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STAFF PAPER

Assembly Bill 1110 Implementation Proposal for Power Source Disclosure, Third Version

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ABSTRACT

California's Power Source Disclosure Program requires retail electricity suppliers to disclose information annually through a power content label to their end-use customers about the fuel mix of the electricity products the customers purchased the previous calendar year. Passed in 2016, Assembly Bill 1110 (Ting, Chapter 656, Statutes of 2016) directs the California Energy Commission to update the Power Source Disclosure Program to require an electricity retail supplier to disclose to its customers the unbundled renewable energy credits and greenhouse gas emission intensities associated with the electricity portfolios offered to its customers.

The Energy Commission plans to initiate a rulemaking to amend the Power Source Disclosure Program regulation in accordance with AB 1110. The *Assembly Bill 1110 Implementation Proposal for Power Source Disclosure, Third Version* staff paper details a proposed approach to modifying the Power Source Disclosure Program to implement AB 1110. This updated proposal reflects changes made in response to stakeholder comments made during and following a public workshop on February 1, 2018.

Keywords: Power Source Disclosure, PSD, power content label, greenhouse gas, GHG, emissions, emissions intensity factor, fuel mix, fuel mix, renewable energy credit, REC

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ACRONYMS AND ABBREVIATIONS

ACS	Asset-controlling supplier
CARB	California Air Resources Board
CH_4	Methane
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
EIA	Energy Information Agency
EIM	Electricity Imbalance Market
EPA	Environmental Protection Agency
FERC	Federal Energy Regulatory Commission
GHG	Greenhouse gas
MRR	Mandatory Reporting Regulation
MWh	Megawatt-hour
N_2O	Nitrous oxide
POU	Publicly owned utility
PSD	Power Source Disclosure Program
REC	Renewable energy credit
RPS	Renewables Portfolio Standard
WREGIS	Western Renewable Energy Generation Information System

EXECUTIVE SUMMARY

The Power Source Disclosure Program is a consumer information program that requires the reporting and disclosure of the electricity sources used to serve retail customers during the previous calendar year. Passed in 2016, Assembly Bill 1110 (Ting, Chapter 656, Statutes of 2016) modifies the Power Source Disclosure Program by also requiring the reporting and disclosure of the greenhouse gas emissions intensity associated with the electricity serving retail customers.

The California Energy Commission will initiate a rulemaking to amend the Power Source Disclosure regulations in accordance with AB 1110. As part of the Energy Commission's pre-rulemaking activities, Energy Commission staff developed the *Assembly Bill 1110 Implementation Proposal for Power Source Disclosure* draft staff paper*, Third Version,* which details a proposed approach to modifying the Power Source Disclosure Program to implement AB 1110. Staff developed this draft staff paper in consultation with the California Air Resources Board and with consideration of feedback received from the California Public Utilities Commission, retail suppliers, and other stakeholders.

This paper includes proposed operational definitions for key terms; proposed guidance for classifying renewable energy resources and for disclosing unbundled renewable energy credits; a proposed adjustment mechanism for qualifying publicly owned utilities to generate emissions adjustments for qualifying GHG-free electricity; proposed new reporting requirements; and an updated power content label and reporting template.

Energy Commission staff held public workshops on July 14, 2017, and February 1, 2018, to solicit feedback from stakeholders on the draft staff proposal for AB 1110 implementation. Staff has participated in additional stakeholder meetings and hosted technical discussions. Staff revised this paper to address public comments and improve the implementation proposal in line with the statutory principles of AB 1110 to provide accurate, reliable, and simple-to-understand information to consumers, and with consideration of business practices and consumer transparency.

Summary of Revisions

This updated paper proposes substantive changes to the following subjects in contrast with the prior version:

- *Tracking of Delivered Renewable Electricity with Renewable Energy Credits.* Clarifies that direct deliveries of renewable generation must include the procurement of the associated renewable energy credits for fuel type and greenhouse gas emissions accounting in Power Source Disclosure. The requirement further proposes that retail suppliers must amend prior Power Source Disclosure filings and power content labels if any amount of renewable

energy credits associated with directly delivered renewable generation above a threshold limit are subsequently resold.

- *Null Power.* Proposes that null power will be assigned the fuel type and GHG emissions profile of unspecified electricity.
- *Grandfathering Adjustment.* Proposes a temporary provision for historical firmed-and-shaped contracts that will allow a retail supplier to claim the fuel type and emissions profile of the procured renewable energy credits.

Introduction

The Power Source Disclosure Program

The Power Source Disclosure (PSD) Program is a consumer information program. In 1997, the Legislature found that there was a need for reliable, accurate, and timely information about the fuel sources generating electricity offered for retail sale in California. Senate Bill 1305 (Sher, Chapter 796, Statutes of 1997) created the PSD Program, requiring that entities offering electric services in California disclose accurate, reliable, and simple to understand information on the sources of energy used to provide electric services.

Under the PSD Program, retail suppliers of electricity[1] are required to disclose information annually to end-use customers about the fuel mix, which describes the types of fuel used to generate the electricity portfolio sold to customers during the previous calendar year. To complete this requirement, retail suppliers report gross electricity procurement sources, resales of electricity, and the net electricity used to serve retail load to the California Energy Commission. The Energy Commission uses this information, in part, to generate California's total fuel mix, which is available to retail suppliers. Each retail supplier must then disclose the fuel mix associated with its electricity portfolios, shown as a comparison with California's overall fuel mix, on a power content label available to consumers.

Assembly Bill 1110

Assembly Bill 1110 (Ting, Chapter 656, Statutes of 2016) was enacted in 2016 requiring the addition of simple-to-understand and reliable greenhouse gas (GHG) emissions disclosures to California's electricity consumers. The bill specifically added the need for "consistent" information to the existing requirements of reliable, accurate, and timely information for consumers. It also modifies the PSD Program by requiring retail suppliers to disclose the GHG emissions intensity associated with the electricity portfolios used to serve retail load. GHG emissions intensity, sometimes referred to as an *emissions factor*, is the average rate of emissions associated with one megawatt-hour of generation. Retail suppliers are required to begin disclosing the GHG emissions intensity associated with their electricity products on the power content label in 2020 for the 2019 reporting year. Under AB 1110,the Energy Commission is also required to determine a format for disclosing unbundled renewable energy credits (REC) as a percentage of annual retail sales.

1 AB 1110 defines a retail supplier to include publicly owned utilities, investor owned-utilities, electric service providers, and community choice aggregators.

Proponents of AB 1110 contend that the current PSD Program does not "accurately represent the environmental effects of the energy products that make up a retail supplier energy portfolio."[2] Moreover, the author of AB 1110 contends that, prior to passage of AB 1110, "the disclosure of GHG emissions associated with end-use electricity consumption [was] entirely unregulated," and as a result, retail customers may receive no GHG emissions information or conflicting emissions information.[3]

PSD is a truth-in-advertising program, designed to provide consumers information about the electricity products offered by their service provider. The enactment of AB 1110 expanded the original scope of the program by requiring that disclosures include information that consumers may use to evaluate the environmental impacts of the products that they purchase. Legislative analysis of AB 1110 indicated that proponents of the bill were concerned about how retail electricity was marketed to customers.[4] The issue of unbundled RECs [5] was specifically identified as an area that required further clarification for consumers. For example, a retail supplier can market an optional product, described as a 100 percent renewable, zero-GHG voluntary green electric service product based on the purchase of additional unbundled RECs. As unbundled RECs are not associated with the delivery of electricity, the voluntary green product described as zero-GHG would be served by the same underlying electricity sources and associated emissions as the default portfolio.[6] The disclosure of GHG emissions associated with these product offerings will provide further information to the consumer.

To implement AB 1110, the Energy Commission must:

- Adopt guidelines for the reporting and disclosure of the GHG emissions intensity associated with retail sales and unbundled RECs.
- Adopt a method, in consultation with the California Air Resources Board (CARB), for calculating the GHG emissions intensity corresponding to each purchase of electricity by a retail supplier to serve its customers.
- Establish guidelines for adjusting the GHG emissions intensity for a reporting year for any local publicly owned utility (POU) that demonstrates it generated quantities of electricity in previous years in excess of its total retail sales and wholesale sales from specified sources that do not emit any GHGs.

2 Senate Floor Analysis, AB 1110, August 10, 2016.

3 Id.

4 Id.

5 A renewable energy credit is a certificate of proof associated with the generation of electricity from an eligible renewable energy resource that one unit of electricity was generated and delivered by an eligible renewable energy resource.

6 Senate Floor Analysis, AB 1110, August 10, 2016.

AB 1110 Implementation Process

To implement the changes introduced by AB 1110, the Energy Commission anticipates initiating a formal rulemaking process in accordance with the California Administrative Procedures Act (APA) in late 2018, which commences with the publication of a notice of proposed action and proposed regulations. The Energy Commission will have one year from the date on which staff initiates the formal rulemaking to adopt proposed regulations at an Energy Commission business meeting and submit the regulations to the Office of Administrative Law for review.[7]

In advance of the rulemaking, staff is conducting public pre-rulemaking activities to identify and develop proposed changes to the existing regulation. Energy Commission staff held a workshop on February 21, 2017, to initiate pre-rulemaking and solicit input on several scoping questions under consideration for the AB 1110 implementation.

After evaluating stakeholder feedback, staff developed an implementation proposal for AB 1110, and presented it at a public workshop on July 14, 2017, to solicit further stakeholder feedback. This paper discusses the third draft staff proposal that considers public comments received on prior drafts, public workshops, stakeholder meetings, and technical discussions. Staff developed the third version of the AB 1110 implementation proposal in consultation with CARB, CPUC, and other stakeholders.

Based on comments that staff receives on this proposal, staff will develop draft regulatory language, and anticipates providing this draft language to stakeholders for feedback in the fall of 2018. Following this public engagement, staff aims to initiate the formal APA rulemaking in early 2019.

