU: 40 CFR sections 60.5845, 60.5850, and 60.5880, published in the Federal Register on October 23, 2015.

(b) Each of the provisions of this subarticle become effective starting with 2021 data submitted in 2022, if U.S. EPA has approved, as memorialized by publication in the Federal Register and Code of Federal Regulations, that provision as part of California's plan for compliance with the Clean Power Plan.

(c) For the purposes of this article, the Clean Power Plan electricity generating unit source category consists of any affected EGU, which is a steam generating unit, integrated gasification combined cycle facility (IGCC), or stationary combustion turbine that commenced construction on or before January 8, 2014, and meets the relevant applicability conditions specified in Subpart UUUU of 40 CFR Part 60, §60.5845 paragraphs (b)(1)-(b)(3). EGUs excluded from being affected EGUs are specified in 40 CFR Part 60, §60.5850.

(c) Any affected EGU is also subject to all other applicable requirements of this article, including but not limited to sections 95101 through 95108 and section 95112, except as modified in this subarticle. All affected EGUs are subject to the full verification provisions of this article.

(e) Any affected EGU must comply with the emission estimation provisions of this subarticle, and must not use other emission calculation methods, such as those specified in section 95115.

(f) Any affected EGU must separately monitor and report emissions and other data for each affected EGU, except as provided under section 95162(a)(4) of this subarticle. The provisions allowing unit aggregation specified elsewhere in this article do not apply to affected EGUs.

(g) Affected EGUs remain subject to the provisions of this subarticle unless they undergo a complete and permanent shutdown, with a full cessation of all GHG-emitting processes and operations as specified in section 95101(h).

NOTE: Authority cited: Sections 38510, 38530, 39600, 39601, 39602, 39607, 39607.4 and 41511, Health and Safety Code. Reference: Sections 38530, 39600 and 41511, Health and Safety Code.

§95161. Definitions.

(a) For the purposes of this subarticle, definitions specified in Subpart UUUU of 40 CFR Part 60, §60.5880 shall apply for affected EGUs. Should a conflict exist between definitions of this subpart, and definitions of section 95102 of this article, the definitions identified in this subarticle take precedence for affected EGUs.

NOTE: Authority cited: Sections 38510, 38530, 39600, 39601, 39602, 39607, 39607.4 and 41511, Health and Safety Code. Reference: Sections 38530, 39600 and 41511, Health and Safety Code.

§95162. Monitoring and Record Keeping Requirements

(a) Owners and operators of affected EGUs must follow the applicable monitoring provisions of this section.

(1) Affected EGUs must prepare a monitoring plan as specified in 40 CFR §60.5860(a)(1).

(2) For two or more affected EGUs which share a common exhaust gas stack, and are implementing continuous emissions monitoring per 40 CFR §60.5860(a)(3), and meet the requirements of 40 CFR §60.5860(a)(6), owners or operators may monitor CO_2 emissions at the common stack and calculate hourly net electric output for the common stack as specified in 40 CFR §60.5860(a)(6).

(3) For two or more affected EGUs in which exhaust gases are emitted to the atmosphere through multiple stacks (or if the exhaust gases are routed to a common stack through multiple ducts and you elect to monitor in the ducts), owners or operators must follow the provisions of 40 CFR §60.5860(a)(7).

(4) If two or more affected EGUs serve a common electric generator, owners or operators must comply with the provisions of 40 CFR §60.5860(a)(8).

(b) The owner or operator of an affected EGU must maintain the following records for at least 10 years after the submission of each report, occurrence, measurement, maintenance, corrective action, report, or record, whatever is latest according to U.S. EPA Standards of Performance for New Stationary Sources, 40 Code of Federal Regulations (CFR) Part 60, Subpart A, Section 60.7, July 1, 2012, which is hereby incorporated by reference. The owner or operator of an affected EGU must maintain each record on site for at least 2 years, and may maintain the records off site and electronically for the remaining year(s).

(1) Data as specified under the provisions of 40 CFR §60.5860(b)(1)-(3).

(2) Records as specified by 40 CFR §60.5860(c)(1) and 40 CFR §60.5860(c)(2)(i)-(iii) which includes data collected or used for calculations in applicable sections of 40 CFR §60.5860(a)-(b).

NOTE: Authority cited: Sections 38510, 38530, 39600, 39601, 39602, 39607, 39607.4 and 41511, Health and Safety Code. Reference: Sections 38530, 39600 and 41511, Health and Safety Code.

§95163. Emissions and Data Calculation and Reporting Requirements.

(a) The owner or operator of an affected EGU must determine the CO_2 mass emissions (short tons) for the compliance period as specified under the provisions of 40 CFR §60.5860(b)(1)-(2).

(b) The owner or operator of an affected EGU that exclusively combusts liquid fuel and/or gaseous fuel may determine the hourly CO_2 mass emissions according to 40 CFR §60.5860(a)(4)(i) through (a)(4)(vi).

(c) The owner or operator of an affected EGU (or group of affected units that share a monitored common stack) must comply with all requirements of 40 CFR §60.5860(b)(3) for measurement and calculation of net electric output, useful thermal output, and mechanical output, and determine net energy output.

(d) Each year, any affected EGUs must submit the information specified in 40 CFR §60.5860(d), paragraphs (1) and (3) to the Air Resources Board pursuant to section 95104(e) of this article, under the schedule specified in section 95103(e) of this article.

NOTE: Authority cited: Sections 38510, 38530, 39600, 39601, 39602, 39607, 39607.4 and 41511, Health and Safety Code. Reference: Sections 38530, 39600 and 41511, Health and Safety Code.

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Appendix A

to the Regulation for the Mandatory Reporting
of Greenhouse Gas Emissions

Emission Factors and Calculation Data
for Petroleum and Natural Gas Systems Reporting

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Table 7
Default Methane Emission Factors for Natural Gas Distribution

Natural gas distribution	Emission Factor (scf/hour/component)
Leaker Emission Factors – Above Grade M&R at City Gate Stations[1] Components	
Connector	1.69
Block Valve	0.557
Control Valve	9.34
Pressure Relief Valve	0.27
Orifice Meter	0.212
Regulator	0.772
Open-ended Line	26.131
Population Emission Factors – Below Grade M&R [2] Components, Gas Service[3]	
Below Grade M&R Station, Inlet Pressure >300 psig	1.30
Below Grade M&R Station, Inlet Pressure 100 to 300 psig	0.20
Below Grade M&R Station, Inlet Pressure <100 psig	0.10
Population emission Factors – Distribution Mains, Gas Service[4]	
Unprotected steel	12.58
Protected Steel	0.35
Plastic	1.13
Cast Iron	27.25
Population Emission Factors – Distribution Services, Gas Service[5]	
Unprotected Steel	0.19
Protected Steel	0.02
Plastic	0.001
Copper	0.03
Population Emission Factors – Customer Meters	Emission Factor (scf/meter-hour)
Residential	0.01582
Commercial	0.00547
Industrial	0.00547

[1] City gate stations at custody transfer and excluding customer meters.
[2] Excluding customer meters.
[3] Emission Factor is in units of “scf/hour/station.”
[4] Emission Factor is in units of “scf/hour/mile.”
[5] Emission factor is in units of “scf/hour/number of services.”

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Appendix B

to the Regulation for the Mandatory Reporting
of Greenhouse Gas Emissions

TEST PROCEDURE
for
~~Flash Emissions of Greenhouse Gases and~~
~~Other Compounds from Crude Oil and Natural Gas~~
~~Separator and Tank Systems~~
Determining Annual Flash Emission Rate of Methane
from Crude Oil, Condensate, and Produced Water

Test Procedure for Determining Annual Flash Emission Rate of Methane from Crude Oil, Condensate, and Produced Water

1. PURPOSE AND APPLICABILITY

In crude oil and natural gas production, flash emissions may occur when gas entrained in crude oil, condensate, or produced water is released from the liquids due to a decrease in pressure or increase in temperature, such as when the liquids are transferred from an underground reservoir to the earth's surface. This procedure is used for determining the annual flash emission rate from tanks used to separate, store, or hold crude oil, condensate or produced water. The laboratory methods required to conduct this procedure are used to measure methane and other gaseous compounds.

2. PRINCIPLE AND SUMMARY OF TEST PROCEDURE

This procedure is conducted by collecting one sample of crude oil or condensate and one sample of produced water upstream of a separator or tank where flashing may occur. Samples shall be collected under pressure and according to the methods specified in this procedure. If a pressure separator is not available for collecting samples, sampling shall be conducted using a portable pressurized separator.

Two sampling methods are specified for collecting liquid samples while maintaining a positive pressure within a sampling cylinder to prevent flashing within the cylinder. The first method requires a double valve cylinder for collecting crude oil or produced water samples. The second method requires a cylinder equipped with a pressurized piston for collecting condensate or produced water samples. Both methods shall be conducted as specified in this procedure.

The laboratory methods specified for this procedure are based on American Standards and Testing Materials (ASTM), US Environmental Protection Agency (EPA), and Gas Processor Association (GPA) methods. These laboratory methods measure the volume and composition of gases that flash from the liquids, including a Gas-Oil or Gas-Water Ratio, as well as the molecular weight and weight percent of the gaseous compounds. The laboratory results are used with the crude oil or condensate or produced water throughput to calculate the mass of emissions that are flashed from the liquids per year.

3. DEFINITIONS

For the purposes of this procedure, the following definitions apply:

3.1 “Air Resources Board or ARB" means the California Air Resources Board.

3.2 "API Gravity" means a scale used to reflect the specific gravity (SG) of a fluid such as crude oil, condensate, produced water, or natural gas. The API gravity is calculated as [(141.5/SG) - 131.5], where SG is the specific gravity of the fluid at 60°F, and where API refers to the American Petroleum Institute.

3.3 "Condensate" means hydrocarbon and other liquid either produced or separated from crude oil or natural gas during production and which condenses due to changes in pressure or temperature.

3.4 "Crude oil" means any of the naturally occurring liquids and semi-solids found in rock formations composed of complex mixtures of hydrocarbons ranging from one to hundreds of carbon atoms in straight and branched chain rings.

3.5 Double valve cylinder" means a metal cylinder equipped with valves on either side for collecting crude oil or produced water samples.

