



CRS

center for
resource
solutions

August 18, 2015

Assembly Member Phil Ting
State Capitol
P.O. Box 942849
Sacramento, CA 94249-0019

RE: Comments of Center for Resource Solutions (CRS) on California Assembly Bill (AB) 1110

Dear Assembly Member Ting:

AB 1110 has come to our attention and we thought it critical to provide some important context on the legal mechanisms of renewable energy trading in California and best practice for greenhouse gas (GHG) accounting. If passed in its current form (as amended June 19, 2015), this bill would seriously undermine widely-accepted carbon accounting definitions and procedures, both in California and more broadly. We recommend that the bill be amended to reflect these mechanisms and best practices, or better still, to allow the California Energy Commission (CEC) to appropriately determine the GHG accounting/reporting methodology and requirements for electric service providers through regulatory processes. It is in spirit of avoiding serious repercussions and affecting sound public policy that we offer the following comments.

Background on CRS and Green-e®

CRS is a 501(c)(3) nonprofit organization—located in the Assembly Member’s district, in the Presidio of San Francisco—that creates policy and market solutions to advance sustainable energy. CRS has broad expertise in renewable energy policy design and implementation, electricity product disclosures and consumer protection, and GHG reporting and accounting. CRS administers the Green-e programs. Green-e Energy is the leading certification program for voluntary renewable electricity products in North America. In 2013, Green-e Energy certified retail sales of 33.5 million megawatt-hours (MWh), enough to power over a quarter of U.S. households for a month. Almost 717,000 total retail customers purchase Green-e Energy certified products from 280 companies in 2013.

Stakeholder-driven standards supported by rigorous verification audits and semiannual reviews of marketing materials ensure robust customer disclosure and are pillars of Green-e Certification. Through these audits and reviews, CRS is able to provide independent third-party certification of renewable energy products. Green-e program documents, including the standards, Code of Conduct, and the annual verification report, are available at www.green-e.org. CRS also has a long history of working with state agencies to design and implement consumer protection policies that ensure accurate marketing and avoid double counting of individual resources towards multiple end uses.

In January of this year, the California Public Utilities Commission directed the three largest investor-owned utilities (IOUs) in the state—Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas and Electric Company, which together cover nearly 80% of the state—to

offer a Green-e Energy certified 100% renewable energy option to their customers.¹ As such, these products will need to comply with Green-e requirements for product disclosure including product content labels.² According to the order, “Green-e Energy certification will also provide customers with standardized, understandable information on the energy's attributes.”³

Summary of CRS Comments and Recommendations for AB 1110

CRS is in full support of GHG disclosure to retail customers, and therefore with the major thrust of this bill. We also support standardizing a GHG accounting methodology in California. However, the limited extent to which the bill stipulates how the accounting should be done is inconsistent with existing California regulations, historical power source disclosure in California, federal guidance on marketing and disclosure claims regarding renewable energy, and international best practice for GHG accounting for delivered electricity:

“The bill would prohibit an adjustment in the calculation of emissions of greenhouse gases through the application of renewable energy credits, carbon offset credits, or other attributes acquired from any facility not providing the actual delivered electricity used to serve a retail customer.”

“For purposes of this calculation, no adjustment shall be made to the calculation of emissions of greenhouse gases assigned to any retail supplier through the application of the following:

- (1) Renewable energy credits, as defined in subdivision (h) of Section 399.12.
- (2) Offset credits issued pursuant to Article 5 (commencing with Section 95801) of Subchapter 10 of Chapter 1 of Division 3 of Title 17 of the California Code of Regulations.
- (3) Other attributes acquired from any facility not providing the actual delivered electricity used to serve a retail customer.”

Importantly, the proposed amendments to Sec. 398.4 of the Public Utilities Code above, which prohibit the use of Renewable Energy Credits (RECs) for GHG disclosure, could result in double counting by effectively assigning the attributes of generation to delivered electricity, rather than the RECs, and by not requiring demonstration of REC ownership for delivered renewable electricity in order for it to be counted as zero-emissions (meaning a supplier could sell off the RECs and report the delivered electricity as zero emissions under the bill). In fact, RECs are the legal mechanism for conveying the attributes of renewable generation, including the GHG emissions factor.