Background

Electricity Transactions

Most retail electricity transactions made by California retail suppliers are directly delivered,[8] meaning that a retail supplier owns or contracts for generation that is delivered to the retail supplier's balancing authority. This includes directly delivered renewables, as well as other resource type transactions such as large hydro and natural gas. Directly delivered imports into a California balancing authority[9] are traceable through tracking instruments called e-tags.[10]

A retail supplier's portfolio of resources may also include products from renewable generators that do not deliver electricity to a California balancing authority. These include firmed-and-shaped imports and unbundled REC[11] purchases.

- Firmed-and-shaped imports
    - A retail supplier procures RECs associated with the electricity from a renewable generator.
    - A retail supplier owns or purchases electricity from a renewable generator, but does not take delivery of the electricity to a California balancing authority; the electricity is sold into the local market or is otherwise used in a manner that does not deliver the electricity to a California balancing authority on behalf of the procuring retail supplier.
    - A retail supplier procures substitute electricity, which is delivered to a California balancing authority, to replace the undelivered electricity from the renewable generator.
- Unbundled REC transactions
    - A retail supplier procures RECs without procuring the associated electricity from a renewable generator or substitute electricity.

8 Delivery, in this context, does not mean tracking the physical disposition of individual electrons. Rather, delivery means electricity transfers to a grid through contractual arrangements including transmission rights and that can be tracked using e-tags to match the source point of the generated electricity to the grid with load being served by the delivered electricity.

9 A balancing authority is 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.

10 An e-tag is an electronic record that contains the details of a transaction to transfer energy from a source point to a sink where the energy is scheduled for transmission across one or more balancing authority area boundaries. For purposes of this definition, "source point" refers to the generation source of the energy, and "sink" refers to the balancing authority in which the electric load is located.

11 In this context, unbundled RECs means RECs that are procured without electricity.

Firmed-and-Shaped Imports

The firmed-and-shaped import is a transaction type that eases compliance with RPS targets. However, the imported substitute electricity typically comes from a non-renewable source that emits GHGs. Some stakeholders contend that the emissions profiles of the renewable generator and the source of the substitute power should be swapped because the Western Interconnection is one grid system and therefore leaves all emissions accounted for within the larger system.

Under a firming-and-shaping agreement, substitute electricity is procured and delivered to a California balancing authority on behalf of a retail supplier. Energy Commission staff is not aware of compelling evidence that the emissions associated with that substitute electricity should not be attributed to the procuring retail supplier. Further, should the emissions associated with the substitute power not be attributed to the procuring retail supplier, it is unclear to whom they would be attributed; staff is not aware of reciprocal accounting regimes or tracking infrastructure that could ensure that emissions displaced through a firmed-and-shaped transaction would be accurately accounted for somewhere in the Western Interconnection.

Unbundled RECs

Unbundled RECs represent investments in renewable energy made by retail suppliers to comply with RPS or other purposes. However, since the retail supplier procured only the RECs and not the associated renewable electricity, those RECs are not an electricity source serving California retail load. Including unbundled RECs in a retail supplier's fuel mix or GHG emissions intensity would inaccurately portray the sources of electricity serving California retail customers.

To ease compliance obligations, a small percentage of unbundled RECs are allowable under RPS. However, allowing unbundled RECs to adjust the characteristics of the actual electricity sources serving California retail customers would not support the statutory requirement for retail suppliers to provide accurate and simple-to-understand information about their customers' electricity sources.

Established State Laws and Programs

The State of California has a legislative and regulatory history of defining, tracking, promoting, and requiring the use of renewable energy, which provides an established framework of definitions and accounting. Additionally, the State has established reporting requirements and an accounting framework for GHG emissions that support multiple GHG emissions tracking and reduction programs. The proposed revisions to PSD utilize and build on these frameworks and maintain consistency where possible.

In reviewing proposed regulations, the Office of Administrative Law evaluates the regulation for consistency with other state laws, including regulations at other

agencies.[12] In the context of this rulemaking, staff asserts that maintaining consistency with other state laws means reflecting established resource accounting frameworks as they correspond with the metrics tracked under PSD. Further, maintaining consistency with existing California laws meets the statutory requirements to provide accurate, reliable, and simple-to-understand information to California consumers. Public Utilities Code 398.4 (h)(5).

Renewable Resource Accounting by the State of California

Renewable resources have been defined through California's RPS program since 2002. Public Resources Code (PRC) 399.12, which sets criteria for RPS eligibility defines "eligible renewable energy resource" as an electrical generating facility that meets the definition of a "renewable electrical generation facility" in PRC §25741 of the , which defines an "in-state renewable electricity generation facility" as a facility that uses biomass, solar thermal, photovoltaic, wind, geothermal, fuel cells using renewable fuels, small hydroelectric generation of 30 megawatts or less, digester gas, municipal solid waste conversion, landfill gas, ocean wave, ocean thermal, or tidal current, and any additions or enhancements to the facility using that technology."[13] These criteria establish fuel type criteria used to determine eligibility for the RPS.

Assembly Bill 62 (Ruskin, 2009) amended the PSD statute to align the program's definitions of eligible renewable resources with those identified under California's Renewables Portfolio Standard (RPS).[14]

Power Source Disclosure relies on a facility's eligibility under California's RPS Program as the definition of a renewable resource to assign a fuel type when reporting each procurement of electricity. This reliance on the RPS Program is appropriate as it maintains consistency with other state laws.

Finally, RPS uses RECs to make claims for RPS compliance and allows the use of a small percentage of unbundled RECs to count towards RPS compliance. However, a REC is not electricity; it is a tracking instrument for renewable generation and supports retail level renewable energy claims.

Staff recognize that prior versions of the PSD regulation did not address the reporting requirements or accounting of unbundled RECs. Staff will clarify the reporting and accounting for unbundled RECs in this document.

California GHG Emissions Accounting

The California Global Warming Solutions Act of 2006 (Assembly Bill 32, Núñez) recognizes CARB as "the state agency charged with monitoring and regulating sources of emissions of greenhouse gases that cause global warming in order to reduce

12 California Rulemaking Law, 2018 Edition, Office of Administrative Law, §11349.1 (d)(4).

13 PRC, §25741 (a)(1).

emissions of greenhouse gases." This bill required CARB to adopt regulations to require the reporting and verification of statewide GHG emissions and defined "statewide greenhouse gas emissions" to mean the "total annual emissions of GHG in the state, including all emissions of GHG from the generation of electricity delivered to and consumed in California, accounting for transmission and distribution line losses, whether the electricity is generated in state or imported."[15] In addition, the bill required CARB to review existing and proposed international, federal, and state GHG emission reporting programs and make reasonable efforts to promote consistency among the programs established pursuant to this part and other programs, and to streamline reporting requirements on GHG emission sources.

The reporting of GHG emissions for major sources required by the California Global Warming Solutions Act of 2006 has been carried out by CARB through the Mandatory Reporting Regulation (MRR). The MRR establishes reporting requirements for several entity types, including generators and electricity importers, and uses a source-based approach instead of a retail-based approach for GHG emissions accounting.[16] A summary of GHG emissions data reported under MRR is made public each year, and the data is used by the Cap-and-Trade Program and is the foundation for in the California GHG Emission Inventory.

The California GHG Emissions Inventory, an accounting of the state's estimated annual anthropogenic GHG emissions, is the primary tool used to track progress toward achieving California's GHG reduction goals. CARB developed the GHG Emission Inventory to conform to international GHG emissions accounting guidelines developed by the International Panel on Climate Change (IPCC), the international body for assessing the science related to climate change.[17]

Under the MRR, emissions associated with firmed-and-shaped imports are reported according to the e-tagged substitute electricity delivered. Requiring entities to report the emissions associated with the substitute firmed-and-shaped imports has been policy since the State adopted the MRR Regulation in 2011, and any firmed-and-shaped electricity imported by a retail supplier or on its behalf has been subject to these long-established rules pertaining to emissions accounting.

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15 Public Health and Safety Code, §38505 (m).

16 Under the MRR requirements for electric power entities, which includes generators and importers, the entities listed below are required to report: (1) Electricity importers and exporters, as defined in section 95102(a); (2) Retail providers, including multi-jurisdictional retail providers, as defined in section 95102(a); (3) California Department of Water Resources (DWR); (4) Western Area Power Administration (WAPA); (5) Bonneville Power Administration (BPA).

17 IPCC is the international body for assessing the science related to climate change. For more on CARB's GHG emissions accounting, see "California Greenhouse Gas Emissions for 2000-2014-Trends of Emissions and Other Indicators," *California GHG Emission Inventory, 2016 Edition*, CARB, https://www.arb.ca.gov/cc/inventory/pubs/reports/2000_2014/ghg_inventory_trends_00-14_20160617.pdf.

Further, CARB's GHG Emission Inventory, MRR, and Cap-and-Trade programs do not allow the use of RECs to modify or adjust the emissions associated with electricity delivered to California.[18] CARB noted that although a REC is defined to contain all renewable and environmental attributes, the "definition does not state under what circumstances a REC has value in California, nor does it say where the electricity would be delivered."[19]

Finally, in 2015, SB 350 (de León, 2015) tasked CARB, in coordination with the Energy Commission and CPUC, with assigning GHG emissions reduction targets for retail suppliers for the purpose of integrated resource planning. CARB assigned an electricity sector emissions reduction target range based on the assessment in *California's 2017 Climate Change Scoping Plan* of the needed reductions to meet the state's 2030 GHG emissions reductions goals and individual utility target ranges based on the allocation methodology for Electrical Distribution Utilities from the Cap-and-Trade Program. While these future targets are for planning purposes, the methods used to establish them are consistent with the emissions accounting framework governing State programs since the adoption of MRR in 2011.[20]

In short, the State performs GHG emissions accounting through a variety of programs, assessing emissions both at the source and retail levels. As detailed above, the State employs a consistent method for tracking emissions based on delivered electricity to a California balancing authority.