3.6 "Emissions" means the discharge of natural gas into the atmosphere.

3.7 "Emulsion" means any mixture of crude oil, condensate, or produced water with varying amounts of natural gas contained in the liquid.

3.8 "Flash or flashing" means a process during which gas entrained in crude oil, condensate, or produced water under pressure is released when subject to a decrease in pressure, such as when liquids are transferred from an underground reservoir to a tank on the earth's surface.

3.9 "Gas-Oil Ratio (GOR)" means a measurement used to describe the volume of gas that is flashed from a barrel of crude oil or condensate.

3.10 "Gas-Water Ratio (GWR)" means a measurement used to describe the volume of gas that is flashed from a barrel of produced water.

3.11 "Natural gas" means a naturally occurring mixture or process derivative of hydrocarbon and non-hydrocarbon gases, of which its constituents include methane, carbon dioxide, and heavier hydrocarbons. Natural gas may be field quality (which varies widely) or pipeline quality.

3.12 "Operating pressure" means the steady-state pressure of the vessel from which a sample is collected. If no pressure gauge is available or the sampling train pressure gauge reading is greater than +/- 5 psig of the vessel pressure, the sampling train pressure gauge reading shall be used to record the steady state pressure on Form 1.

3.13 "Operating temperature" means the steady-state temperature of the vessel from which a sample is collected. If no temperature gauge is available or the sampling train temperature gauge reading is greater than +/- 4°F of the vessel temperature, the sampling train temperature gauge reading shall be used to record the steady state temperature on Form 1.

3.14 “Percent water cut” means the volume percentage of produced water to crude oil or condensate.

3.15 “Piston cylinder” means a metal cylinder containing an internal pressurized piston for collecting condensate or produced water samples.

3.16 "Portable pressurized separator" means a sealed vessel that can be moved from one location to another by attachment to a motor vehicle without having to be dismantled and is used for separating and sampling crude oil, condensate, or produced water at the steady-state temperature and pressure of the separator and tank system required for sampling.

3.17 "Pressure separator" means a pressure vessel used for the primary purpose of separating crude oil and produced water or for separating natural gas and produced water.

3.18 “Pressure vessel” means any vessel rated, as indicated by an American Soceity of Mechanical Engineers (ASME) pressure rating stamp, and operated to contain normal working pressures of at least 15 psig without vapor loss to the atmosphere and may be used for the separation of crude oil, condensate, produced water, or natural gas.

3.19 “Produced water” means water recovered from an underground reservoir as a result of crude oil, condensate, or natural gas production and which may be recycled, disposed, or re-injected into an underground reservoir.

3.20 “Separator” means any tank or pressure separator used for the primary purpose of separating crude oil and produced water or for separating natural gas, condensate, and produced water. In crude oil production a separator may be referred to as a Wash Tank or as a three-phase separator. In natural gas production a separator may be referred to as a heater/separator.

3.21 "Separator and tank system" means the first separator in a crude oil or natural gas production system and any tank or sump connected directly to the first separator.

3.22 “Tank” means any container constructed primarily of non-earthen materials used for the purpose of storing, holding, or separating emulsion, crude oil, condensate, or produced water and that is designed to operate below 15 psig normal operating pressure.

3.23 “Throughput” means the average volume of crude oil, condensate, or produced water expressed in units of barrels per day.

4. BIASES AND INTERFERENCES

4.1 The sampling method used to collect a liquid sample will have an impact on the final results reported. Liquid samples shall be collected in accordance with the sampling procedures specified in this procedure.

4.2 The location from where a sample is collected will have an impact on the final results reported. Liquid samples shall be collected from a pressure separator or portable pressurized separator as specified in this procedure.

4.3 Collecting liquid samples from a pressure separator or portable pressurized separator that periodically drains liquids will have an impact on the final results reported. Samples shall not be collected from a pressure separator or portable pressurized separator while it periodically drains liquids.

4.4 Collecting liquid samples using an empty double valve cylinder without displacing an immiscible liquid from the cylinder will allow gases to flash from the cylinder and will have an impact on the final results reported. Samples collected using a double valve cylinder shall be collected as specified in this procedure.

4.5 Displacing liquids from a double valve cylinder that are reactive and not immiscible with the sample liquid collected will result in gas composition or volume errors and will affect the final results reported. Displacement liquids shall be pre-tested by a laboratory to verify that the liquid is non-reactive and is immiscible with the sample liquid collected.

4.6 Non-calibrated equipment including pressure or temperature gauges will have an impact the final results reported. All pressure and temperature measurements shall be conducted with calibrated gauges as specified in this procedure.

4.7 Conducting laboratory procedures other than those specified in this procedure will have an impact on the final results reported. All laboratory methods and quality control and quality assurance procedures shall be conducted as specified in this procedure.

4.8 The collection and testing of duplicate samples is recommended in order to verify the reported results.

5. SAMPLING EQUIPMENT SPECIFICATIONS

5.1 A pressure gauge capable of measuring liquid pressures of less than 50 pound per square inch gauge pressure within +/-10% accuracy.

5.2 A pressure gauge capable of measuring liquid pressures greater than 50 pounds per square inch gauge pressure within +/- 5% accuracy.

5.3 A temperature gauge capable of reading liquid temperature within +/- 2°F and within a range of 32°F to 250°F.

5.4 A graduated cylinder capable of measuring liquid in at least five (5) milliliter increments with at least the same capacity as the double valve cylinder used for liquid sampling.

5.5 A portable pressurized separator that is sealed from the atmosphere and is used for collecting crude oil, condensate, and produced water samples at the steady state temperature and pressure of the separator and tank system being sampled.

6. SAMPLING EQUIPMENT

6.1 A double valve cylinder or a piston cylinder of at least 300 milliliters in volume for collecting crude oil or condensate samples or at least 800 milliliters in volume for collecting produced water samples.

6.2 A graduated cylinder for use with double valve cylinder.

6.3 A waste container suitable for capturing and disposing sample liquid.

6.4 High-pressure rated metal components and control valves that can withstand the temperature and pressure of the pressure vessel or portable pressurized separator being sampled.

6.5 Pressure gauges with minimum specifications listed in section 5.

6.6 A temperature gauge with minimum specifications listed in section 5.

6.7 If required, a portable pressurized separator with minimum specifications listed in section 5.

7. DATA REQUIREMENTS

7.1 The data requirements required to conduct this procedure shall be provided by the facility owner or operator prior to conducting the sampling methods specified in this procedure. Field sampling shall not be performed until all data requirements are provided as listed in section 7.2 and as specified on Form 1.

7.2 For each pressure separator or portable pressurized separator sampled, the following data shall be recorded on the sample cylinder identification tag and on Form 1 prior to conducting a sample collection method:

(a) The separator identification number or description.

(b) The separator temperature and pressure if available.

(c) Crude oil or condensate throughput.

(d) Produced water throughput.

(e) Percent water cut.

(f) Gas flow rate of three phase separator if available.

(g) Number of wells in the separator and tank system.

(h) Days of operation per year.

8. DOUBLE VALVE CYLINDER SAMPLING METHOD

8.1 The double valve cylinder sampling method is used for collecting crude oil or produced water samples and is not applicable for collecting samples of condensate. Liquid samples of condensate shall be collected using the piston cylinder sampling method specified in section 9.

8.2 Fill the double valve cylinder with non-reactive liquid that is immiscible with the liquid to be collected to prevent flashing within the cylinder and to prevent the displacement liquid from mixing or attaining homogeneity with the sample liquid.

8.3 Locate a pressure separator immediately upstream of the separator or tank required for testing and verify it is pressurized to at least 15 psig. Install a portable pressurized separator if no pressure separator is available immediately upstream of the separator or tank that can be used to collect crude oil and produced water samples.

8.4 Record the sample collection data requirements specified in section 7 on the cylinder identification tag and on Form 1.

8.5 Locate the sampling port(s) for collecting liquid samples.

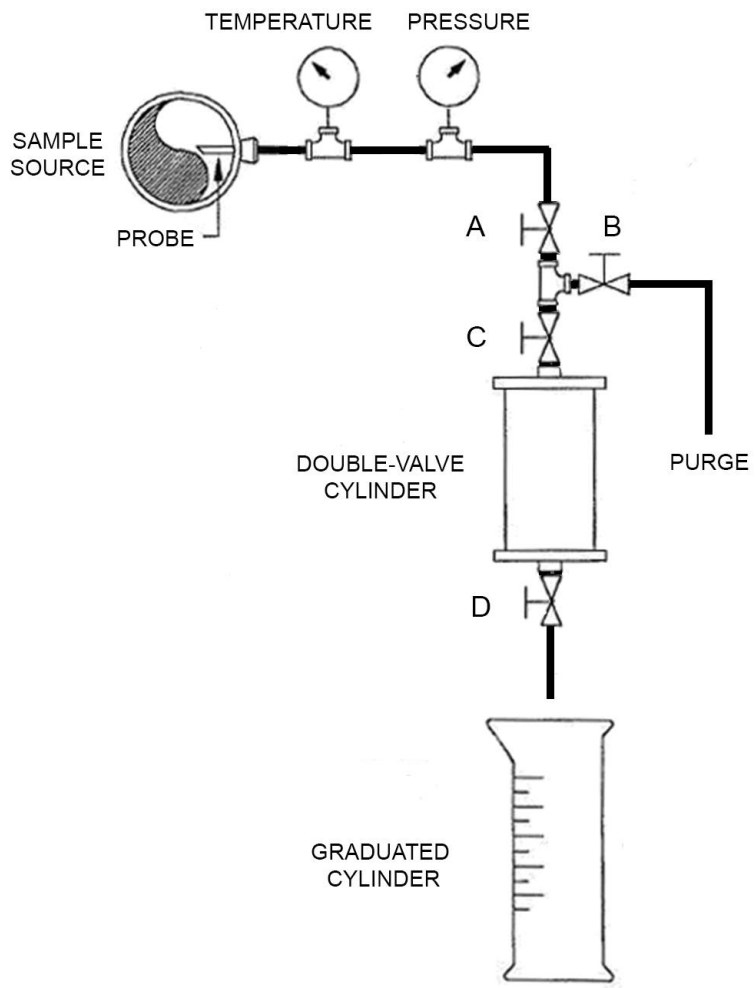
8.6 Connect the sampling train as illustrated in Figure 1 to the sampling port on the pressure separator or portable pressurized separator while minimizing tubing between the purge valve and cylinder as shown. Bushings or reducers may be required.