It is our strong recommendation that this language simply be removed from the bill, which would appropriately allow the CEC to finish its work to determine the methodology for GHG emissions accounting and reporting through a transparent and open regulatory process. Methodology and standard development should not be a part of this legislation.

If it cannot be removed, we recommend that this language be amended such that the bill prohibits the use of offset credits alone:

¹ California Public Utilities Commission Decision 15-01-051. January 29, 2015. *Decision Approving Green Tariff Shared Renewables Program for San Diego Gas & Electric Company, Pacific Gas and Electric Company, and Southern California Edison Company pursuant to Senate Bill 43*. Available online: <http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M146/K250/146250314.PDF>.

² Green-e's requirements for product content labels and other customer disclosure can be found in the Green-e Energy Code of Conduct, available online: http://www.green-e.org/getcert_re_stan.shtml#coccdr.

³ *Ibid.* Section 5.4, pg. 90.

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- ~~(3) Other attributes acquired from any facility not providing the actual delivered electricity used to serve a retail customer.”~~

The restrictions on RECs in the bill appear to stem from consistent mischaracterizations of RECs, which have been repeated in legislative committee hearings and analyses of the bill, and a general conflation of “localness” and “renewable-ness.” We attempt to correct many of these mischaracterizations below. If there is a desire to prioritize in-state renewable energy, or even to restrict GHG reporting to in-state or more local generation resources, this can be done without restricting the nature of the underlying contractual instrument, which is not directly related to the effective delivery of attributes, and attacking RECs as the basis for renewable energy delivery and use in California. In fact, unbundled RECs are not contradictory to local or in-state renewable energy delivery.

Introduction to U.S. Renewable Energy Markets and RECs

Since usage of any specified generation source on the shared electricity grid can only be determined contractually, RECs are used to demonstrate renewable electricity purchasing, delivery, and use within the broader context of functioning voluntary and compliance renewable electricity markets in California and across the United States. A REC represents and conveys the renewable, environmental and social attributes of one MWh of renewable electricity generation to the owner, including the GHG emissions factor of that generation, along with the legal right to claim usage of that renewable electricity.⁴ Without RECs such a claim could not otherwise be substantiated. Consequently, use of electricity without RECs cannot be claimed as renewable or in this case zero-emissions energy and must be classified and counted as “null power,” having the attributes of the residual regional grid mix.

This was corroborated once again this year by the U.S. Federal Trade Commission (FTC), the federal law enforcement agency responsible for oversight of marketing claims:

“RECs have become an important tool for the renewable electricity market. Once renewable electricity is introduced into the grid, it is physically indistinguishable from electricity generated from conventional sources. Accordingly, consumers cannot determine the source of the electricity flowing into their homes and businesses. However, because electricity transactions can be tracked, entities can ‘buy’ renewable power by purchasing power bundled with RECs. Under the REC system, a renewable electricity generator splits its output into two components: (1) the electricity itself (i.e., ‘null’ electricity); and (2) certificates representing the renewable attributes of that electricity. Generators that produce renewable electricity sell their electricity at market prices for conventionally produced power and then sell the renewable attributes of that electricity through separate certificates. Organizations purchase these RECs to characterize all or a portion of their electricity usage as ‘renewable’ by matching the certificates with the conventionally-produced electricity they

⁴ Jones, T. (2015). *The Legal Basis of Renewable Energy Certificates*. Center for Resource Solutions. Available online at: http://www.resource-solutions.org/pub_pdfs/The%20Legal%20Basis%20for%20RECs.pdf.

Also see U.S. Environmental Protection Agency. (2008) *Renewable Energy Certificates*. Available online at: http://www.epa.gov/greenpower/documents/gpp_basics-recs.pdf.

normally purchase. By allowing these certificates to be sold separately and not requiring the renewable attribute to remain attached to the generated electricity, the REC approach provides flexibility and efficiency for the renewable electricity market.”⁵

As such, RECs are essential to substantiate all renewable energy usage and delivery claims in the U.S.—regardless of how renewable electricity is purchased or consumed—and are required to avoid double counting. Again, according to the FTC:

“[T]he operation of the renewable energy market relies heavily on the expectation of all market participants that these certificates have not been counted or claimed twice (i.e., double counted). Such double-counting can occur, for instance, through [...] renewable energy claims made by a company that already sold the RECs for its renewable generation. [...] Such double counting, in turn, not only risks deceiving consumers but also threatens the integrity of the entire REC market. By selling RECs, a company has transferred its right to characterize its electricity as renewable. Accordingly, the FTC's Green Guides advise that, if ‘a marketer generates renewable electricity but sells renewable energy certificates for all of that electricity, it would be deceptive for the marketer to represent, directly or by implication, that it uses renewable energy.’ See 16 C.F.R. § 260.15(d).”⁶

Trading a REC in the U.S., whether bundled or unbundled with underlying electricity, effectively transfers ownership rights over all of the attributes of the associated renewable electricity generation to the REC purchaser. They are part of the machinery of electricity markets in the U.S. and they function as the currency for the U.S. renewable energy market.⁷

RECs in California

RECs are the only way to deliver renewable energy in California. The requirement in AB 1110 *not* to use unbundled RECs in calculations of GHG emissions associated with delivered electricity contradicts the legal standing of RECs in California as the sole instrument that includes the attributes of renewable power generation, including the GHG emissions factor, as is currently enforced in the Renewable Portfolio Standard (RPS) and in the CEC's power source disclosure (PSD) program:

CAL. PUB. UTIL. CODE § 399.12 (h)⁸

(h) (1) "Renewable energy credit" means a certificate of proof associated with the generation of electricity from an eligible renewable energy resource, issued through the accounting system established by the Energy Commission pursuant to Section 399.25, that one unit of electricity was generated and delivered by an eligible renewable energy resource.

(2) "Renewable energy credit" includes all renewable and environmental attributes associated with the production of electricity from the eligible renewable energy resource, except for an emissions reduction credit issued pursuant to Section 40709 of the Health and Safety Code and any credits or payments associated with the reduction of solid waste and treatment benefits created by the utilization of biomass or biogas fuels.

CAL. PUB. UTIL. CODE § 399.21 (a)

⁵ US Federal Trade Commission. (2015). *Letter from James A. Kohm, Associate Director, Division of Enforcement, Bureau of Consumer Protection, to R. Jeffrey Behm, Esq., Sheehey, Furlong & Behm, P.C.* February 5, 2015. Available at: https://www.ftc.gov/system/files/documents/public_statements/624571/150205gmpletter.pdf.

⁶ *Ibid.*

⁷ U.S. Environmental Protection Agency. (2008) *Renewable Energy Certificates*. Available online at: http://www.epa.gov/greenpower/documents/gpp_basics-recs.pdf.

⁸ California Public Utility Code is online at: <http://www.leginfo.ca.gov/cgi-bin/displaycode?section=puc&group=00001-01000&file=399.11-399.32>.

399.21. (a) The commission, by rule, shall authorize the use of renewable energy credits to satisfy the renewables portfolio standard procurement requirements established pursuant to this article, subject to the following conditions:

(1) Prior to authorizing any renewable energy credit to be used toward satisfying the renewables portfolio standard procurement requirements, the commission and the Energy Commission shall conclude that the tracking system established pursuant to subdivision (c) of Section 399.25, is operational, is capable of independently verifying that electricity earning the credit is generated by an eligible renewable energy resource, and can ensure that renewable energy credits shall not be double counted by any seller of electricity within the service territory of the WECC.

(2) Each renewable energy credit shall be counted only once for compliance with the renewables portfolio standard of this state or any other state, or for verifying retail product claims in this state or any other state.

CAL. PUB. UTIL. CODE § 399.25 (c)

The Energy Commission shall do all of the following:

(c) Establish a system for tracking and verifying renewable energy credits that, through the use of independently audited data, verifies the generation of electricity associated with each renewable energy credit and protects against multiple counting of the same renewable energy credit. The Energy Commission shall consult with other western states and with the WECC in the development of this system.

Western Renewable Energy Generation Information System (WREGIS) Operating Rules⁹

Certificate: A WREGIS Certificate (also called a renewable energy credit) represents all Renewable and Environmental Attributes from MWh of electricity generation from a renewable energy Generating Unit registered with WREGIS or a Certificate imported from a Compatible Registry and Tracking System and converted to a WREGIS Certificate.¹⁰ The WREGIS system will create exactly one Certificate per megawatt-hour of generation that occurs from a registered Generating Unit or that is imported from a Compatible Registry and Tracking System. Disaggregation of Certificates is not currently allowed within WREGIS.