AB 1110 requires the Energy Commission to adopt a methodology for "the calculation of greenhouse gas emissions intensity for each purchase of electricity by a retail supplier to serve its retail customers." The requirement to limit the GHG emissions intensity to purchases that serve retail customers is substantially equivalent to the existing definition of statewide GHG emissions in Health and Safety Code 38505(k), which applies to electricity delivered to and consumed in California.

In developing a GHG accounting methodology for retail sales of electricity, it is appropriate to recognize and seek consistency with the State's established accounting system as well as the State's established requirements for emissions attributable to the electricity sector as defined by existing state law and implemented in State programs. Established law recognizes that emissions associated with the electricity sector are attributable based on delivery of electricity. For purposes of establishing the total emissions attributable to the state's electricity sector, the State recognizes emissions

18 While the Cap-and-Trade Program does not recognize the emissions reduction value of RECs, the program allows for a reduction to the reporter's compliance obligation when requirements of the RPS adjustment are met, including that associated RECs are reported and retired.

19 Final Statement of Reasons, California Air Resources Board, Cap-and-Trade Program Regulatory Documents, October 2011, p. 616.

20 The Air Resources Board adopted CARB staff's proposed methodology at a public hearing on July 26, 2018. https://www.arb.ca.gov/board/mt/2018/mt072618.pdf?_ga=2.68498257.1774497100.1535477312-730192970.1512668373

associated with in-state generation and that from imported electricity delivered to a California balancing authority. Similarly, for consistency and reliability of data, accounting at the retail level should seek to align with these established practices.

Consistent with the statutory definition of statewide GHG emissions and existing State emissions accounting programs such as MRR and the GHG Emission Inventory, staff proposes to track and account for GHG emissions under PSD as those attributable to California on the basis of the electricity that is delivered to a California balancing authority.

AB1110 Requirements and Guidance

The PSD Program is a consumer transparency program. With the passage of AB 1110, the PSD Program will provide a snapshot of the electricity fuel types and GHG emissions characteristics of the electricity portfolios sold to retail customers. Several statutory requirements guide the development of this implementation proposal:

- Present information disclosed to customers on the power content label in a manner that is accurate, reliable, and simple to understand.[21]
- Rely on the most recent verified GHG emissions data in developing GHG emissions intensities for specified and unspecified sources of power while ensuring that these intensities are made available to retail suppliers with sufficient notice to permit timely reporting under PSD.[22]
- Ensure there is not double-counting of GHG emissions or environmental attributes.[23]
- Minimize the reporting burden on retail suppliers.[24]

Accuracy

The State of California has an established history of GHG emissions accounting through CARB programs and activities. Further, California has an established definition for statewide GHG emissions.These practices provide the foundation for identifying the accurate quantity of emissions attributable to the state, even though California is only one jurisdiction within the broader Western Interconnection.

As established by existing state law under MRR, accurate emissions accounting must be predicated on electricity deliveries to a California balancing authority, taking into account the contractual arrangements and tracking mechanisms used in retail-level

21 Public Utilities Code 398.1 (a), http://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=PUC&division=1.&title=&part=1.&chapter=2.3.&article=14.

22 Public Utilities Code 398.4 (k)(2)(C).

23 Public Utilities Code 398.4 (k)(2)(E).

24 Public Utilities Code 398.5 (d).

electricity accounting. Staff contends that any emissions associated with electricity procured and delivered on behalf on a California retail supplier must be attributed to that retail supplier. In the case of firmed-and-shaped imports into California, the emissions associated with the delivered substitute electricity must be attributed to the procuring retail supplier since that entity paid for and took delivery of the electricity. No other entity has a contractual claim or the e-tag delivery path demonstrating a claim to that electricity and its associated emissions.

Reliability

Staff concludes that the statutory requirement to present reliable information under PSD means the information should be consistently good in quality, including consistent through time. Providing good quality information can be done by utilizing, to the extent practicable, the existing, vetted accounting methods established by the State. As stated, such an approach supports the Office of Administrative Law's review standard for consistency with existing state regulations.

Fuel Type Accounting. In California, the RPS program is the most prominent and well-documented fuel type accounting method developed by the State. Moreover, the Energy Commission's Tracking Progress annual report determines California's renewable resource mix by relying on the fuel type designations established by RPS for directly delivered and firmed-and-shaped electricity.

GHG Emissions Accounting. For GHG emissions accounting, CARB's emissions accounting method used under MRR and the GHG Emission Inventory is the official method for source-based emissions accounting. As mentioned, retail suppliers that directly or indirectly import firmed-and-shaped electricity have had emissions assigned to those transactions basis on the delivered substitute power since 2011. Deviating from this practice would contradict years of established policy and regulations.

AB 1110 requires the power content label to display the aggregated GHG emissions intensity of California's statewide retail sales. As such, the sources of electricity and associated emissions procured by a retail supplier, when aggregated across all retail suppliers' portfolios, should generally correspond to CARB's GHG Emission Inventory for the electricity sector. In other words, it would be inaccurate and inconsistent for PSD to identify emissions sources *outside* of those identified by CARB as comprising the emissions sources attributable to California's electricity sector.

To meet the requirement to present reliable information, staff has concluded that adopting existing accounting methods, to the extent appropriate, is appropriate. As such, staff has concluded that the method for determining the fuel mix under PSD should align with the established method under the RPS, with the exception of unbundled RECs, which, as stated, do not represent procured electricity. For the GHG emissions intensity methodology, staff has concluded that it should align with existing GHG accounting method underpinning several State programs. As such, the associated

emissions of a firmed-and-shaped transaction should also be in alignment with the method used by CARB.

Misalignment with these accounting assumptions would result in unreliable information under PSD. For example, MRR assigns emissions to firmed-and-shaped imports based on the electricity delivered to a California balancing authority. It would contradict established State regulations for emissions accounting if PSD were to assign a zero-GHG emissions value to those same firmed-and-shaped imports regardless of the delivered electricity.

Simple-to-Understand Information

Retail-level electricity resource accounting is complex. Staff endeavors to develop a power content label that provides clear information with additional context detailed in the footnotes.

Further, staff concludes that simple-to-understand information means information that does not contradict other public-facing State products, such as the Tracking Progress report and CARB's GHG Emission Inventory. Because of this, staff has concluded that it is necessary to communicate consistent messaging pertaining to the fuel type and GHG emissions of resources serving California load.

Reliance on the Most Recent Verified GHG Emissions Data

PUC 398.4(5)(2)(C) directs the Energy Commission to "rely on the most recent verified greenhouse gas emissions data." In California, the most reliable and verified GHG emissions data collection is done under MRR. Alignment with MRR emissions data, therefore, meets this statutory requirement, as well as supporting the requirements for PSD to present information that is accurate, reliable, and comprehensible.

Avoiding Double-Counting

RECs are the conventional tracking instruments supporting retail-level renewable energy accounting in the RPS program and in voluntary markets. Procurement of electricity from renewable generators without the associated RECs is considered procurement of null power. Staff recognizes that some jurisdictions in the Western Interconnection use unbundled RECs for their RPS programs, while the underlying null power may be sold to other parties in the Western Interconnection. Treating the null power in such transactions as a specified resource with the GHG emissions profile of the renewable generator, would lead to competing retail-level claims on the same renewable generation. For example, a renewable generator in another state could sell the RECs associated with certain generation to an entity in its home state for a product claim under that State's RPS and sell the underlying electricity to a California retail supplier for a product claim under Power Source Disclosure. Consequently, staff considers it necessary to require REC procurement for all retail-level renewable energy claims of delivered generation in order to prevent double counting or the disaggregation of environmental attributes.

Minimizing the Reporting Burden

Staff has developed a reporting template that minimizes the reporting burden on retail suppliers by consolidating fuel type and GHG emissions reporting under the same set of reporting forms and by providing generator-specific GHG emissions factors that will auto-populate rather than requiring retail suppliers to manually search for emissions factors in an index.

At the same time, and as discussed below, staff has not proposed to adopt an hourly matching of resources and load in part because of the excessive reporting burden it would place on retail suppliers.

Proposed Accounting Methodology

To meet the requirements under AB 1110 to provide accurate, reliable, and simple-to-understand information, and to rely on the most recent verified GHG emissions data while avoiding double-counting, as discussed above, staff proposes that the fuel mix under PSD should classify electricity sources using accounting conventions under California's RPS. For the GHG emissions intensity, staff proposes to align with the accounting method established by existing State programs, including the MRR and GHG Emission Inventory.

Fuel Mix Reporting

Staff proposes that the fuel mix under PSD should classify electricity sources using accounting conventions under California's RPS. This means that firmed-and-shaped imports will be assigned the fuel type of the associated RECs. Further, because unbundled RECs do not represent procured electricity, staff proposes for unbundled RECs to be disclosed separately on the power content label, outside of the fuel mix and GHG emissions intensity.

The current PSD regulations instruct retail suppliers to report eligible renewable energy generation based on the year it was generated. The current regulations do not, however, offer specific guidance on how the procurement date and retirement date of the associated RECs would affect the year in which the eligible renewable energy generation is reflected in the fuel mix for each electricity portfolio. Some stakeholders have proposed that eligible renewable energy generation be reported for the year the associated REC is retired, as is done under RPS because retirement represents an exclusive claim by a single entity.

The RPS program, however, is constructed with multiyear compliance periods that allow retail suppliers to reconcile annual REC retirements at the end of the period and among compliance periods, and RECs have a 36-month period in which they can be retired. The PSD program, on the other hand, requires retail suppliers to report annually on the electricity portfolios sold to retail customers the previous year. Due to differences in reporting time frames, there will be a mismatch between how eligible renewable electricity is accounted for in the PSD Program and the RPS Program. As the PSD program is a reporting program and is required by statute to minimize the reporting burden, it is not appropriate to require more stringent REC retirements than those already required under the RPS Program.