8.7 Purge the sampling train: Place the outlet of valve B into the waste container. With valves B, C and D closed, slowly open valve A completely, and then slowly open valve B to purge the sample train until a steady stream of liquid without gas pockets is observed, and then close valve B.

8.8 Prepare for sampling: Orient the double-valve cylinder in the vertical position so that displacement liquid can readily be discharged from the cylinder. Note that the orientation of valves C and D depend on the type of sample being collected and the liquid used for displacement. Based on density differences in liquids, the heaviest liquid must be introduced or expelled from the bottom of cylinder. See Figure 2

8.9 Slowly open valve C to the full open position and place the outlet of valve D into the graduated cylinder.

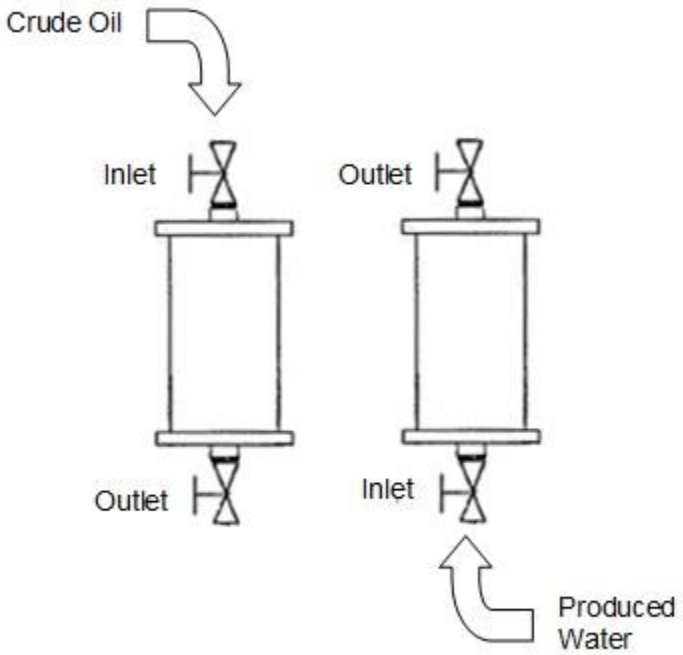
Figure 1: Double Valve Cylinder Sampling Train



8.10 Collect liquid sample: Slowly open valve D to allow a slow displacement of the non-reactive displacement liquid at a rate between 150 and 200 milliliters per minute (3 drips per second) to prevent the sample liquid from flashing inside the cylinder. Continue until 80 to 95 percent of the displacement liquid is measured in the graduated cylinder, and then close valves D and C.

8.11 Record the steady state pressure and temperature on Form 1.

Figure 2: Double Valve Cylinder Orientation



8.12 Record the double valve cylinder volume and the volume of liquid sampled on the cylinder identification tag and on Form 1.

8.13 Disconnect the sample cylinder from the sampling train and verify that both valves are sealed.

8.14 Remove sampling train: With valves D and C closed, purge any remaining liquid in the sampling train through valve B. Then close valves A and B. Disconnect the sampling train from the pressure separator or portable pressurized separator.

8.15 Verify that all of the data requirements are recorded on the cylinder identification tag and on Form 1.

8.16 Transport the cylinder to the laboratory for conducting the laboratory methods specified in section 12.

9. PISTON CYLINDER SAMPLING METHOD

9.1 Locate a pressure separator immediately upstream of the separator or tank required for testing and verify it is pressurized to at least 15 psig. Install a portable pressurized separator if no pressure separator is available immediately

upstream of the separator or tank that can be used to collect condensate and produced water samples.

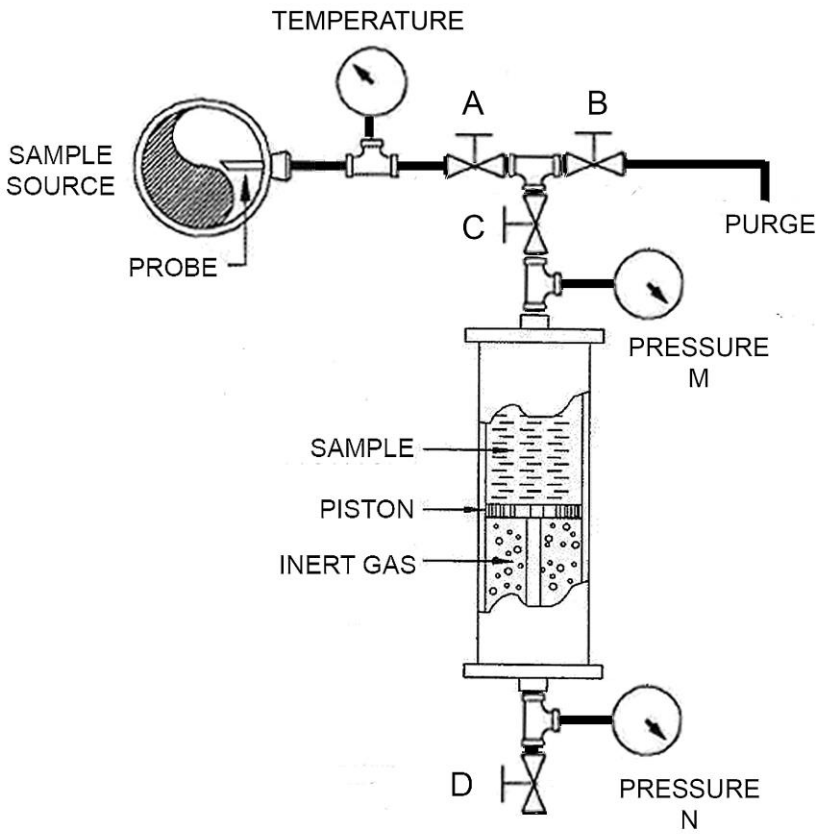
9.2 Record the sample collection data requirements specified in section 7 on the cylinder identification tag and on Form 1.

9.3 Locate the sampling port(s) for collecting liquid samples.

9.4 Connect the sampling train as illustrated in Figure 3 to the pressure separator or pressurized portable separator while minimizing tubing between the purge valve and cylinder as shown. Bushings or reducers may be required.

9.5 Purge the sampling train: Place the outlet of valve B into the waste container. With valves B, C and D closed, slowly open valve A completely, and then slowly open valve B to purge the sample train until a steady stream of liquid without gas pockets is observed, and then close valve B.

Figure 3: Piston Cylinder Sampling Train



9.6 Prepare for sampling: With valve B closed and valve A open, slowly open valve C to the full open position, then slowly open valve D until the pressure indicated on Gauge N is equal to Gauge M.

9.7 Collect liquid sample: Slowly open Valve D to allow liquid to enter the piston cylinder at a rate of 150 to 200 milliliters per minute until 80 to 95 percent of the cylinder is filled with liquid. Then close valves C and D.

9.8 Record the steady state pressure and temperature on Form 1.

9.9 Record the cylinder volume and volume of liquid sampled on the cylinder identification tag and on Form 1.

9.10 Disconnect the sample cylinder from the sampling train and verify that both valves are sealed.

9.11 Remove sampling train: Place the outlet of valve B into the waste container and slowly open valve B to purge all liquid from the sampling train. Then close valves A and B. Disconnect the sampling train from the pressure separator or portable pressurized separator.

9.12 Verify that all of the data requirements are recorded on the cylinder identification tag and on Form 1.

9.13 Transport the cylinder to the laboratory for conducting the laboratory methods as specified in section 12.

10. LABORATORY REQUIREMENTS AND METHODS

10.1 Quality Control, Quality Assurance, and Field Records

(a) Quality control requirements shall be performed in accordance with the laboratory methods specified in this test procedure.

(b) Each day of sampling, at least one field duplicate sample shall be collected per matrix type (crude oil, condensate, produced water). The field duplicate samples are collected to demonstrate acceptable method precision by the laboratory at the time of analysis. Through this process the laboratory can evaluate the consistency of sample collection and analytical measurements as well as matrix variation. The laboratory should establish control limits based on relative percent difference to evaluate the validity of the measured results.

(c) Laboratory procedures shall be in place for establishing acceptance criteria for field activities described in sections 7, 8 and 9 of this procedure. All deviations from the acceptance criteria shall be documented. Deviations from the acceptance criteria may or may not affect data quality.

(d) Laboratory procedures shall be in place to ensure that field staff have been trained on the sampling methods specified in this procedure and retrained on sampling methods if this procedure changes.

(e) Field records shall provide direct evidence and support necessary for technical interpretations, judgments, and discussions concerning project activities and shall, at a minimum, include a completed copy of Form 1 as provided in this procedure for each sample collected.

10.2 Laboratory Flash Analysis Equipment

(a) All laboratory equipment used to conduct measurements shall be calibrated in accordance with the manufacturer specifications and in accordance with the laboratory methods specified in this procedure.

(b) Any chromatograph system that allows for the collection, storage, interpretation, adjustment, or quantification of chromatograph detector output signals representing relative component concentrations may be used to conduct this procedure. All test methods and quality control requirements shall be conducted in accordance with each laboratory method specified.

(c) The minimum reporting limit of the instruments used for reporting gaseous compounds must be at least 100 parts per million (ppm) for both hydrocarbon and fixed gases.

(d) The laboratory apparatus used for heating sample cylinders must be capable of heating and maintaining the steady state temperature measured at the time of sampling as reported on Form 1.

(e) The laboratory apparatus used for collecting gas flashed from liquids must be capable of precisely measuring gas volume, temperature, and pressure.

(f) The laboratory vessel used for collecting gas flashed from liquids must be capable of collecting or storing gas for chromatography analysis without sample degradation and without compromising the integrity of the sample.

(g) Additional sample preparation guidance can be found in GPA 2174-93, GPA 2261-00 and GPA 2177-03, all of which are hereby incorporated by reference, and fully identified in section 14 of this appendix, under References.

10.3 Laboratory Flash Analysis Procedure

(a) Heat the sample cylinder to the sample collection temperature as reported on Form 1 and allow the temperature to stabilize for a minimum of 30 minutes.