Renewable and Environmental Attributes: Any and all credits, benefits, emissions reductions, offsets, and allowances—howsoever titled—attributable to the generation from the Generating Unit, and its avoided emission of pollutants.¹¹ Renewable and Environmental Attributes do not include (i) any energy, capacity, reliability, or other power attributes from the Generating Unit; (ii) production tax credits associated with the construction or operation of the Generating Unit and other financial incentives in the form of credits, reductions, or allowances associated with the Generating Unit that are applicable to a state, provincial, or federal income taxation obligation; (iii) fuel-related subsidies or “tipping fees” that may be paid to the seller to accept certain fuels, or local subsidies received by the generator for the destruction of particular pre-existing pollutants or the promotion of local environmental benefits; or (iv) emission reduction credits encumbered or used by the Generating Unit for compliance with local, state, provincial, or federal operating and/or air quality permits.

For retail customers in California, the REC represents the attributes of renewable generation, exclusive claim to the delivery and ultimately use of renewable generation, and proof of renewable generation that has been added to the grid within Western power grid. Whether these attributes are delivered to

⁹ Western Electricity Coordinating Council, *WREGIS Operating Rules* (July 15, 2013). Section 2, pg. 2, 4-5. Available online at: <https://www.wecc.biz/Corporate/WREGIS%20Operating%20Rules%20072013%20Final.pdf>.

¹⁰ A renewable Generating Unit, for the purposes of WREGIS, includes any Generating Unit that is defined as renewable by any of the states or provinces in WECC.

¹¹ The avoided emissions referred to here are the emissions avoided by the generation of electricity by the Generating Unit and therefore do not include the reduction in greenhouse gases (GHG) associated with the reduction of solid waste or treatment benefits created by the use of biomass or biogas fuels. Avoided emissions may or may not have any value for complying with any local, state, provincial, or federal GHG regulatory program. Although avoided emissions are included in the definition of a WREGIS Certificate, this definition does not create any right to use those avoided emissions to comply with any GHG regulatory program.

the customer with (“bundled”) or separate from electricity (“unbundled”) has no bearing whatsoever on the delivery of those attributes and customer’s claim to receipt of those attributes (emissions), which is precisely what is being communicated in the disclosure required under AB 1110.

Unbundled REC purchases also appear to clearly meet the definition of specified purchases included in the bill:

“Specific purchases’ means electricity transactions which 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 claimed has been sold once and only once to a retail consumer. Retail suppliers may rely on annual data to meet this requirement, rather than hour-by-hour matching of loads and resources” (emphasis added).¹²

The FTC’s enforcement authority over marketing claims affects California consumers as well. According to the FTC, any renewable energy delivery claims that are not based on RECs are not legal:

“In addressing these issues in the Green Guides, the Commission [...] did warn that power providers that sell null electricity to their customers, but sell RECs based on that electricity to another party, should keep in mind that their customers may mistakenly believe the electricity they purchase is renewable, when legally it is not. Accordingly, it advised such generators to exercise caution and qualify claims about their generation by disclosing that their electricity is not renewable.”¹³¹⁴

Finally, the CEC’s 2015 PSD Program Pre-Rulemaking Draft Regulations include unbundled REC purchases with other bundled renewable electricity purchases within the total for “Eligible Renewable.”¹⁵ In order to be accurate, all purchases made by utilities and CCAs, including purchases of out-of-state and/or unbundled RECs, are included in disclosure to retail customers. In particular, the following language reflects an appropriate and consistent treatment of RECs in PSD:

“If a retail supplier purchases electricity for which WREGIS Certificates were issued but the retail supplier does not purchase the Certificates, the retail supplier shall identify the fuel type as ‘unspecified sources of power’ and shall disclose the facility from which the electricity was purchased.”¹⁶

Mischaracterizations of RECs in Testimony and Analyses for AB 1110

Mischaracterization 1: Consumers aren’t really getting renewable energy if they are being delivered RECs paired with system power.