Furthermore, reporting eligible renewable energy generation in the year the associated REC is retired would result in discrepancies between annual electricity procurements and annual retail sales, as renewable electricity generation would be reported according to the REC retirement year, while nonrenewable generation would still be reported

according to the year in which it was generated. As such, staff proposes that electricity from eligible renewable energy sources be reported according to the year in which it was generated and procured.

Staff further proposes that a retail supplier's electricity transactions may be classified as renewable fuel types if the electricity is matched with RECs through a directly delivered or firmed-and-shaped transaction. Renewable electricity must be transacted with the associated RECs to substantiate a retail supplier's retail-level claim on renewable generation. Renewable generation that is not transacted with the associated RECs (null power) will be classified as unspecified electricity for the fuel mix and assigned the default emissions factor of unspecified electricity.

To avoid double-counting, staff further proposes that if a retail supplier subsequently sells RECs from directly delivered electricity or firmed-and-shaped imports in a quantity that exceeds one percent of the relevant reporting year's retail sales, the retail supplier must revise the affected data year's PSD annual report to reclassify the renewable electricity as unspecified power. Staff chose the one percent threshold since the fuel mix on power content labels are rounded to the nearest percent, meaning that a one percent change to a portfolio's fuel mix is the smallest threshold in which a noticeable impact would be illustrated on the power content label.

Finally, staff proposes to clarify that eligible renewable generators must be certified under California's RPS Program to be classified as "Eligible Renewable," as defined by Public Utilities Code 398.4 (h), in the fuel mix. Electricity purchases from renewable facilities that do not meet this requirement will be classified as "Other" in the fuel mix.[25]

GHG Emissions Accounting

In developing a GHG accounting methodology for retail sales of electricity, it is appropriate to recognize and seek consistency with the State's established accounting practices for emissions attributable to the electricity sector as defined by established state law. For purposes of establishing the total emissions attributable to the state's electricity sector, the state recognizes emissions associated with in-state generation and that from imported electricity delivered to a California balancing authority. In keeping with this established policy, and to meet the statutory requirements to provide accurate, reliable, and simple-to-understand information, emissions accounting at the retail level should be conducted on the basis of electricity that is delivered to retail customers.

Existing State programs, such as MRR and the GHG Emission Inventory, assign the emissions associated with the delivered substitute electricity to firmed-and-shaped imports. Some stakeholders have argued that firmed-and-shaped transactions should be assigned the emissions profile of the renewable generator, even though the delivered substitute electricity is often not from a zero-GHG source. This approach conflicts with

25 The "Other" classification under Power Source Disclosure is a blanket classification that also captures uncommon electricity generation fuels such as petroleum.

the GHG emissions accounting approach established under State regulation through MRR, the requires the emissions associated with firmed-and-shaped imports reflect the GHG profile of the substitute electricity.

Further, using RECs to offset emissions from substitute electricity could leave emissions unaccounted for somewhere in the Western Interconnection, since most other jurisdictions lack reciprocal retail-level emissions accounting regimes to ensure uniform treatment of firmed-and-shaped imports and null power.

Stakeholders have also contended that the source-based emissions accounting under MRR does not correspond to retail-level emissions. However, the GHG emissions accounting method used in MRR and the California GHG Emission Inventory calculates emissions for the electricity sector to include in-state source emissions and imports. That includes firmed-and-shaped imports that are delivered to a California balancing authority either directly or indirectly on behalf of a California retail supplier. In short, the MRR identifies the pool of emissions sources attributed to California's electricity sector. It would be inaccurate and inconsistent for PSD to identify undelivered electricity from renewable generators as electricity sources serving California retail customers when those resources are not numbered among the emissions sources enumerated under MRR.

Staff's proposal to align GHG emissions accounting under PSD with that of MRR also meets the statutory directives to minimize the reporting burden, provide accurate and reliable information, and assure that emissions information relies on the most recent verified data.

Finally, staff assert that alignment with MRR emissions accounting enables the State to communicate coherent messaging about the emissions attributable to California's retail electricity sector. CARB has performed emissions accounting for the state since 2011, implementing both the MRR and the GHG Emission Inventory, which are foundational to measuring the California's progress in emissions reductions.

RECs in GHG Emissions Accounting

California has several landmark climate and energy policies and programs that aim to reduce GHG emissions and advance renewable energy in California, including the RPS Program, the MRR, and the Cap-and-Trade Program. Staff from the Energy Commission, CARB, and the CPUC recently issued a joint letter reaffirming California's definition and usage of a REC under its principal energy policies and programs.[26] The joint letter expresses a consistent understanding of the role of RECs in GHG emissions accounting. Although a REC includes all renewable and environmental attributes associated with

26 Smith, Courtney, Rajinder Sahota, and Edward Randolph, "Public Comment on June 15, 2015 Workshop on RECs, the Oregon Renewable Portfolio Standard, and energy imports into California via the western Energy Imbalance Market," August 2, 2017, Public Comments on Renewable Energy Certificates Associated with Energy Imported into the California Energy Imbalance Market, pg. 8-11, http://www.oregon.gov/energy/energy-oregon/Documents/2017-Public-Comments-RECs-EIM.pdf.

electricity production, including avoided emissions, a REC is not an emissions reduction credit and cannot be used for that purpose under CARB's source-based emissions accounting. In addition, it is not used as a tracking method for GHG emissions associated with electricity generation under CARB's accounting protocol. As such, RECs will also not be used as a tracking method for GHG emissions associated with electricity generation under PSD.

For fuel type accounting, staff recognizes that retail-level claims are currently tracked using an existing tracking instrument. As RECs are the conventional tracking instruments for retail-level claims on renewable energy, both through RPS and through voluntary market claims, staff proposes that to designate a procurement as a renewable fuel type, the retail supplier must have procured the associated RECs alongside the delivered renewable electricity to prevent double counting or the disaggregation of environmental attributes. Since RECs are used to track ownership of renewable generation, requiring the associated RECs to be procured with the delivered electricity maintains consistency for retail-level resource accounting.

Staff finds that the proposed accounting methodology for reporting and calculating GHG emissions intensities under the PSD program is the best option for meeting the statutory requirements to present accurate, reliable, and simple-to-understand information while relying on the most recent verified emissions data, preventing double-counting, and minimizing the reporting burden.

Unbundled RECs Under the PSD Program

AB 1110 requires the Energy Commission to determine the format for disclosing the portion of annual sales derived from unbundled RECs.[27] The current PSD regulations provide no formal guidance regarding how to report or reflect unbundled RECs on the power content label.

The past practice of some load-serving entities (retail suppliers) has been to report unbundled REC purchases as electricity purchases in their PSD Program filings and to reflect unbundled RECs in the fuel mix for each electricity portfolio on the power content label. However, such reporting produces accounting discrepancies under the PSD Program, as the inclusion of unbundled RECs inflates the reported total electricity procurement for an electricity portfolio. To reconcile retail sales with an inflated total electricity procurement, retail suppliers have reduced the amount of electricity procured from unspecified or other nonrenewable sources.

This has led to concerns that the power content label does not accurately reflect the actual generating sources comprising an electricity portfolio or that unbundled RECs are being used to misrepresent the actual sources of electricity used to serve customers. In

27 See §398.4 (h) (7) of the Public Utilities Code, https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=PUC&division=1.&title=&part=1.&chapter=2.3.&article=14.

implementing AB 1110, this proposal addresses the perceived marketing concerns pertaining to the reflection of unbundled RECs in the power content label.

AB 1110 requires the disclosure of all electricity sources serving retail customers in California. Unbundled RECs do not represent an electricity source serving California retail customers, since unbundled RECs are derived from behind-the-meter in-state generators or out-of-state generators that do not deliver electricity to a California balancing authority or from generators that separately sell the electricity as null power. Since RECs derived from renewable generators that do not deliver the underlying electricity to a California balancing authority cannot modify or adjust the emissions attributable to a California retail supplier, the procurement of unbundled RECs will not be reflected in the GHG emissions intensity.

However, unbundled RECs do represent financial investments made by retail suppliers to comply with RPS or for voluntary purposes. Retail suppliers will report their unbundled RECs as part of each electricity portfolio separate from electricity procurements in their PSD Program filings. As a footnote on the power content label, retail suppliers will disclose the quantity of unbundled RECs retired in the reporting year as a percentage of retail sales.

Retirement of Unbundled RECs

Staff proposes that retail suppliers report their unbundled RECs in the year in which the REC is retired. This approach differs from staff's proposed approach to RECs associated with directly delivered electricity, in which the transactions are reported in the year the electricity is delivered, as described above. This is because unbundled RECs can be bought and sold more than once before ultimately being retired, which could result in double-counting. RECs from directly delivered electricity transactions, on the other hand, cannot be resold without the environmental attribute becoming that of an unbundled REC, minimizing the concern of double counting these resources.

Alternatives Considered

Scope 2 Protocol/REC Accounting

Some stakeholders have advocated for the PSD program to adopt an emissions accounting method that counts all RECs equally, similar to the Scope 2 Protocol.[28] Under such a proposal, stakeholders contend that all RECs should be counted as zero-GHG electricity, including RECs that are not bundled with directly delivered renewable generation. Stakeholders further contend that alignment with the Scope 2 Protocol would better reflect procurement under California's Renewables Portfolio Standard (RPS). [29]

Staff considered this approach and found that it did not address the requirements of AB 1110. Staff concluded that REC-based emissions accounting does not provide accurate, reliable, and simple-to-understand information about the GHG emissions associated with a retail customer's electricity. The Scope 2 Protocol would not account for the emissions associated with delivered substitute electricity, which would undercount emissions associated with electricity that was purchased and delivered on behalf of a California retail supplier. Moreover, the Scope 2 Protocol would allow unbundled RECs to adjust the emissions intensity of a retail supplier's portfolio, displacing emissions associated with procured generation comprising that portfolio. Consequently, Scope 2-based emissions accounting would inaccurately characterize the emissions intensity of the electricity sources serving retail consumers, as well as misalign with existing State law established under MRR and employed under the statewide GHG Emission Inventory and SB 350 emissions reduction targets for retail suppliers.