(b) After the cylinder temperature has stabilized, open the cylinder and collect all gas flashed from the liquid for a minimum of 30 minutes while monitoring the gas pressure and temperature.

(c) After all gas has flashed from the cylinder for a minimum of 30 minutes, ensure that the gas pressure has stabilized at ambient pressure with no changes in gas pressure observed. In the event that the gas pressure changes or remains above ambient pressure after 30 minutes, continue to allow the cylinder to flash until the gas pressure stabilizes at ambient pressure. The collected gas sample can now be used for gas chromatography analysis.

(d) At least 0.20 standard cubic feet of sample gas per barrel of liquid is required to conduct the laboratory procedures specified in this procedure. If insufficient gas volume is collected during the flash analysis procedure, additional laboratory analyses cannot be completed while maintaining the accuracy requirements specified in this procedure.

(e) After the flash analysis procedure is completed, remove all liquid from the sample cylinder and measure the total liquid volume and volume fractions (for example, 300ml total volume, 285 ml crude oil, 15 ml water) and adjust for any displacement liquid that was not displaced during the sample collection procedure.

10.4 Gas-Oil and Gas-Water Ratio Calculation Methodology

(a) Convert the volume of gas vapor measured during the laboratory flash analysis procedure to standard atmospheric conditions as derived from the Ideal Gas Law as follows:

$$Vapor_{Std} = \frac{(Volume_{Lab})(459.67 + 60F)(P_{Lab})}{(459.67 + T_{Lab})(14.696)} \qquad \textbf{Equation 4}$$

Where:

$Vapor_{Std}$ = Standard cubic feet of vapor at 60°F and 14.696 psia.

$Volume_{Lab}$ = Volume of vapor measured at laboratory conditions.

T_{Lab} = Temperature of vapor at laboratory conditions, °F.

P_{Lab} = Pressure of vapor at laboratory conditions, psia.

459.67 = Conversion from Fahrenheit to Rankine

60F = Standard temperature of 60°F.

14.696 = Standard atmospheric pressure, psia.

(b) Convert the volume of crude oil or produced water measured after conducting the laboratory flash analysis procedure to standard conditions as follows:

$$Liquid_{Std} = \left(\frac{Mass_{Liquid}}{Density_{60F}}\right)\left(\frac{1\ gallon}{3785.412\ ml}\right)\left(\frac{1\ STB}{42\ gallons}\right)$$ **Equation 5**

Where:

Liquid $_{Std}$ = Standard volume of post-flash liquid at 60°F, barrels.

Mass $_{Liquid}$ = Mass of liquid at laboratory conditions, grams.

Density $_{60F}$ = Density of liquid at 60°F, grams/milliliter.

3785.412 = Conversion from milliliter to US gallons.

STB = Stock Tank Barrel.

42 gallons = Volume of a stock tank barrel at 60°F.

(c) Calculate the Gas-Oil or Gas-Water Ratio as follows:

$$G = \frac{(Vapor_{Std})}{(Liquid_{Std})}$$ **Equation 6**

Where:

G = The Gas-Oil or Gas-Water Ratio.

Vapor Std = Standard cubic feet of vapor at 60oF and 14.696 psia.

Liquid Std = Standard volume of post-flash liquid at 60oF, barrels.

Note: For condensate, the volume of liquid used for calculating the Gas-Oil Ratio shall be obtained from the piston cylinder measurement reported on Form 1 at the time of liquid sampling due to the rapid flashing of condensate that occurs during the laboratory flash analysis procedure.

10.5 Analytical Laboratory Methods and Requirements

The following methods are required to evaluate and report flash emission rates from crude oil, condensate, and produced water.

(a) Oxygen, Nitrogen, Carbon Dioxide, Methane, Ethane, Propane, i-Butane, n-Butane, i-Pentane, n-Pentane, Hexanes, Heptanes, Octanes, Nonanes, Decanes+: Evaluate per GPA 2286-95, ASTM D-1945-03, ASTM D-3588-98, and ASTM D-2597-10 (GC/TCD), all of which are hereby incorporated by reference, and fully identified in section 14 of this appendix, under

References.

(b) BTEX: Evaluate per EPA 8021B (GC/FID) or use ASTM D-3710-95, GPA 2286-95, EPA 8260B, EPA TO-14A, and EPA TO-15 as alternate methods, all of which are hereby incorporated by reference, and fully identified in section 14 of this appendix, under References.

(c) API Gravity of whole oil at 60°F by ASTM D 287-92 (Hydrometer Method), ASTM D-4052-09 (Densitometer), ASTM D 5002-16 (Densitometer), or ASTM D-70-09 (Pycnometer), all of which are hereby incorporated by reference, and fully identified in section 14 of this appendix, under References. Note: if water is entrained in sample, use ASTM D 287-92, which is hereby incorporated by reference and fully identified in section 14 of this appendix, under References. If needed calculate Specific Gravity 60/60°F = 141.5 / (131.5 + API Gravity at 60°F).

(d) Specific Gravity of Produced Water at 60°F by ASTM D 287-92 (Hydrometer Method), ASTM D 4052-09 (Densitometer), ASTM D 5002-16 (Densitometer), or ASTM D 70-09 (Pycnometer), all of which are hereby incorporated by reference, and fully identified in section 14 of this appendix, under References. If needed calculate API at 60°F = (141.5 / SG at 60°F) - 131.5

(e) Molecular Weight of gaseous phase by calculation per ASTM D-3588-98, which is hereby incorporated by reference, and fully identified in section 14 of this appendix, under References

(f) Water and Sediment in Crude Oil by Centrifuge Method per ASTM D-4007-08, which is hereby incorporated by reference, and fully identified in section 14 of this appendix, under References

11. CALCULATING RESULTS

The following calculations are performed in conjunction with the data requirements specified in section 7 and the laboratory reports specified in section 12. The same calculations are used for crude oil, condensate, and produced water.

11.1 Calculate the volume of gas flashed from the liquid per year using the Gas Oil or Gas Water Ratio obtained from the laboratory report as follows:

$$Ft^3 / Year = (G)\left(\frac{Barrels}{Day}\right)\left(\frac{Days}{Year}\right) \qquad \textbf{Equation 1}$$

Where:

Ft3/Year = standard cubic feet of gas produced per year

G = Gas Oil or Gas Water Ratio (from laboratory report)

Barrels/Day = barrels per day of liquid (Form 1)

Days/Year = days of operation per year (Form 1)

11.2 Convert the gas volume to pounds as follows: **Equation 2**

$$Mass_{Gas}/Year = \left(\frac{Ft^3}{Year}\right)\left(\frac{gram}{gram-mole}\right)\left(\frac{gram-mole}{23.690\,l}\right)\left(\frac{28.317\,l}{Ft^3}\right)\left(\frac{lb}{454\,grams}\right)$$

Where:

Mass $_{Gas}$ /Year = pounds of gas per year

Ft^3/Year = cubic feet of gas produced per year (Equation 1)

Gram/Gram-Mole = Molecular weight (from laboratory report)

23.690 l/gr-mole = molar volume of ideal gas at 14.696 psi and 60^0F

11.3 Calculate the annual mass of methane as follows:

$$Mass_{Methane}/Year = \left(\frac{WT\%\,Methane}{100}\right)\left(\frac{Mass_{Gas}}{Year}\right)\left(\frac{metric\ ton}{2205\,lb}\right)$$ **Equation 3**

Where:

Mass $_{Methane}$ /Year = metric tons of methane

Mass $_{Gas}$ /Year = pounds of gas per year (Equation 2)

WT% Methane = Weight % of methane (from laboratory report)

12. LABORATORY REPORTS

12.1 The results of this procedure are used by owners or operators of separator and tank systems to report annual methane flash emissions to ARB. The following information shall be compiled as a report by the laboratory conducting this procedure and provided to the owner or operator each time flash analysis testing is conducted:

(a) A sketch or diagram of the separator and tank system depicting the sampling location; and,

(b) A copy of Form 1 as specified in this procedure for each liquid sample collected; and,

(c) The laboratory results for each liquid sample evaluated as specified in section 12.4; and,

(d) Other documentation or information necessary to support technical

interpretations, judgments, and discussions.

12.2 Reports shall be made available to the owner or operator no later than 60 days from the date of liquid sampling.

12.3 Reports shall be maintained by the laboratory conducting this procedure for a minimum of five (5) years from the date of liquid sampling and additional copies shall be made available at the request of the owner or operator.

12.4 Laboratory reports shall include, at minimum, a listing of results obtained using the laboratory methods specified in this procedure and as specified in Table 1.

Table 1: Laboratory Data Requirements

WT% CO2, CH4
WT% C2-C9, C10+
WT% BTEX
WT% O2
WT% N2
Molecular Weight of gas sample (gram/gram-mole)
Liquid phase specific gravity of produced water
Gas Oil or Gas Water Ratio (scf/stock tank barrel)
API gravity of whole oil or condensate at 60°F
Water and Sediment of whole oil (ASTM D-4007-08)
Post-Test Cylinder Water Volume
Post-Test Cylinder Oil Volume

13. ALTERNATIVE TEST PROCEDURES, SAMPLING METHODS OR LABORATORY METHODS

Alternative test procedures, sampling methods, or laboratory methods other than those specified in this procedure shall only be used if prior written approval is obtained from ARB. In order to secure ARB approval of an alternative test procedure, sampling method, or laboratory method, the applicant is responsible for demonstrating to the ARB's satisfaction that the alternative test procedure, sampling method, or laboratory method is equivalent to those specified in this test procedure.

(1) Such approval shall be granted on a case-by-case basis only. Because of the evolving nature of technology and procedures and methods, such approval shall not be granted in subsequent cases without a new request for approval and a new demonstration of equivalency.

(2) Documentation of any such approvals, demonstrations, and approvals shall be maintained in the ARB files and shall be made available upon request.