The following statement was made at the Senate Energy, Utilities and Communications (EUC) Committee hearing on July 13, 2015:

¹² California PUBLIC UTILITIES CODE Section 398.2(c). See: <http://www.leginfo.ca.gov/cgi-bin/displaycode?section=puc&group=00001-01000&file=398.1-398.5>

¹³ See Statement of Basis and Purpose at 225, available at <http://www.ftc.gov/sites/default/files/attachments/press-releases/ftc-issues-revised-green-guides/greenguidesstatement.pdf>.

¹⁴ US Federal Trade Commission. (2015). *Letter from James A. Kohm, Associate Director, Division of Enforcement, Bureau of Consumer Protection, to R. Jeffrey Behm, Esq., Sheehey, Furlong & Behm, P.C.* February 5, 2015. Available at: https://www.ftc.gov/system/files/documents/public_statements/624571/150205gmpletter.pdf.

¹⁵ Please see our Comments on the draft regulations attached.

¹⁶ Chou, K. (2015). *Power Source Disclosure Program Pre-Rulemaking Draft Regulations*. California Energy Commission, Renewable Energy Division. CEC-300-2015-004-SD. Section 1394(a)(2)(A)(3). Available online at: <http://www.energy.ca.gov/2015publications/CEC-300-2015-004/CEC-300-2015-004-SD.pdf>.

“We know that there are some actors out there, in both the CCA arena and energy service provider arena, that are going to customers and promoting themselves as being 100% renewable, when in reality they’re relying predominately on renewable energy credits and delivering system power that is which is 67% fossil based. So they go to a customer, in many of your districts, and suggest that if they pay a little more, a higher premium, they will get 100% renewable power, when in reality they’re not getting 100% renewable power, they’re getting system power which is 67% fossil based.”

This statement reflects a fundamental misunderstanding of renewable energy markets. Physical electricity is indistinguishable based on how it was produced, or the emissions associated with its production, and untraceable on a shared grid. Generation attributes (including emissions) are not physically delivered or knowable, and use and delivery of specified generation on a shared grid can *only* be determined contractually. Emissions are *always and already* separate from electricity and do not enter the grid. Consuming and paying for physical electricity does not determine the generation attributes or the emissions associated with that electricity unless there are attributes *contractually* included in the product consumed. Not only is it true that RECs and other contracts do not distort any physical truth, but in fact there is no truth or reality other than the contract or certificate.

In the U.S., electricity is traded using contracts and certificates. Consumers have choice of differentiated electricity products. California and 34 other states and territories, along with various participants in the U.S. voluntary market—including U.S. federal agencies, utilities and other electric service providers, thousands of companies, and hundreds of thousands of individuals—have chosen to use RECs as the most accurate, enforceable and verifiable mechanism (revisit California’s definition of “specific purchases” above) to determine delivery and use of renewable energy on the grid.¹⁷

As stated previously, these contracts, including RECs, are also legally enforceable, and to the extent that AB 1110 does not reflect this contractual delivery of differentiated electricity, the resultant GHG disclosures could conflict with legally enforceable property rights.

Mischaracterization 2: Unbundled RECs are functionally different from bundled renewable energy with respect to consumer claims.

RECs may be acquired “bundled”—paired with grid electricity that is delivered to the buyer—or “unbundled” from electricity and subsequently paired by the electric service provider with its grid electricity for the buyer. There is no difference between bundled and unbundled RECs in terms of claims to emissions since the emissions are not conveyed by the grid in physical electricity. Whether acquired and sold bundled or unbundled with physical electricity, the RECs determine the attributes, because the attributes are only knowable through the RECs. Regardless of how they are acquired by a supplier or sold to customers, all RECs get bundled with electricity, either by the generator, the supplier or by the customer. It does not matter which.

The FTC has determined that, “marketers may make unqualified [renewable energy] claims when they purchase RECs to match their use of non-renewable energy.”¹⁸ The U.S. EPA agrees that, “RECs

¹⁷ Jones, T. (2015). *The Legal Basis of Renewable Energy Certificates*. Center for Resource Solutions. Available online at: http://www.resource-solutions.org/pub_pdfs/The%20Legal%20Basis%20for%20RECs.pdf.