Furthermore, other California regulatory programs affirm that the investment in renewable energy represented in firmed-and-shaped agreements are distinct and unequal to transactions for directly delivered renewables. RPS limits the amount of firmed-and-shaped imports (other than resources grandfathered under RPS) that can be used to meet RPS compliance targets, and voluntary procurement of firmed-and-shaped RECs above the maximum allowed under RPS does not affect a retail supplier's RPS compliance[30]. On the other hand, voluntary procurement of additional directly delivered renewables can adjust a retail supplier's RPS compliance requirements. This

28 The Scope 2 Protocol is one layer of the Greenhouse Gas Protocol, an accounting standard developed for corporations and governments to track GHG emissions. See http://www.ghgprotocol.org/.

29 RPS is California's energy program that establishes multiyear targets for specified percentages of electricity generated by eligible renewable resources by California load-serving entities.

30 Conversely, SB 350 included a provision that allows the retail sales of green pricing program offered by a POU to be deducted from the utility's total retail sales for determining RPS compliance, provided the renewable electricity serving the green pricing program is directly delivered. See Public Utilities Code 399.30 (c)(4).

demonstrates that, even within the context of RPS, California does not consider firmed-and-shaped imports to be equivalent to directly delivered renewables.

Clean Net Short/Hourly Matching of Resources and Load

Some stakeholders proposed a more granular level of resource accounting based on an hourly matching of resources and load. As described by PG&E:

> Clean Net Short gives credit to a retail supplier's owned or contracted GHG-free generation used to meet that retail supplier's load. The GHG emissions associated with dispatchable fossil resources on the system are proportionally assigned to a retail supplier according to their Clean Net Short in each hour. Any owned or contracted GHG-free generation in excess of a retail supplier's load in a given hour is not credited back to that retail supplier, but instead lowers the GHG emissions intensity of the system in that hour.[31]

Staff recognizes that an hourly matching of resources with load is an innovative approach. However, staff analysis concluded that an hourly matching of resources and load would be extraordinarily data intensive. Retail suppliers would be required to report 8,760 data points to convey hourly load. For smaller retail suppliers, this would be significantly burdensome or not achievable, which conflicts with the statutory mandate to minimize the reporting burden. Further, the statute explicitly allows specified purchases to be identified on an annual basis.

An hourly accounting method would require intensive data reporting, which may prove exceptionally burdensome for smaller reporting entities. Further, the Energy Commission lacks a specific funding source for the staff resources and data infrastructure necessary for such a fundamental overhaul of the PSD program.

Moreover, staff have determined that imposing a requirement to match resources to load is not appropriate when the electricity market may not yet operate in a manner that supports such matching. A typical power purchase agreement is not constructed to require delivery of electricity matched to the particular hourly load of a retail supplier. While well-established or vertically-integrated retail suppliers may have greater flexibility to shape generation to match a particular load shape, staff concluded that hourly accounting would likely disproportionately impact smaller and newer retail suppliers, which have less diversified resource portfolios and more limited purchasing power. Such retail suppliers are more likely to have smaller loads which are best served by contracts with less specific delivery terms, regardless of a particular hourly load shape of the retail supplier.

31 http://docketpublic.energy.ca.gov/PublicDocuments/16-OIR-05/TN223171_20180410T114814_Pacific_Gas_and_Electric_Comments_Supplemental_Comments_Followi.pdf.

Consequently, staff propose not to employ hourly accounting for power source disclosure at this time, staff is open to revisiting hourly accounting in the future through a thorough public process.

PSD Program Definitions

Electricity Portfolio and Electricity Offering

Energy Commission staff proposes that the terms *electricity portfolio* and *electricity offering* be considered synonymous with the term *electric service product* as it is used in the PSD regulations. All three terms mean a portfolio of electricity sources serving load of some or all retail customers in a retail supplier's service area over a calendar year.

Further, staff proposes to clarify that each electricity portfolio offered to a retail supplier's customers should be disclosed separately in annual filings and on power content labels.

Electricity Sources Serving Private Contracts

Some retail suppliers have private contracts with individuals or organizations to provide electricity. The electricity resources procured to fulfill these private contracts are not available to the retail supplier's general customer base. These electricity portfolios are still subject to the reporting requirements under the PSD Program. However, it may prove impractical to display numerous electricity portfolios on a single power content label, as well as prove confusing to consumers.

Therefore, staff proposes that a retail supplier's default electricity portfolio may include the aggregated generation sources and associated GHG emissions from private contracts, rather than reporting these separately for each private contract.

This provision as proposed would by optional and intended only to simplify reporting requirements as stipulated by AB 1110. Retail suppliers that aggregate private contracts may supplement the power content label with additional details on the specific electricity service arrangements pertaining to a customer's private contract.

Annual Sales

The statutes governing the PSD Program stipulate that the fuel mix should be based on *annual sales*, an undefined term in statute.[32] In the past, the PSD Program has interpreted annual sales to mean *retail sales* as defined in the *Enforcement Procedures for the Renewables Portfolio Standard for Local Publicly Owned Utilities* and applied in the RPS Program.[33] Staff proposes that annual sales will mean annual retail sales and be defined as:

> "Sales of electricity by a retail supplier to end-use customers and their tenants over the course of a calendar year, measured in megawatt hours (MWh). Retail

32 Public Utilities Code 398.4 (g).

33 *Enforcement Procedures for the Renewables Portfolio Standard for Local Publicly Owned Utilities*, http://www.energy.ca.gov/2016publications/CEC-300-2016-002/CEC-300-2016-002-CMF.pdf.

sales do not include self-consumption, defined as consumption by a retail supplier; electricity produced for onsite consumption (self-generation) that was not sold to the customer by the retail supplier; or losses due to transmission, distribution, power wheeling, and transmission-interconnected energy storage."

Greenhouse Gases Covered Under the PSD Program

Targeted Gases

As Energy Commission staff propose to utilize the methods employed by the established MRR and Emissions Inventory programs. The calculation of GHG emissions intensity associated with retail suppliers' electricity portfolios will include only the GHGs attributed to electricity generation under MRR: carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). These are the tracked GHGs under MRR, the EPA's Greenhouse Gas Reporting Program, and the IPCC's GHG inventory guidelines.[34]

Excluded Emissions

Although the terms are sometimes conflated, not all renewable electricity resources are GHG-free resources. Under MRR, geothermal generators and generators that use biogenic fuels, such as biomass and all in-state and new out-of-state sources of biomethane,[35] are required to report their GHG emissions.

Biogenic CO_2 , meaning CO_2 emitted from combustion of biogenic fuels and fugitive emissions from geothermal generators (CO_2 and CH_4,), emissions from the electricity sector are estimated in CARB's GHG Emission Inventory but disclosed separately from other GHG emissions and not included under the statewide GHG emissions total or CARB's Scoping Plan sectoral GHG emissions targets.[36] This is consistent with IPCC GHG inventory accounting that attributes biogenic CO_2 to the Agriculture, Forestry, and Other Land-Use sector; to avoid double-counting, IPCC guidance states that biogenic CO_2 should not be counted in the electricity sector GHG emissions accounting.[37] Similarly, the Cap-and-Trade Program exempts eligible biogenic GHG emissions from the determination of a participating entity's compliance obligation.

Fugitive GHG emissions from geothermal generators vary depending on the local geologic conditions and generator system design. Fugitive GHG emissions from

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34 See CARB's *Regulation for the Mandatory Reporting of Greenhouse Gas Emissions*, https://www.arb.ca.gov/cc/reporting/ghg-rep/regulation/mrr-2016-unofficial-2017-10-10.pdf ; EPA's *Greenhouse Gas Reporting Program, Subpart C*, https://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&SID=be77ce6e756f0befaa0dd95743e3342e&tpl=/ecfrbrowse/Title40/40cfr98_main_02.tpl; *2006 IPCC Guidelines for National Greenhouse Gas Inventories: Volume 2, http://www.ipcc-nggip.iges.or.jp/public/2006gl/vol2.html.*

35 See Sections 95852.1, 958521.1, and 95852.2 of the Cap-and-Trade regulation for details on what biomass and biomethane are exempt from a compliance obligation.

36 See CARB's "Scoping Plan Categorization," https://www.arb.ca.gov/cc/inventory/data/tables/ghg_inventory_by_scopingplan_00-15.xlsx.

37 "Frequently Asked Questions," IPCC Task Force on National Greenhouse Gas Inventories, http://www.ipcc-nggip.iges.or.jp/faq/faq.html.

geothermal generators are reported under MRR and counted in the GHG Emission Inventory but are not used to determine a compliance obligation under the Cap-and-Trade Program.

Public Utilities Code 398.2 (a) defines "greenhouse gas emissions intensity" as the sum of all annual emissions of GHG associated with a generation source divided by the annual production of electricity from the generation source. However, AB 1110 did not prescribe a method for identifying GHG emissions or calculating the emissions intensity. Rather, Section 398.4 (5)(2)(A) directs the Energy Commission to develop a method for calculating the emissions intensity. Consequently, staff proposes that retail suppliers report to the PSD Program all GHG emissions, including those from geothermal and biogenic sources.