14. REFERENCES

ASTM D-70-09 *Standard Test Method for Density of Semi-Solid Bituminous Materials (Pycnometer Method). 2009.*

ASTM D-287-92 *Standard Test Method for API Gravity of Crude Petroleum and Petroleum Products (Hydrometer Method). Reapproved 2000.*

ASTM D-1945-03 *Standard Test Method for Analysis of Natural Gas by Gas Chromatography. Reapproved 2010.*

ASTM D-2597-10 *Standard Test Method for Analysis of Demethanized Hydrocarbon Liquid Mixtures Containing Nitrogen and Carbon Dioxide by Gas Chromatography. 2010.*

ASTM D-3710-95 *Standard Test Method for Boiling Range Distribution of Gasoline and Gasoline Fractions by Gas Chromatography. Reapproved 2009.*

ASTM D-3588-98 *Standard Practice for Calculating Heat Value, Compressibility Factor, and Relative Density of Gaseous Fuels. Reapproved 2003.*

ASTM D-4007-08 *Standard Test Method for Water and Sediment in Crude Oil by the Centrifuge Method (Laboratory Procedure). 2008.*

ASTM D-4052-09 *Standard Test Method for Density, Relative Density, and API Gravity of Liquids by Digital Density Meter. 2009.*

ASTM D-5002-16 *Standard Test Method for Density and Relative Density of Crude Oils by Digital Density Analyzer. 2016.*

EPA Method 8021B *Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors. 2014.*

EPA Method 8260B *Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS). 1996.*

EPA Method TO-14 *Determination of Volatile Organic Compounds (VOCs) In Ambient Air Using Specially Prepared Canisters with Subsequent Analysis By Gas Chromatography. 1999.*

EPA Method TO-15 *Determination of Volatile Organic Compounds (VOCs) In Air Collected In Specially-Prepared Canisters and Analyzed By Gas Chromatography/Mass Spectrometry (GC/MS). 1999.*

GPA 2174-93 *Analysis Obtaining Liquid Hydrocarbon Samples for Analysis by Gas Chromatography. 2000.*

GPA 2177-03 *Analysis of Natural Gas Liquid Mixtures Containing Nitrogen and Carbon Dioxide by Gas Chromatography. 2003.*

GPA 2261-00 *Analysis for Natural Gas and Similar Gaseous Mixtures by Gas Chromatography. 2000.*

GPA 2286-95 *Tentative Method for the Extended Analysis of Natural Gas and Similar Gaseous Mixtures by Temperature Program Gas Chromatography . Reprinted 1999.*

FORM 1

Flash Analysis Testing Field Data Form

Date of Testing:	
Production Company Name:	
Address:	
City:	
Contact:	Phone:
Sampling Company Name:	
Address:	
City:	
Contact:	Phone:
Portable Pressurized Separator ID:	
Pressure Vessel ID:	
Steady State Pressure: psig	
Steady State Temperature: ^{o}F	
Crude Oil or Condensate Throughput: Barrels/Day	
Produced Water Throughput: Barrels/Day	
Gas Flow Rate (if metered): Mcf/Day	
Days of Operation of Separator and Tank System per Year:	
Percent Water Cut: %	Number of wells in system:

Sample Type (circle one): crude oil condensate produced water

Sample Cylinder ID Number:	
Cylinder Type:	Displacement Liquid:
Cylinder Volume: ml	Volume of Liquid Collected: ml

~~Test Procedure~~

~~Flash Emissions of Greenhouse Gases and Other Compounds from Crude Oil and Natural Gas Separator and Tank Systems~~

~~1. PURPOSE AND APPLICABILITY~~

~~This procedure is used to determine annual emission rates of Greenhouse Gases and other compounds from crude oil and natural gas separator and tank systems. This procedure is conducted by gathering one sample of crude oil or condensate and one sample of produced water from a pressurized vessel and having the liquids analyzed by a laboratory to determine the composition and volume of gas released from the liquids while they change from reservoir to standard atmospheric conditions. The laboratory results are used in conjunction with throughput to calculate the emission rates per year. The sampling and lab analyses may also be conducted to evaluate emissions from Flowback Fluids used to stimulate or hydraulically fracture a crude oil or natural gas well if they are handled by a separation and tank system. An alternative methodology is included for determining the specified emissions rates using measured vapor recovery system parameters provided the system meets the requirements specified in Section 9.~~

~~2. PRINCIPLE AND SUMMARY OF TEST PROCEDURE~~

~~The sampling and laboratory methods specified in this procedure are used to take samples of liquids and conduct a Flash Analysis on crude oil or natural gas separator and tank systems and are based on American Standards and Testing Materials (ASTM), US Environmental Protection Agency (EPA), and Gas Processor Association (GPA) methods and standards. The alternative vapor recovery system methodology described in Sections 9 and 10.2 is based on common industry practices.~~

~~Samples must be taken from a primary vessel located in a separator and tank system using the sampling methods specified in this procedure. Non-pressurized tanks or secondary vessels may not be used for sampling. Typical sampling points are from pressurized Two-Phase or Three-Phase Separators or vessels used to measure Percent Water Cut (e.g., Automatic Well Tester). The liquids found in these vessels contain gases that will flash from the liquids as vapor when the liquids flow into lower pressure secondary vessels. This procedure is used to measure both the volume and composition of this flashed gas vapor. Liquid samples of a crude oil-produced water emulsion do not contain enough crude oil to be evaluated by a laboratory and are not applicable to this procedure.~~

~~Two sampling methods are specified: The first is a displacement method used for gathering crude oil or condensate. The second is for gathering produced water. Both methods are specified due to the nature of the laboratory analyses and the design of the sampling cylinders. Produced water cannot be displaced~~

~~from a Double-Valve Cylinder using laboratory grade water and heavy crude oil may solidify and cause problems with a Floating-Piston Cylinder.~~

~~The laboratory methods are used to measure the composition and volume of gas that flash from liquids while they cool or depressurize to standard atmospheric conditions. This includes the molecular weight and weight percent of the gaseous compounds and a Gas-to-Oil Ratio or Gas-to-Water Ratio. The laboratory results are applied to the annual liquid production rates to calculate Greenhouse Gas and other compound emission rates per year.~~

~~3. DEFINITIONS~~

~~For the purposes of this procedure, all definitions are found in section 95102(a) of the Regulation for the Mandatory Reporting of Greenhouse Gas Emissions (title 17, California Code of Regulations, section 95100 et seq.).~~

~~4. BIASES AND INTERFERENCES~~

~~4.1~~ ~~The sampling methods specified in this procedure have an impact on the laboratory methods and the final results reported. All samples must be gathered in adherence with the minimum procedures and specifications identified in this procedure.~~

~~4.2~~ ~~A representative sampling point must be selected to ensure that pressurized gases remain suspended in liquid during sampling. Obtaining samples from a non-pressurized vessel or a vessel connected to a vapor recovery system will produce non-representative results.~~

~~4.3~~ ~~All pressure and temperature measurements must be acquired using calibrated instruments as described in Section 5. Un-calibrated equipment, including pressure or temperature gauges installed on vessels, may produce non-representative results. This may result in data errors when analyzing samples in a laboratory.~~

~~4.4~~ ~~The analytical portion of this procedure must be conducted by laboratories experienced with laboratory instrumentation, analytical methods, and the laboratory methods specified in this procedure.~~

~~5. EQUIPMENT SPECIFICATIONS~~

~~5.1~~ ~~A pressure gauge capable of measuring liquid pressure less than 200 pounds per square inch pressure within +/-10% accuracy.~~

~~5.2~~ ~~A pressure gauge capable of measuring liquid pressure greater than 200 pounds per square inch pressure within +/- 5% accuracy.~~

~~5.3~~ ~~A temperature gauge capable of reading liquid temperature to within +/- 2°F. The range of the gauge must be at least 32 to 200°F.~~

~~**5.4** A volume meter with a minimum of +/- 5% accuracy over the entire range of flow rates for which the meter is used. Volume meters must be calibrated annually against a NIST traceable standard.~~

~~6. TEST EQUIPMENT~~

~~**6.1** A Double-Valve Cylinder filled with laboratory grade water for crude oil or condensate or a Floating-Piston Cylinder for produced water.~~

~~**6.2** A Graduated Cylinder to measure displaced laboratory grade water from a Double-Valve Cylinder.~~

~~**6.3** A waste container suitable for capturing and disposing sample liquid.~~

~~**6.4** High-pressure rated components and control valves that can withstand pressure under the same operating conditions as the vessel sampled.~~

~~**6.5** A low-pressure and a high-pressure measuring device with minimum specifications listed in Section 5.~~

~~**6.6** A temperature measuring device with minimum specifications listed in Section 5.~~

~~**6.7** A calibrated volume meter with temperature and pressure gauges each with minimum specifications listed in Section 5 for measuring collected vapor recovery gas volume as described in Section 9.~~

~~**6.8** A stainless steel hand pump equipped with one-way check valves suitable for pumping low API gravity crude oil into a Double-Valve Cylinder per Section 7.3. Stainless steel is required to prevent sample contamination.~~

~~7. SAMPLING METHODS~~

~~Pre-Sampling Requirements~~

~~Prior to gathering liquid samples, the sampling technician must be provided with the vessel description, Throughput, Percent Water Cut, Days of Operation, and a description of the vapor recovery system on downstream vessels by the facility operator as indicated in Table 1 and on Form 1. If required, the Percent Water Cut may be measured using ASTM D-4007-08. For sampling liquids that may contain proprietary compounds, such as those used in hydraulic fracturing liquids, a Tentatively Identified Compound List must also be provided prior to gathering liquid samples. All of this information specified is required to calculate and report the results of this test procedure. The results of this test procedure may be nullified without the specified information.~~

~~Background~~

~~The sampling method used for this procedure depends on the type of liquid to be sampled. Crude oil or condensate is collected using the Crude Oil or~~

~~Condensate Sampling Method specified in Section 7.1. Produced water is collected using the Produced Water Sampling Method specified in Section 7.2. Low API gravity crude oil that will not flow into a sampling cylinder may be collected using the method specified in Section 7.3.~~

~~Liquid samples must only be taken from separated liquids. This is accomplished by taking samples from different levels in a pressurized separator, which may be a permanent or temporarily installed vessel. Liquid samples of emulsions cannot be evaluated by a laboratory and are therefore not applicable to this procedure. To gather a liquid sample, the sample vessel must be pressurized. Samples must not be taken from tanks or separators open to atmosphere.~~