¹⁸ U.S. Federal Trade Commission (FTC). (2012). *The Green Guides Statement of Basis and Purpose*, pg. 218. Available online: <https://www.ftc.gov/sites/default/files/attachments/press-releases/ftc-issues-revised-green-guides/greenguidesstatement.pdf>.

combined with plain grid electricity are functionally equivalent to green power purchases from a local utility, no matter where the REC may be sourced.”¹⁹

It would not be accurate to exclude unbundled RECs that are purchased by utilities and CCAs from calculations of GHG emissions (attributes) delivered to their customers. The most accurate picture of the emissions associated with different electricity products and options is achieved by including *all* purchases made by utilities and CCAs, including purchases of out-of-state and/or unbundled RECs. Utility boundaries do not align with state boundaries. Utilities cross state borders and they buy and sell electricity outside of their footprint and outside individual states. Rules for power source and GHG emissions disclosure should not necessarily be dictated by state boundaries or programs and policies that center on state-specific emissions.

Consistent treatment of RECs and agreement that emission rate claims (like other generation attributes) belong to the REC owner also prevents double counting of emissions. Since only the REC owner can claim the emissions rate, other in-state and out-of-state electricity customers cannot claim that zero-carbon power.

Mischaracterization 3: RECs are the same as carbon offsets, or should be treated the same in GHG accounting.

The following statement was made at the Senate EUC Committee hearing on July 13, 2015: “We want to make sure that there’s no opportunity to use tradable credits or planting trees in Brazil or any number of different sort of offset measures to try to adjust the actual numbers that are reported.”

This statement conflates tradable credits that include RECs with carbon offsets, implying that they are comparable instruments and activities and are accounted for in the same way. In fact, RECs are not equivalent to carbon offsets. RECs *define* the emissions associated with delivered electricity, the product being consumed by an organization (generation attributes) by nature of the instrument and are therefore involved in the calculations of *gross* emissions associated with delivered electricity (again, regardless of whether they are purchased bundled or unbundled from physical electricity, which is "null" or "attribute-less" without contractual definition, and in the case of renewable energy, the REC). Offsets, on the other hand, are emissions reductions that are separate from the emissions associated with delivered electricity, and therefore, whether purchased by the customer or the utility, would be accounted for after the gross emissions have been calculated to get to a *net* emissions figure.

This distinction between RECs and offsets is very important to understand. If the two are being conflated, legislators may misunderstand RECs as separate from the emissions associated with electricity generation, and therefore not necessary to include in GHG disclosure, when in fact RECs determine and make verifiable the delivery and use of zero-emissions, renewable generation.

Mischaracterization 4: GHG accounting disclosure to retail customers as required by this bill should use the same methodology as that which is used for reporting GHG emissions to the California Air Resources Board under the cap-and-trade program.

¹⁹ U.S. Department of Energy, U.S. Environmental Protection Agency, the World Resources Institute, Center for Resource Solutions. (March 2010). *Guide to Purchasing Green Power Renewable Electricity, Renewable Energy Certificates, and On-Site Renewable Generation*. Office of Air (6202J) EPA430-K-04-015. DOE/EE-0307. Pg. 10. Available online: http://www.epa.gov/greenpower/documents/purchasing_guide_for_web.pdf

The following statement was also made at the Senate EUC Committee hearing on July 13, 2015:

“The goal here is to align the standard with the approach that is used for reporting greenhouse gas emissions to the Air Resources Board, which administers the state’s cap-and-trade program. We want to make sure there’s no disconnect where you have different methodologies being used that effectively result in retailers disclosing greenhouse gas emissions that are different from the greenhouse gas emissions that are being disclosed to the Air Resources Board for the same power plants that are serving.”

In fact there are very good reasons why we would want two different methodologies to be used in these two cases and why the methodology used for disclosing GHG emissions to retail utility customers should be different from the reporting methodologies used by compliance entities as a part of the cap-and-trade program.