For consistency with electricity sector GHG accounting practices under current California programs and IPCC guidance, staff proposes that reported geothermal emissions consistent with those reported under MRR be included in the overall GHG emissions intensity for each electricity portfolio. Staff proposes that biogenic CO_2 associated with an electricity portfolio be disclosed on the power content label separately in a footnote but not be used in calculating the overall GHG emissions intensity of the electricity offering's. CH_4 and N_2O emissions associated with biogenic fuels will still be included in the GHG emissions intensity of an electric portfolio. The proposed approach provides an accurate and transparent reporting of the renewable and emissions attributes associated with electricity serving retail customers, while aligning with existing emissions accounting protocols used by California and other national and international organizations.

This approach will not alter the way the retail supplier's fuel mix is calculated, as biomass, eligible biomethane, and geothermal electricity generators will still be classified as eligible renewable energy resources in the fuel mix but will be assigned GHG emissions in a manner that is consistent with the MRR.

Data Sources and GHG Emissions Intensity Calculations

Generator-Specific GHG Emissions Intensities

MRR collects and publishes the most robust generator-level GHG emissions data available to support the implementation of the expanded PSD program requirements called for in AB 1110. Energy Commission staff proposes to use the most recent publicly available MRR data annually to develop generator-specific emissions intensities to meet the requirements for relying on the most recent verified data and reduced reporting burden. This approach further supports consistency with existing California programs.

Publicly available GHG emissions data reported under MRR are derived from several reporting methods. Most in-state electricity generators report GHG emissions directly to MRR.[38] Out-of-state electricity generators do not report their GHG emissions directly to MRR; however, the MRR program calculates generator-specific GHG emission intensities based on federal data from the U.S. Environmental Protection Agency (U.S. EPA) and Energy Information Agency (EIA) so electricity importers can report the quantity of imported electricity and report GHG emissions associated with their electricity imports. MRR data, therefore, will provide generator-specific GHG emissions intensities for out-of-state generators (expressed in metric tons of CO_2e/MWh), and total GHG emissions for in-state generators (expressed in metric tons of CO_2 equivalent or CO_2e).

For in-state generators, staff proposes to calculate generator-specific GHG emissions intensities by dividing total GHG emissions of CO_2e by the annual net generation reported to EIA.[39]

For out-of-state generators, staff proposes to adopt the out-of-state generator-specific GHG emissions intensities that CARB staff calculates and publishes as part of the MRR reporting tools for electricity importers.[40]

Generator Data Not Covered Under MRR

Some small generators do not meet the reporting threshold under MRR, and new generators in their first year of operation will not yet have reported emissions reported emissions to CARB in time for PSD reporting. For these cases, staff will calculate GHG

38 Small generators with an annual capacity less than 1 MW or that emit fewer than 10,000 metric tons (MT) of CO_2e a year are not required to report under MRR.

39 Annual net generation data is published by EIA on Form 923.

40 See CARB's Mandatory Reporting Regulation reporting tools Workbook 1: EPE Importers and Exporters, https://www.ccdsupport.com/confluence/display/calhelp/Reporting+Form+Instructions#EPE.

emissions by multiplying the heat content of fuel consumed for electricity production[41] by stationary fuel emission factors[42] published by the EIA. When calculating GHG emissions for such generators, staff proposes to convert emissions of CO_2, CH_4, and N_2O to CO_2e using global warming potentials in a manner consistent with MRR.[43]

Furthermore, staff is aware that a small number of generators may have discrete generating units that are owned or contracted to separate retail suppliers. These generators may have supplied only aggregated GHG emissions data under MRR. Staff is consulting with CARB to develop a specific treatment for such cases, which may involve using either MRR or EIA data. As an initial option for situations in which electricity deliveries from discrete generating units within one generator can be demonstrated to be attributable to separate retail suppliers, staff proposes to calculate GHG emissions intensities for each generating unit using the heat content of fuel consumed for electricity production and stationary fuel combustion factors provided by EIA.

Cogeneration Facilities

Cogeneration plants produce GHG emissions through both the generation of electricity and useful heat for industrial processes. MRR collects total GHG emissions from these cogeneration facilities, which include emissions associated with both heat and electricity generation.

For cogeneration facilities, staff proposes to include in the GHG emissions intensity of the electricity portfolio only the portion of GHG emissions associated with electricity generation. Using fuel consumption data reported to EIA,[44] staff will calculate this portion by dividing the heat content of the fuel consumed for electricity generation by the heat content of the total fuel consumed by the cogeneration facility. That portion of GHG emissions attributable to electricity production will then be multiplied by the total GHG emissions of the facility and divided by the total electricity generation of the facility to calculate the GHG emissions intensity of a cogenerator for a given year.

GHG Emissions Intensity of an Electricity Portfolio

For each procurement claim from a specified resource, reporting entities will multiply the GHG emissions intensity of the generator by the total amount of procurement from that generator to obtain the GHG emissions associated with that procurement.

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41 "Annual Electric Utility Data," Energy Information Agency, Form EIA-923, https://www.eia.gov/electricity/data/eia923/.

42 "Carbon Dioxide Emission Coefficients," Energy Information Agency, https://www.eia.gov/environment/emissions/co2_vol_mass.php; EIA's factors are based on stationary fuel combustion emissions factors published by the Environmental Protection Agency. See "Emission Factors for Greenhouse Gas Inventories," Environmental Protection Agency, https://www.epa.gov/sites/production/files/2015-07/documents/emission-factors_2014.pdf.

43 Direct Global Warming Potential, Second Assessment Report (SAR) 100 Year Values, IPCC, https://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html.

44 Cogeneration facility heat content numbers as made available through EIA's Form 923 reporting process that will be used for this calculation.

Procurement of unspecified sources of electricity will be assigned a default GHG emissions intensity, as discussed in a subsequent section of this paper.

The GHG emissions intensity of an electricity portfolio will be calculated by dividing the sum of all GHG emissions associated with the associated specified and unspecified electricity sources by the retail sales of that electricity portfolio.

As stated above, to reconcile total procured generation with retail sales for calculating the GHG emissions intensity, the total GHG emissions of an electricity portfolio will exclude GHG emissions associated with a retail supplier's self-consumption, as well as losses as a result of transmission, distribution, power wheeling, and transmission-interconnected energy storage.

The initial draft of this staff proposal for AB 1110 implementation called for retail suppliers' electricity imports to use CARB's line loss adjustment factor of 1.02 to account for transmission losses prior to delivery to a California balancing authority. That represented an upward adjustment of total procurement. Staff eliminated this proposal since reconciling total procurement with retail sales necessitates a downward adjustment. Staff concluded that adjusting total procurement up through the line loss adjustment factor before adjusting total procurement down to reconcile with retail sales would distort PSD's resource accounting and diminish the accuracy of the program.

Incorporating GHG Emissions Intensities Into Annual Reports

Retail suppliers will provide line item generator data for each procurement on Schedule 1 of the annual report, including EIA identification numbers (ID). Staff plans to develop a reporting form that will auto-populate generator-specific GHG emissions intensities based on the EIA ID entered for each line item of procurement. Staff further anticipate that the overall GHG emissions intensity of the electricity portfolio will also be automatically calculated on the PSD annual reporting form. Staff anticipates that this will greatly reduce the reporting burden for retail suppliers to meet the additional requirements of AB 1110 and will also increase the reliability across retail suppliers and even products within a retail supplier by ensuring consistent calculation methodology.

Timing of GHG Emissions Intensity Updates

Staff proposes to update the PSD Program annual reporting forms with the most recently available GHG emissions intensities for known electricity generators by April 1 of each year.

Due to the availability date of new GHG emissions data from MRR, the generator-specific emissions intensities will be based on data from an earlier year than the reporting year under the PSD Program. This data lag is unavoidable, given the statutory requirements of the existing Power Source Disclosure program and AB 1110. Staff analysis of MRR

data indicates that generators' year-to-year emissions intensities do not vary significantly.

PSD Program Accounting by Procurement Type

Consistent with current practices under the PSD Program, procurements will beclassified as specified or unspecified, with specified procurements further distinguished as either directly delivered or firmed-and-shaped.

Table 1 summarizes how each type of procurement is treated for fuel mix and GHG emissions accounting.

Table 1: Procurement Types and Accounting Treatment

Procurement Type	Power Mix Accounting	GHG Emissions Intensity Accounting
Specified – Directly Delivered	Assigned the fuel type of the REC	Assigned the GHG emissions intensity of the generator
Specified – Firmed-and-Shaped	Assigned the fuel type of the REC	Assigned the GHG emissions intensity of the substitute power. If unknown, assigned the default GHG emissions intensity for unspecified electricity[45]
Null Power	Classified as unspecified electricity	Assigned the default GHG emissions intensity for unspecified electricity
Unspecified	Classified as unspecified electricity	Assigned the default GHG emissions intensity for unspecified electricity

Source: Energy Commission staff

Specified Sources of Electricity

Specified sources of electricity are electricity transactions that are traceable to specific generation sources by any auditable contract trail or equivalent, such as a tradable commodity system, that provides commercial verification that the electricity source has

45 If the source of the substitute electricity is known, the retail supplier may use the generator-specific GHG emissions intensity from the substituted electricity in the firmed-and-shaped procurement transaction.

been sold once and only once to a retail consumer. A specified source must have been specified before contract execution or trade confirmation. A source is also considered specified on the basis of ownership with evidence of direct delivery (see below) via continuous physical transmission.

Directly Delivered Procurements

Procurement claims that meet one of the following criteria will be considered directly delivered sources of electricity: have a first point of interconnection with a California balancing authority, have a first point of interconnection with distribution facilities used to serve end users within a California balancing authority area, or be scheduled from the generation 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 in California (usually via e-tag),[46] or have an agreement to dynamically transfer electricity to a California balancing authority.

Power Mix. Directly delivered procurements will be assigned the fuel type of the generator from which the electricity was derived.