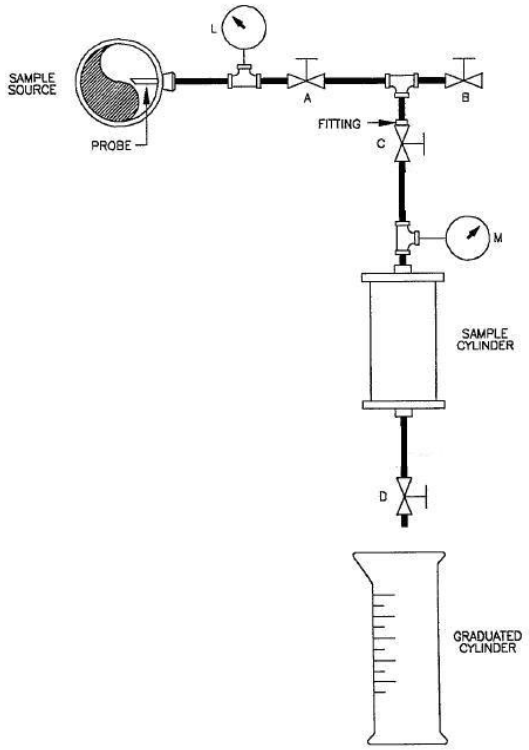
~~When a liquid sample is gathered, the technician measures the pressure and temperature of the liquid using the calibrated gauges specified and records the vessel and liquid characteristics as reported by the facility operator. The cylinder is then identified with a Cylinder Identification Tag (See Section 8) and sent to a laboratory for analysis. The laboratory heats and pressurizes the liquid to the same conditions recorded at the time of sampling and performs a Flash Analysis which measures the rate and composition of gas evolved from the liquid while it cools and depressurizes to specified atmospheric conditions.~~

~~7.1 CRUDE OIL OR CONDENSATE SAMPLING METHOD~~

~~The Crude Oil or Condensate Sampling Method is conducted by displacing laboratory grade water with pH between 5 and 7 from a Double-Valve Sampling Cylinder. Figure 1 illustrates a Double-Valve Cylinder sampling train. The configuration shows a cylinder outfitted with high-pressure rated components that can be used for controlling the flow of liquid. Calibrated temperature (Gauge L) and pressure (Gauge M) gauges are included for conducting field measurements. Sample liquid enters the cylinder when water is displaced into a graduated cylinder. The amount of sample liquid contained in the cylinder is equal to the amount of laboratory grade water measured in the graduated cylinder.~~

~~Figure 1~~

~~Double-Valve Cylinder Sampling Train~~



~~(a) If samples are to be shipped to a laboratory, calculate 90% of the cylinder volume, which will be the volume of sample to gather. As an example, 90% of a 500ml cylinder is 0.9 x 500 ml = 450 ml. This also represents the amount of water to displace with sample liquid. The cylinder must retain 10% of the laboratory grade water to allow for flashing during shipping and to prevent an explosive situation from occurring. If samples are not going to be shipped to a laboratory, this step does not need to be performed. Instead, fill the entire cylinder with sample liquid after purging with three cylinder volumes of liquid as described in (f).~~

~~(b) Connect the sampling train to a sampling point on the pressurized vessel. Bushings or reducers may be required.~~

~~(c) Purge the sample line: with Valves C and D closed, route the outlet of Valve B into a suitable waste container to purge sample liquid. Slowly open Valve B. Slowly open Valve A and allow air and liquid to purge. Continue purging until a consistent, steady stream of liquid is observed and gas pockets subside. Close Valve B.~~

~~(d) With Valve C and D closed, slowly open Valve A to the full-open position and then slowly open Valve C to the full-open position.~~

(e) ~~Slowly open Valve D to allow a slow discharge of water into the graduated cylinder at a rate of approximately 60 milliliters per minute (1 drip per second).~~

~~(f) Record the temperature from Gauge L and pressure from Gauge M while the liquid is filling the cylinder. Do not take temperature or pressure measurements on stagnant liquid. If the sample is to be shipped as described in (a), continue displacing the laboratory grade water from the cylinder until 90% of the water is displaced. If the cylinder is not going to be shipped, continue filling the cylinder with sample liquid until three cylinder volumes of liquid have passed through the sampling cylinder.~~

~~(g) Close Valves D, C, and A in that order.~~

~~(h) Purge the line pressure: slowly open Valve B and allow pressurized liquid to drain into the waste container.~~

~~(i) Disconnect the Double-Valve Cylinder from the sampling train and disconnect the sampling train from the pressurized vessel.~~

~~(j) Check Valves C and D for leaks. If either Valve C or D is leaking, drain the cylinder into a suitable waste container and use a different cylinder to obtain a new sample.~~

~~(k) Wrap the threaded connections of the cylinder with Teflon tape and cap using threaded metal caps to protect the threads and ensure the cylinder is securely sealed for shipping.~~

~~(l) Identify the sample cylinder as specified in Section 8.~~

~~7.2 PRODUCED WATER SAMPLING METHOD~~

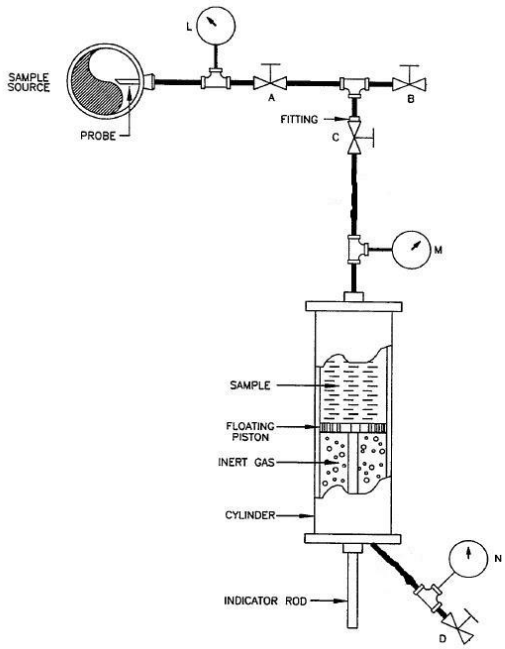
~~The Produced Water Sampling Method is conducted using a Floating-Piston Cylinder. This allows the sample liquid to be extracted from the cylinder without using laboratory water. The cylinder is provided by a laboratory with the piston pressurized with inert gas to approximately 1,000 psig or greater. Note: produced water may be gathered using a Double-Valve Cylinder as described in Section 7.1 provided that the laboratory can displace the produced water from the cylinder without commingling the sample liquid with laboratory grade water.~~

~~Prior to gathering a sample, the technician first measures the vessel pressure and temperature using the calibrated gauges specified. The technician then bleeds off excess pressure from the piston to at least 10 psig greater than the vessel to be sampled. Sample liquid is gathered by slowly bleeding off additional pressure from the piston. The rate at which liquid is gathered must not exceed 60 milliliters per minute in order to prevent the liquid from flashing gases within the sample cylinder.~~

~~Figure 2 shows a Floating-Piston Cylinder sample train outfitted with high-pressure rated components. Calibrated temperature (Gauge L) and pressure (Gauge M and N) gauges are included for conducting the required vessel measurements.~~

Figure 2

Floating-Piston Cylinder Sampling Train



~~(a) Connect the sampling train to a sampling point on the pressurized vessel. Bushings or reducers may be required.~~

~~(b) Purge the sample line: with Valves C and D closed, route the outlet of Valve B into a suitable waste container to purge sample liquid. Slowly open Valve A to the full-open position. Slowly open Valve B and allow liquid to purge. Continue purging until a consistent, steady stream of liquid is observed and gas pockets subside. Close Valve B.~~

~~(c) Slowly open Valve C to the full-open position.~~

~~(d) Slowly open Valve D to release inert gas pressure until the pressure indicated on Gauge N is equal to Gauge M. When both gauges read equal pressure, close Valve D and prepare to gather sample liquid.~~

~~(e) Slowly open Valve D and allow liquid to enter the cylinder at a slow rate of approximately 60 ml per minute to prevent liquid from flashing within the sampling cylinder. Use the measurement scale located on the sampling cylinder and a stopwatch to measure the rate at which liquid is gathered.~~

(f) Record the temperature from Gauge L and pressure from Gauge M while liquid is gathered. Do not take measurements on stagnant liquid.

(g) Continue gathering liquid until the cylinder is 80% full as indicated on the cylinder scale. The rate at which liquid enters the cylinder, and the volume of liquid in the cylinder, are indicated on the sample cylinder. No outage is required when using a Floating-Piston Cylinder.

(h) Close valves D, C, and A in that order.

(i) Purge the line pressure: slowly open Valve B and allow pressurized liquid to drain into the waste container.

(j) Disconnect the Floating-Piston Cylinder from the sampling train and disconnect the sampling train from the pressurized vessel.

(k) Check Valves C and D for leaks. If either Valve C or D is leaking, drain the cylinder into a suitable waste container and use a different cylinder to obtain a new sample.

(l) Wrap the threaded connections of the cylinder with Teflon tape and cap using threaded metal caps to protect the threads and ensure the cylinder is securely sealed for shipping.

(m) Identify the sample cylinder as specified in Section 8.

7.3 LOW API GRAVITY CRUDE OIL SAMPLING METHOD

In some cases, low API gravity crude oil may not flow into a sampling cylinder. This could be due to the viscosity, temperature, or pressure of the oil. In these cases, a stainless steel hand pump is used to assist with the collection of liquid. The pump must be outfitted with one-way check valves to ensure that liquid flows in only one direction. The difference between the Displacement Method and this method is that the hand pump is used in place of system pressure.

(a) Install the stainless steel hand pump equipped with one-way check valves as described in Section 6 at the inlet of the Double-Valve Cylinder Sampling Train.

(b) Using the hand pump to slowly force the flow of liquid, collect a liquid sample following the sample procedures described in Section 7.1.