GHG Emissions Intensity. Directly delivered procurements will be assigned the GHG emissions intensity of the generator from which the electricity was derived.

Firmed-and-Shaped Procurements

Firmed-and-shaped procurements are bundled electricity products in which RECs are matched with substitute electricity imported from outside a California balancing authority and in addition to a retail supplier's resource portfolio prior to the contract or ownership agreement for the renewable resource.[47] The renewable generation associated with the RECs in firmed-and-shaped procurements is not delivered to a California balancing authority in these transactions.

As discussed above, RECs will not be used to track or adjust GHG emissions under PSD. In the case of firmed-and-shaped imports, staff will assign the emissions profile of the delivered substitute electricity to firmed and shaped imports. If a specified source of the substitute electricity cannot be identified through e-tags, staff will assign the firmed-and-shaped import the GHG emissions factor of unspecified power.

Power Mix. For the power mix, staff proposes that firmed-and-shaped electricity procurements be assigned the resource type of the generator from which the RECs were derived. This proposal aligns with current practice under PSD. It should be noted that this exception for firmed-and-shaped procurements, in which the fuel type of the

46 The use of another source to provide real-time ancillary services required to maintain an hourly or sub hourly import schedule into a California balancing authority shall be permitted, but only the fraction of the schedule actually generated by the specified generation source shall count toward this specified procurement of electricity.

47 For the full definition, see §3203 (b) of the *Enforcement Procedures for the Renewables Portfolio Standard for Local Publicly Owned Electric Utilities.*

transacted REC is used to determine the procurement's power mix category, is meant to reflect a retail supplier's procurement decisions for meeting its RPS obligation, and the inclusion of firmed-and-shaped procurements in PSD's power mix is still predicated on transactions for actual electricity as part of the bundled product.

GHG Emissions Intensity. To determine the GHG emissions of firmed-and-shaped transactions, staff proposes requiring reporting entities to use the GHG emissions intensities of the generator that produced the substitute electricity. For cases in which the source of the substituted electricity is unknown, reporting entities will be required to use the default GHG emissions intensity of unspecified electricity in reporting the emissions associated with that product. Energy Commission staff is evaluating the appropriate method for retail suppliers to report e-tag documentation for PSD filings.

Staff proposes not to provide any adjustments to retail suppliers' GHG emissions intensity based on the retirement of RECs transacted through firmed-and-shaped electricity products. A main purpose of the PSD Program is to bring additional transparency regarding the GHG emissions intensity associated with electricity portfolios sold to retail customers in California. As such, staff concludes that any adjustments to GHG emissions for the retirement of RECs from firmed-and-shaped electricity products would prevent a more accurate accounting of the GHG emissions associated with a retail supplier's electricity portfolios used to serve retail customers.

Footnote Disclosure. To support accuracy and consumer transparency, staff proposes that the retail suppliers will disclose on the power content label the percentage of renewable electricity that was sourced through firmed-and-shaped imports.

Specified System Mixes of Asset-Controlling Suppliers

Asset-controlling suppliers (ACS), such as Powerex and Bonneville Power Administration, have system mixes composed primarily of large hydroelectric plants with a small portion composed of other generation sources. Under the current PSD regulations, a retail supplier that procures specified electricity from an ACS through a transaction that can be traced to a specific generator can report it according to the resource characteristic of the specific generator; otherwise, procurements from mixed electricity sources must be classified as unspecified electricity. However, MRR contains provisions that allow an ACS to be assigned a GHG emissions intensity that reflects the ACS' system mix of specified resources for the reporting year. Under MRR, there is a two-year lag in the ACS-specific GHG emissions factor data and MRR reporting data. (For example, 2019 data reported in 2020 will use an emissions factor based on the ACS' 2017 generation and emissions.)

Staff proposes that specified procurements of system mix electricity from an ACS (but not procurements for unspecified electricity from an ACS) be assigned the ACS-specific GHG emissions factor reported and verified under MRR. For the fuel mix, specified purchases from an ACS will no longer be reported as unspecified power. Instead, retail

suppliers will be allowed to assign the ACS-specific system GHG emissions factor for their system mix as determined under MRR.

Energy Commission staff will post resource mix factors and system GHG emissions intensity factors for specified procurements of ACS system power by April 1 of each year. Retail suppliers will use these resource factors to determine the system mix breakdown of a specified purchase from an ACS. Each line item of resource-specific ACS electricity will be assigned the overall GHG emissions intensity of the ACS's system mix.

Unspecified Sources of Electricity

Unspecified sources of electricity are procurements that cannot be traced to specific generation sources through an auditable contract trail or an equivalent verification process. More specifically, electricity is unspecified when the source was not identified explicitly at the time the contract was executed, which is the case, for example, when buying power on the Intercontinental Exchange or contracting for power from unknown sources via a broker.

Power Mix. As is the case under the current PSD program, unspecified sources will be categorized in the fuel mix as "unspecified."

Greenhouse Gas Emissions Intensity. Energy Commission staff proposes that emissions from unspecified electricity be treated in a manner consistent with MRR. The current MRR assigns unspecified power a default emissions factor of 0.428 MT CO_2e/MWh. If CARB updates its default GHG emissions factor for unspecified power, it will be reflected in the PSD Program.

In-State Unspecified Electricity

CARB's default emissions factor for unspecified electricity applies only to imports of unspecified power as most in-state generation reports actual emissions under MRR. Stakeholders have noted that in-state unspecified electricity should not be assigned the same emissions factor as CARB's factor for out-of-state unspecified electricity, arguing that marginal generators in California have lower emissions than out-of-state generators operating on the margin. Furthermore, stakeholders have pointed out that CARB developed its default emissions factor for unspecified electricity several years ago and that the figure should be updated.

However, Energy Commission staff analysis indicated that the average GHG emissions factor of current in-state marginal generation did not substantially deviate from CARB's GHG default emissions for imported sources of unspecified electricity. Furthermore, Energy Commission staff is not aware of a simple and reliable method for distinguishing between in-state and imported sources of unspecified electricity purchased through open market transactions.

Therefore, Energy Commission staff proposes applying CARB's default emissions factor to all sources of unspecified electricity.

Spot Market Purchases Through the Energy Imbalance Market

The Energy Imbalance Market (EIM)[48] is a real-time electricity trading market managed by the California Independent System Operator (California ISO). A retail supplier's California ISO spot market purchases for unspecified electricity may include electricity transacted through the EIM. Staff proposes that unspecified electricity, including any electricity that may be transacted through the EIM, be assigned CARB's default emissions factor of 0.428 MT CO_2e.

CARB and the California ISO are analyzing the EIM to ascertain a method for determining the GHG emissions attributable to EIM transactions. If the results of that analysis yield a method for more accurately reflecting GHG emissions attributed to EIM transactions, Energy Commission staff will consider incorporating that method under PSD through a public process.

48 An *Energy Imbalance Market* is a real-time wholesale energy market that allows participating balancing authority areas to buy and sell the final few megawatts of power to satisfy demand during the hour it is needed. (See https://www.caiso.com/informed/Pages/EIMOverview/Default.aspx.)

GHG Emissions Adjustments and Provisions

Adjustment due to Self-Consumption and Grid Losses

AB 1110 specifies that GHG emissions should be reported for each generation source, but the GHG emissions intensity should be determined based on retail sales. However, Energy Commission staff anticipates that there will be discrepancies between a retail supplier's reported annual procurement and retail sales. For discrepancies stemming from some portion of a retail supplier's total procurement being used to serve a retail supplier's self-consumption (generation consumed by the retail supplier) or lost due to transmission, distribution, power wheeling, and transmission-interconnected energy storage, staff proposes that a retail supplier's nonrenewable sources of electricity should be proportionally reduced to reconcile the difference between total net procurement and retail sales.

Staff has concluded that such an approach best aligns with RPS procurement strategies, since RPS sets renewable procurement targets based on retail sales, and specific sources of renewable generation are procured exclusively to meet retail sales (and not to serve self-consumption or system losses).

After a retail supplier provides the relevant data on Schedule 1 of the PSD Program annual report, the pro-rata reduction of each nonrenewable procurement to account for self-consumption and transmission, distribution, power wheeling, and storage losses will be applied automatically by an embedded Excel formula and be reflected in the calculated GHG emissions. A retail supplier that also serves as a balancing authority should not report electricity used to cover transmission losses for wheeled power as part of its retail sales.

Grandfathering Provision for Firmed-and-Shaped Investments

Staff recognizes that some retail suppliers have made investments in firmed-and-shaped products as a cost-effective and allowable way to meet RPS targets or to support voluntary renewable procurement. The original MRR regulation, adopted in 2011, concluded that firmed-and-shaped imports have emissions attributable to California based on the substituted electricity, and any imports made on behalf of retail suppliers have been reported to CARB with emissions since that time. However, staff understands that retail suppliers have not, prior to this rulemaking, received guidance on how GHG emissions should be publicly disclosed for any investments in firmed-and-shaped products, and, as such, could have prepared marketing materials or claims in which firmed-and-shaped transactions were assigned the emissions profile of the renewable generator and associated RECs.

Staff further recognize that for those retail suppliers that have made investments in firmed-and shaped-products, the public disclosure requirements under this rulemaking may change the manner in which GHG emissions for any product have previously been conveyed. Although not required, if a retail supplier were to choose to change their procurement strategy in light of this new disclosure requirement, the retail supplier may not be able to revise or remove firmed-and-shaped contracts from their electricity portfolio quickly.

To address this, staff proposes a grandfathering provision that would apply to the accounting methodology under PSD to provide sufficient transition time for retail suppliers to renegotiate or replace existing firmed-and-shaped agreements at their discretion. Under the proposed revision, firmed-and-shaped imports under contract as of February 1, 2018, may be classified according to the emissions profile of the renewable generator and associated RECs. Staff proposes using February 1, 2018, as the cutoff date since that corresponds with the public workshop in support of previous iteration of this implementation proposal, in which staff reaffirmed its conclusions regarding firmed-and-shaped imports.

The grandfathering provision will expire by the end of the initial firming-and-shaping contract or by December 31, 2024, whichever occurs sooner. Contracts amended after February 1, 2018, will be ineligible for the grandfathering provision. Retail suppliers must provide contracts to the Energy Commission for review before claiming the grandfathering provision. Staff proposes the December 31, 2024, expiration date for the grandfathering provision because it aligns with the current RPS compliance period, ensuring that procurements made to meet RPS targets under the current and next compliance periods will reflect retail supplier assumptions about the fuel type and emissions profile of firmed-and-shaped investments. The grandfathering provision will cover firmed-and-shaped imports for data years 2019-2024, providing a reasonable transition window for retail suppliers to consider adjustments to their procurement strategies.

To support consumer transparency, staff further proposes that the power content label contain a footnote indicating the percentage of electricity resources exempted from GHG emissions disclosure under the grandfathering provision.

Emissions Adjustment for Excess GHG-Free Generation of Publicly Owned Utilities

AB 1110 requires the Energy Commission to develop guidelines for adjustments to a GHG emissions intensity for a reporting year for any POU that demonstrates it generated GHG emission-free electricity in excess of its retail sales and wholesale sales of specified sources.

Qualifying Requirements

Energy Commission staff understands that this GHG emissions adjustment provision was intended to address the unique contractual circumstances of excess Hetch Hetchy hydroelectric generation owned by the San Francisco Public Utilities Commission.

Any POU that wishes to apply for this adjustment must demonstrate that it generated GHG-free electricity in excess of its retail sales and wholesale sales of specified sources in a given year. To verify a POU's eligibility for the adjustment, staff proposes requiring each applying POU to demonstrate qualifying generation amounts by submitting all associated contracts for the sale of the qualifying generation.

Adjustment Mechanism

Staff proposes allowing a qualifying POU to annually generate emissions adjustments, denominated in megawatt-hours, equal to the quantity of eligible generation in excess of its retail sales and wholesale sales of specified sources for a given year multiplied by the default emissions factor for unspecified electricity. In effect, only excess electricity sold as unspecified electricity will be eligible for emissions adjustments. These emissions adjustments can be applied by the POU to reduce a POU's current or future reported annual GHG emissions and thereby reduce or eliminate the GHG emissions intensity of its electricity portfolios on the power content label for the reporting year. Each emissions adjustment can be applied only once.

Consistent with the *Enforcement Procedures for the Renewables Portfolio Standard for Local Publicly Owned Electric Utilities*, staff proposes a 20-year life for each emissions adjustment generated to capture the annual fluctuation of hydroelectric output. This means that an eligible POU could bank emissions adjustments for up to 20 years after the year in which the adjustment was generated[49] for later use in reducing annual emissions as reflected on the power content label. PSD staff will track the reporting, use, and expiration of emissions adjustments for qualifying generation reported by a retail supplier.

For example, if a POU generated 1,000 MWh of qualifying GHG-free electricity in 2019 that was in excess of its 2019 retail sales and wholesale sales of specified sources, it will be credited for 428 MT CO_2e (1,000 MWh x 0.428 MT CO_2e/MWh) of emissions adjustments that could be used for the retail supplier's 2019 PSD report or any PSD report through the retail supplier's 2040 PSD report.

To generate retroactive GHG emissions adjustments from zero-emission electricity generated before the first year in which GHG emissions intensities must be reported (2019), a POU eligible for this adjustment will be allowed to submit historical data for generation that occurred no earlier than the effective date of AB 1110, January 1, 2017.

49 Emissions adjustments would expire annually. The year following the reporting year (for example, 2020 for 2019 generation data) would be the first year in the 20-year banking period for a specific adjustment.

Other Proposed Program Changes

Energy Commission staff proposes other programmatic changes to the PSD regulations.

First, to streamline reporting, retail suppliers will be required to provide EIA IDs and RPS IDs[50] on the annual report for any generators that have been assigned those numbers. RPS retail suppliers will no longer be asked to provide either WREGIS (Western Renewable Energy Generation Information System) or FERC (Federal Energy Regulatory Commission) IDs. Nearly all generators will have EIA IDs, and all eligible renewables will have RPS IDs. For the few generators that have neither ID, retail suppliers should contact the Energy Commission to determine an appropriate method of identifying the generator in question.

Second, Schedules 3 and 4 of the annual report pertaining to power pools will be eliminated. Staff analysis indicates that no retail supplier has used these forms since 2012, which suggests these forms are obsolete. Furthermore, staff asked stakeholders at the July 2017 workshop whether any reporting entities anticipated using these schedules, and received no comments.

Third, Section 1394 (b)(2) of the current PSD regulations will be clarified to establish an October 1 due date for a retail supplier that is a public agency to submit the minutes from the public meeting in which the governing board approved the annual report to the Energy Commission. Before this proposed change, the PSD regulations did not specify a date or specific requirements for POUs to submit proof of governing board approval.

Fourth, the auditing procedures in Appendix A will be simplified to adhere to a set of common industry standards, rather than requiring specific auditing procedures. Staff concluded that the current auditing requirements were overly prescriptive. Consequently, staff proposes to provide more discretion for auditors to perform their work in accordance with industry standards and their professional judgement.

50 The RPS ID is a unique identifier assigned to each generator that applies for RPS certification.

Proposed New Reporting Requirements

Energy Commission staff aims to minimize new reporting requirements. Under the AB 1110 implementation proposal outlined above, a retail supplier reporting under PSD will need to make the following changes to Schedule 1 of its annual filing to the Energy Commission:

- Disclose EIA and RPS IDs, rather than EIA, WREGIS, or FERC IDs (Columns I and J)
- Indicate whether line items are firmed-and-shaped procurements (Column K)
- Specific attribution of self-consumption and grid losses will no longer be reported; self-consumption and grid losses will be automatically reconciled against retail sales, as described on page 21 of this document (Column O)

Proposed Power Content Label

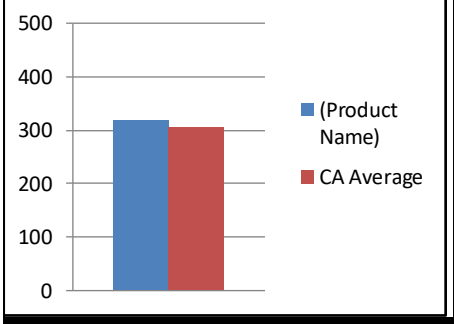
The proposed annual power content label builds upon the existing label by adding GHG emissions intensity of the product near the top and the percentage of the electricity portfolio associated with retired unbundled RECs in footnote 4. The chart on the label that compares the GHG emissions intensity of the electricity portfolio to the statewide GHG emissions intensity of electricity serving California load will be rendered automatically through embedded formulas in the power content label. Although retail suppliers will report GHG emissions denominated in metric tons CO_2e/MWh, the GHG emissions intensity of the electricity portfolio will be converted to kilograms of CO_2e/MWh for disclosure to customers. (This conversion will be performed automatically on the PSD reporting form.) Staff will create variants of the proposed label so that a retail supplier could display multiple electricity portfolios on a power content label.

Figure 1: Proposed Power Content Label

(ENTITY NAME & ELECTRICITY PORTFOLIO NAME)

2019 POWER CONTENT LABEL

Greenhouse Gas Emissions Intensity (in kg CO_2e/MWh)[1, 2]	
(Product Name)	CA Average
318	**305**



Energy Resources	Fuel Mix	CA Total Mix
Eligible Renewables[3]	**36%**	**22%**
Biomass & biowaste	6%	3%
Geothermal	5%	4%
Eligible hydroelectric	0%	1%
Solar	0%	6%
Wind	25%	8%
Coal	**0%**	**6%**
Large Hydroelectric	**6%**	**5%**
Natural Gas	**40%**	**44%**
Nuclear	**0%**	**9%**
Other	**0%**	**0%**
Unspecified Power[4]	**18%**	**14%**
TOTAL[5, 6]	**100%**	**100%**

[1] Greenhouse gas (GHG) emissions intensity represents an average over the course of a year of the carbon dioxide (CO_2) equivalent of greenhouse gases resulting from each megawatt hours of electricity generated for this product. CO_2 emissions from biogenic fuels are not reflected in the GHG emissions intensity above, but are indicated below:

GHG emissions intensity of this electric service product including biogenic CO_2:	**393**
California average GHG emissions intensity including biogenic CO_2:	**372**

[2] GHG emissions from nonrenewable electricity delivered under renewable contracts are exempt from emissions disclosure if the resources were under contract prior to February 2018.

Electricity resources exempt from GHG emissions disclosure as a percentage of this electric service product's retail sales:	**8%**

[3] The Power Content Label does not demonstrate compliance with California's RPS. GHG emissions intensity and fuel mix accounting use different accounting methods established by the State of California. For more information on the methodology used to construct this power content label, visit www.energy.ca.gov/pcl/

[4] Unspecified power is electricity that was purchased through open market transactions and is not traceable to a specific generation source or sources. For more detail, visit www.energy.ca.gov/pcl/

[5] Unbundled renewable energy credits (RECs) represent renewable investments that do not deliver electricity to the retail supplier's customers. Unbundled RECs are not reflected in the power mix or GHG emissions intensities above.

Unbundled RECs retired as a percentage of this electric service product's retail sales:	**12%**

[6] Due to rounding, fuel mix percentages may not add to 100%.

For specific information about this electricity portfolio, contact:	**(Entity Name)**	(Entity Phone Number) (Entity Website)
For more information about the power content label, consult:	**California Energy Commission**	1-844-217-4925 www.energy.ca.gov/pcl/

Source: California Energy Commission staff