8. CYLINDER IDENTIFICATION TAG

8.1 Identify the cylinder with a Cylinder Identification Tag. Both the tag and a copy of Form 1 must be completed prior to sampling using information provided by the facility operator and must include the following minimum information:

~~(a) Date and time;~~

~~(b) Unique sample ID number or cylinder number;~~

~~(c) Sample type (crude oil, condensate, or produced water);~~

~~(d) Sample pressure and temperature during sampling;~~

~~(e) Vessel description;~~

~~(f) Vessel throughput of emulsion or liquid in barrels per day;~~

~~(g) Percent Water Cut;~~

~~(h) Days of Operation per Year;~~

~~(i) Facility name and location of where sample was gathered; and,~~

~~(j) Attach a completed copy of Form 1.~~

~~**8.2** Package the cylinder with the information tag and a copy of Form 1.~~

~~9. ALTERNATIVE METHODOLOGY FOR CALCULATING EMISSION RATES USING MEASURED VAPOR RECOVERY SYSTEM PARAMETERS IN LIEU OF GATHERING AND EVALUATING LIQUID SAMPLES~~

~~This methodology is used to measure the specified emission rates using a vapor recovery system in lieu of gathering and evaluating liquid samples. This methodology requires that all gases flashed from liquid are collected and measured, and that a vapor recovery system is installed on a minimum of the primary and secondary vessels, and that intermediate vessels be covered and controlled using a pressure/vacuum valve, at minimum, so that the vessels are not open to atmospheric pressure. This methodology is an alternative to gathering and evaluating liquid samples and may be used for systems that handle emulsions or single liquids.~~

~~The Greenhouse Gas and other compound emission rates are calculated using the measured annual vapor recovery gas volume metered by the system and an annual gas composition analysis. The annual measured gas volume is adjusted to account for capture efficiency of the vapor recovery system.~~

~~(a) Measure the annual gas volume recovered by the vapor recovery system using the calibrated meter outfitted with temperature and pressure gauges as described in Section 6.~~

~~(b) Obtain an annual gas sample of the vapor recovery gas and evaluate it for all gaseous compounds, the molecular weight, and the weight percent of Greenhouse Gases and other compounds.~~

~~(c) Calculate the annual emission rates as described in Section 10.2.~~

~~10. CALCULATING RESULTS~~

~~10.1 Flash Emission Calculation Methodology for Liquid Samples~~

~~The following is used in conjunction with vessel information and a laboratory analysis to calculate metric tons of Greenhouse Gases (CO_2 and CH_4) or short tons of other compounds (VOC_{C3-C9} or BTEX). The same formulas may be applied to crude oil, condensate, and produced water.~~

~~(a) If required, calculate the barrels per day of crude oil or condensate in emulsion using the Percent Water Cut:~~

$$\cancel{Barrels/Day = (1 - Percent\ Water\ Cut)(Throughput)}$$ ~~**Equation 1A**~~

~~Where:~~

~~Barrels/Day = barrels per day crude oil or condensate~~

~~Percent Water Cut = percentage of produced water in emulsion~~

~~Throughput = barrels per day of emulsion~~

~~(b) If required, calculate the barrels per day of produced water in emulsion using the Percent Water Cut:~~

$$\cancel{Barrels/Day = (Percent\ Water\ Cut)(Throughput)}$$ ~~**Equation 1B**~~

~~Where:~~

~~Barrels/Day = barrels per day produced water~~

~~Percent Water Cut = percentage of produced water in emulsion~~

~~Throughput = barrels per day of emulsion~~

~~(c) Calculate the total volume of gas produced per year:~~

$$\cancel{Ft^3/Year = (G)\left(\frac{Barrels}{Day}\right)\left(\frac{Days}{Year}\right)}$$ ~~**Equation 2**~~

~~Where:~~

~~Ft^3/Year = standard cubic feet of gas produced per year~~

~~G = Gas-to-Oil Ratio or Gas-to-Water Ratio (from lab analysis)~~

~~Barrels/Day = barrels per day crude oil, condensate, or produced water (Eq. 1A/1B)~~

~~Days/Year = days of operation per year~~

~~(d) Convert the total gas volume to pounds:~~

~~**Equation 3**~~

$$Mass_{Gas}/Year = \left(\frac{Ft^3}{Year}\right)\left(\frac{gram}{gram-mole}\right)\left(\frac{gram-mole}{23.690\,l}\right)\left(\frac{28.317\,l}{Ft^3}\right)\left(\frac{lb}{454\,grams}\right)$$

~~Where:~~

~~Mass $_{Gas}$ /Year = pounds of gas per year~~

~~Ft^3/Year = cubic feet of gas produced per year (Eq. 2)~~

~~Gram/Gram-Mole = Molecular Weight of gas sample (from lab analysis)~~

~~23.690 l/gr-mole = molar volume of ideal gas at 14.696 psi and 60^0F~~

~~(e) Calculate the mass of GHG or other compound:~~

$$Mass_{GHG}/Year = \left(\frac{WT\%\,GHG}{100}\right)\left(\frac{Mass_{Gas}}{Year}\right)\left(\frac{metric\ ton}{2205\,lb}\right)$$ ~~**Equation 4**~~

$$Mass_{Compound}/Year = \left(\frac{WT\%\,Compound}{100}\right)\left(\frac{Mass_{Gas}}{Year}\right)\left(\frac{ton}{2000\,lb}\right)$$ ~~**Equation 5**~~

~~Where:~~

~~Mass $_{GHG}$ /Year = metric tons of CO_2 or CH_4 (Eq. 4)~~

~~Mass $_{Compound}$ /Year = tons of other compound (Eq. 5)~~

~~Mass $_{Gas}$ /Year = pounds of gas per year (Eq. 3)~~

~~WT% GHG = Weight % of CO_2 or CH_4 (from lab analysis)~~

~~WT% Compound = Weight % of VOC_{C3-C9} or BTEX (from lab analysis)~~

~~(f) If a vapor recovery system is installed on the separator and tank system, adjust the annual emission rate as follows:~~

$$Emissions_{GHG/Compound} = \left(Mass_{GHG/Compound}/Year\right)(1-CE)$$ ~~**Equation 6**~~

~~Where:~~

~~Emissions $_{GHG/Compound}$ = controlled GHG or other compound emissions~~

~~$Mass_{GHG/Compound}$ /Year = uncontrolled GHG or other compound emissions per year (Eq. 4 or 5)~~

~~CE = capture and control efficiency of vapor recovery system~~

~~10.2 Emission Calculation Methodology Using Measured Vapor Recovery System Parameters~~

~~(a) Convert the total volume of vapor measured using the calibrated meter and average annual vapor temperature and pressure to standard conditions:~~

$$Ft^3/Year = V\left(\frac{519.67}{T}\right)\left(\frac{P+14.696}{14.696}\right)$$ **~~Equation 7~~**

~~Where:~~

~~Ft^3/Year = annual cubic feet of gas corrected to standard conditions (scf)~~

~~V = annual volume of gas going to the vapor recovery system, measured by the calibrated meter (cubic feet)~~

~~T = average annual vapor temperature measured at the meter (degrees R)~~

~~P = average annual gauge pressure measured at the meter (psig)~~

~~(b) Convert the total gas volume to pounds:~~

~~Equation 8~~

$$Mass_{Gas}/Year = \left(\frac{Ft^3}{Year}\right)\left(\frac{gram}{gram-mole}\right)\left(\frac{gram-mole}{23.690\,l}\right)\left(\frac{28.317\,l}{Ft^3}\right)\left(\frac{lb}{454\,grams}\right)$$

~~Where:~~

~~$Mass_{Gas}$ /Year = pounds of gas per year~~

~~Ft^3/Year = cubic feet of gas produced per year (Eq. 6)~~

~~Gram/Gram-Mole = Molecular Weight of gas sample (from lab analysis)~~

~~23.690 l/gr-mole = molar volume of ideal gas at 14.696 psi and 60^0F~~

~~(c) Calculate the mass of GHG or other compound:~~

$$Mass_{GHG}/Year = \left(\frac{WT\%GHG}{100}\right)\left(\frac{Mass_{Gas}}{Year}\right)\left(\frac{metric\ ton}{2205\,lb}\right)$$ **~~Equation 9~~**

$$\cancel{Mass_{Compound}/Year = \left(\frac{WT\%\,Compound}{100}\right)\left(\frac{Mass_{Gas}}{Year}\right)\left(\frac{ton}{2000\,lb}\right)}$$ ~~**Equation 10**~~

~~Where:~~

~~Mass $_{GHG}$ /Year = metric tons of CO_2 or CH_4 (Eq. 9)~~

~~Mass $_{Compound}$ /Year = tons of other compound (Eq. 10)~~

~~Mass $_{Gas}$ /Year = pounds of gas per year (Eq. 8)~~

~~WT% GHG = Weight % of CO_2 or CH_4 (from lab analysis)~~

~~WT% Compound = Weight % of VOC_{C3-C9} or BTEX (from lab analysis)~~

~~(d) Adjust the annual emission rate as follows:~~

~~**Equation 11**~~

$$\cancel{Emissions_{GHG/Compound} = \left(Mass_{GHG/Compound}/Year\right)\left(\frac{1-CE}{CE}\right)}$$

~~Where:~~

~~Emissions $_{GHG/Compound}$ = uncaptured GHG or other compound emissions~~

~~Mass $_{GHG/Compound}$ /Year = captured GHG or other compound emissions per year (Eq. 9 or 10)~~

~~CE = capture efficiency of vapor recovery system.~~

~~11. REPORTING RESULTS~~

~~The results of this procedure are used to estimate or report emission rates of Greenhouse Gases or other compounds from separator and tank systems used in onshore crude oil or natural gas production, processing, or storage. All results shall be reported to at least three significant figures. All supporting information used to derive the emission estimates, including sample information, laboratory results, and calculations must be maintained by the reporting entity for a minimum of three years in order to reproduce the estimated or reported results. The following information must be maintained by the reporting entity:~~

~~11.1 Crude Oil, Condensate, or Produced Water~~ (Section 10.1)

~~(a) Laboratory results specified in Section 12;~~
~~(b) All calculations and calculated results;~~
~~(c) A completed copy of Form 1;~~
~~(d) Annual emission rates of Greenhouse Gases and other compounds;~~
~~(e) Annual production of crude oil, condensate, and produced water; and~~

~~(f) API Gravity of crude oil or condensate.~~

~~11.2 Emulsion or Liquids under Vapor Recovery~~ ~~(Section 10.2)~~

~~(a) Laboratory results of an annual gas composition analysis or an average of multiple, more frequent samples within the year;~~
~~(b) Measured annual vapor recovery system gas throughput;~~
~~(c) All calculations and calculated results;~~
~~(d) Annual emission rates of Greenhouse Gases and other compounds; and,~~
~~(e) API Gravity of crude oil or condensate.~~

~~12. ANALYTICAL LABORATORY METHODS~~

~~12.1 Sample Preparation~~

~~(a) Prior to extracting liquid from a sample cylinder, the cylinder must be heated to the same temperature as measured at the time of sampling. The laboratory apparatus must be temperature and pressure controlled by a means that allows cooling and depressurizing liquid from sampling conditions to the standard temperature and pressure while precisely measuring liquid and gas volumes.~~

~~(b) Sample gases shall be collected in a closed system with a means of precisely measuring liquid and gas volume. Sample preparation guidance can be found in GPA 2174-93, GPA 2261-00 and GPA 2177-03.~~

~~12.2 Laboratory Methods~~

~~The following methods are required to evaluate and report flash emission rates from crude oil, condensate, and produced water. All methods and quality control requirements shall be conducted as specified in each method.~~

~~(g) Hydrogen Sulfide (Low-Level): Evaluate using EPA Method 15 and EPA Method 16 or use ASTM D-1945-03 (Thermal Conductivity Detector), ASTM D-5504-08 (sulfur chemiluminescence detector), and ASTM D-6228-10 (flame photometric detector) as alternate methods.~~

~~(h) Oxygen, Nitrogen, Carbon Dioxide, Hydrogen Sulfide (High-Level), Methane, Ethane, Propane, i-Butane, n-Butane, i-Pentane, n-Pentane, Hexanes, Heptanes, Octanes, Nonanes, and Decanes+: Evaluate per ASTM D-1945-03, ASTM D-3588-98(2003), and ASTM D-2597-94(2004)(GC/TCD). Note: This analysis requires all three methods specified. The base method is ASTM D-1945-03, which is modified to extend the hydrocarbon analysis range based on information from the other two methods.~~

~~(i) BTEX: Evaluate per EPA 8021 B (GC/FID) or use ASTM D-3170, GPA~~

~~2286, EPA 8260B, EPA TO-14, and EPA TO-15 as alternate methods.~~

~~(j) API Gravity of liquid phase crude oil or condensate at 60 degrees Fahrenheit (60°F): Evaluate per ASTM D-287-92-(2006) using measured result of Specific Gravity. Note: If water is entrained in the sample, measure the API Gravity using ASTM D-287-92 (2006)(API Hydrometer) and calculate the Specific Gravity using the measured API Gravity.~~

~~(k) Specific Gravity of pre-flash liquid phase crude oil or condensate: Evaluate per ASTM D-4052-09, ASTM D-70-09, or ASTM D-5002-99(2010) or calculate using results from ASTM D-287-92(2006).~~

~~(l) Molecular Weight of gaseous phase by calculation per ASTM D-3588-98(2003).~~

~~(m) Percent Water Cut: evaluate per ASTM D-4007-08 (Basic Sediment and Water).~~

~~12.3 Laboratory Reports~~

~~Any chromatograph system that allows for the collection, storage, interpretation, adjustment, or quantification of chromatograph detector output signals representing relative component concentrations may be used to conduct this procedure. The laboratory results must be reported as specified in Section 11. A laboratory report that provides the following minimum information described below and in Table 1 must be provided to the facility operator so they can calculate and report the results specified in Sections 10 and 11:~~

~~(a) The gaseous phase WT% of CO_2, CH_4, the gaseous phase WT% of C2 through C9 and C10+, the gaseous phase WT% of BTEX, and the gaseous phase WT% of O_2, N_2, and H_2S;~~
~~(b) The gaseous phase Gram Molecular Weight of the total gas sample;~~
~~(c) The liquid phase API Gravity of crude oil or condensate at 60°F;~~
~~(d) Volumetric Gas-to-Water Ratio (GWR) for produced water; and,~~
~~(e) Volumetric Gas-to-Oil Ratio (GOR) for crude oil or condensate.~~

~~**Table 1**~~

~~**Flash Analysis Sampling and Laboratory Requirements**~~

~~**Sampling Technician Needs to Obtain from Operator Before Sampling Can Occur:**~~
~~Vessel Description~~
~~Vessel Throughput (Barrels/Day)~~
~~Percent Water Cut~~
~~Number of Days in Operation~~
~~Vapor Recovery System Information (downstream vessels)~~ ~~• Presence of VR System~~ ~~• Vapor Processing & Type~~ ~~• Vapor End Use(s)~~
~~Tentatively Identified Compound List (if sampling proprietary compounds)~~

~~**Gas Evolved from Crude Oil, Condensate, or Produced Water**~~
~~WT% CO2, CH4~~
~~WT% C2-C9, C10+~~
~~WT% BTEX~~
~~WT% O2~~
~~WT% N2~~
~~WT% H2S~~
~~Molecular Weight Total Gaseous Sample~~
~~Gas-to-Oil Ratio~~
~~Gas-to-Water Ratio~~

~~**Pre-Flash Liquid Crude Oil or Condensate**~~
~~API Gravity~~

~~13. REFERENCES~~

~~ASTM D-70-09 *Standard Test Method for Density of Semi-Solid Bituminous Materials (Pycnometer Method)*~~

~~ASTM D-287-92(2006) *Standard Test Method for API Gravity of Crude Petroleum and Petroleum Products (Hydrometer Method)*~~

~~ASTM D-1945-03 *Standard Test Method for Analysis of Natural Gas by Gas Chromatography*~~

~~ASTM D-2597-94(2004) *Standard Test Method for Analysis of Demethanized Hydrocarbon Liquid Mixtures Containing Nitrogen and Carbon Dioxide by Gas Chromatography*~~

~~ASTM D-3710-95(1999) *Standard Test Method for Boiling Range Distribution of Gasoline and Gasoline Fractions by Gas Chromatography*~~

~~ASTM D-3588-98(2003) *Standard Practice for Calculating Heat Value, Compressibility Factor, and Relative Density of Gaseous Fuels*~~

~~ASTM D-4007-08 *Standard Test Method for Water and Sediment in Crude Oil by the Centrifuge Method*~~

~~ASTM D-4052-09 *Standard Test Method for Density, Relative Density, and API Gravity of Liquids by Digital Density Meter*~~

~~ASTM D-5002-99(2010) *Standard Test Method for Density and Relative Density of Crude Oils by Digital Density Analyzer*~~

~~ASTM D-5504-08 *Standard Test Method for Determination of Sulfur Compounds in Natural Gas and Gaseous Fuels by Gas Chromatography and Chemiluminescence*~~

~~ASTM D-6228-10 *Standard Test Method for Determination of Sulfur Compounds in Natural Gas and Gaseous Fuels by Gas Chromatography and Flame Photometric Detection*~~

~~EPA Method 15 (1996) *Determination of Hydrogen Sulfide, Carbonyl Sulfide, and Carbon Disulfide Emissions from Stationary Sources*~~

~~EPA Method 16 (1996) *Semicontinuous Determination of Sulfur Emissions from Stationary Sources*~~

~~EPA Method 8021B (1996)*Aromatic and Halogenated Volatiles By Gas Chromatography Using Photoionization And/Or Electrolytic Conductivity Detectors*~~

~~EPA Method 8260B(1996) *Volatile Organic Compounds By Gas Chromatography/Mass Spectrometry (GC/MS)*~~

~~EPA Method TO-14(1999) *Determination Of Volatile Organic Compounds (VOCs) In Ambient Air Using Specially Prepared Canisters With Subsequent Analysis By Gas Chromatography*~~

~~EPA Method TO-15(1999) *Determination Of Volatile Organic Compounds (VOCs) In Air Collected In Specially-Prepared Canisters And Analyzed By Gas Chromatography/Mass Spectrometry (GC/MS)*~~

~~GPA 2174-93 *Analysis Obtaining Liquid Hydrocarbon Samples For Analysis by Gas Chromatography*~~

~~GPA 2177-03 *Analysis of Natural Gas Liquid Mixtures Containing Nitrogen and Carbon Dioxide by Gas Chromatography*~~

~~GPA 2261-00 *Analysis for Natural Gas and Similar Gaseous Mixtures by Gas Chromatography*~~

~~GPA 2286-95 *Extended Gas Analysis Utilizing a Flame Ionization Detector*~~

~~Form 1~~

~~Crude Oil, Condensate, and Produced Water Sampling Field Data Sheet~~

~~(report measured results to at least three significant figures)~~

~~Facility Contact Information:~~

~~Facility Name:~~ _____

~~Address:~~ _____

~~City:~~ _____ ~~State:~~ _____

~~Zip:~~ _____ ~~Phone:~~ _____

~~Facility Contact:~~ _____

~~Sampling Company:~~

~~Company Name:~~ _____

~~Address:~~ _____

~~City:~~ _____ ~~State:~~ _____

~~Zip:~~ _____ ~~Phone:~~ _____

~~Sampling Technician:~~ _____

~~Sample Information:~~

~~Sample Type:~~ _____ ~~(crude oil, condensate, produced water)~~

~~Date:~~ _____

~~Time:~~ _____ ~~Sample Temperature:~~ _____ ~~Deg. F~~

~~Cylinder Number:~~ _____ ~~Sample Pressure:~~ _____ ~~PSI~~

~~Field Name:~~ _____ ~~(field from where sample was taken)~~

~~Separator Information:~~

~~Separator Type:~~ _____ ~~(e.g., heater/treater)~~

~~Separator Throughput:~~ _____ ~~(barrels/day)~~

~~Percentage Water Cut~~ _____ ~~%~~ ~~Days in Operation/Year:~~ _____

~~Vapor Recovery (VR) System (downstream of sample vessel):~~

~~VR System Installed:~~ ~~Yes~~ ~~No~~

~~Vapor Processing & Type:~~ ~~Yes~~ ~~No~~ ~~List Type(s):~~ _____
~~(Sulfa Treat, Amine, etc.)~~

~~Vapor End Use(s) (list):~~ _____
~~(sales gas, flare, engine, boiler, etc.)~~

~~Shipping Information:~~

~~Shipping Company:~~ _____

~~Tracking Number:~~ _____