California’s Mandatory Reporting Regulation (MRR) is not used for power source disclosure or disclosure of the GHG emissions associated with delivered electricity to retail customers, nor is it appropriate as such a protocol. Rather, the MRR is used for accounting of electricity generated in-state or directly delivered to support compliance for wholesale power generation. California’s cap-and-trade program and the MRR do not regulate consumers or suppliers; they are not concerned with the attributes/emissions being delivered to/consumed by customers. They regulate emitting generators—smokestacks—generating electricity delivered to load in the state. The MRR and cap-and-trade do not regulate renewable energy. They only include out-of-state renewable energy and RECs in order to prove that it is not a smokestack—in order to prove that (“scope 1”) direct emissions are zero.²⁰

Cap-and-trade and the MRR are not concerned with the distribution of renewable energy or emissions. The point of regulation is production. There is no prohibition against trading unbundled RECs under the MRR—once in the state, the attributes can be traded and used²¹—and no prohibition against using unbundled RECs for emissions claims for delivery to customers. RECs, whether bundled or unbundled, apply to delivery and consumption of electricity (“scope 2” emissions). There is a market for renewable energy, with which the MRR is not concerned, but which must be reflected in the GHG emissions factor reported/disclosed to customers in order to verify delivery of renewable energy, avoid double counting, and support the legitimacy of the program.

The state program that *does* regulate suppliers and the delivery of renewable energy is the Renewable Portfolio Standard (RPS), which *does* in fact include unbundled, out-of-state RECs, and which is also a

²⁰ Under the MRR, there are specific requirements for specified source imports, and certain additional requirements for specified renewable imports. If these requirements are not met, the import will not be accepted as specified renewable import and will be assigned emissions. For example, if importing wind power from Oregon, in order to meet the specified source requirements, ARB requires an e-tag (which shows direct delivery of power), a contract or some other way to demonstrate ownership, and the RECs for that power. As of 2015, REC serial numbers associated with the import need to be reported (the reporting template uses the data field extract from WREGIS). The RECs must be those associated with the electricity being imported, that is, they cannot be generated at a different source or at a different time. They are looking at bundled RECs only. Unbundled RECs do not have compliance value with ARB. If the Oregon wind was not directly delivered, then the compliance entity is allowed to take an RPS adjustment, in which case REC retirement is required.

²¹ ARB does not look downstream to what happens after the bundled RECs enter the state, and whether they are actually used for RPS compliance or potentially unbundled and resold after the import. ARB uses a “gateway” compliance point only.

core component of AB 32, and as such has been recognized as a mechanism to achieve GHG emissions reductions in the state, of equal importance as cap-and-trade.

We have confirmed with the Air Resources Board (ARB) that the MRR is not required to calculate GHG “footprints” for California utilities (utility emission factors for electricity delivered to retail customers), and not all the data that is required for a full footprint calculation is collected/reported under MRR. Examples of data that is not collected under the MRR that would be necessary for utility footprints includes power bought out of the CA ISO market as well as unbundled REC purchases.

Mischaracterization 5: RECs are not a reliable mechanism for GHG accounting because avoided grid emissions may not have any value for compliance purposes.

An analysis of AB 1110 prepared by California Clean Power²² states:

“Further complicating the relationship between renewable energy and GHG accounting, under California law, the mechanism for accounting for renewable energy, known as a renewable energy certificate, or “REC”, has not developed in manner that is reliable for tracking GHG emissions associated with RECs.* AB 1110 avoids these complications by utilizing a formula for calculating the Emissions Factor that is not dependent on RECs and that does not in any way impact the use of RECs for California’s Renewable Portfolio Standard requirements.”

* ‘Avoided emissions may or may not have any value for GHG compliance purposes. Although avoided emissions are included in the list of Green Attributes, this inclusion does not create any right to use those avoided emissions to comply with any GHG regulatory program.’ *RPS STANDARD CONTRACT TERM THAT MAY NOT BE MODIFIED PER CPUC D.08-04-009, D.08-08-028, D.10-03-021 AND D.10-05-018.*”

In fact GHG accounting for renewable energy is based on *direct* emissions, not avoided emissions on the grid. Both direct and avoided emissions are included in a REC in California, but avoided emissions aren’t involved in GHG accounting (see the following section on best practices for GHG Accounting). The direct emissions factor of the generation that is used for GHG accounting is exclusively conveyed by the REC and counting electricity as zero emissions without the REC, or “calculating the emissions factor that is not dependent on RECs,” is double counting. It is also untrue that RECs have not developed in a manner that’s reliable for tracking GHG emissions associated with renewable energy. In fact, use of RECs for GHG accounting, as the highest quality emission factor data source, has been recognized by a number of organizations recently, including the CEC, the World Resources Institute (WRI), The Climate Registry (TCR), and CDP (formerly the Carbon Disclosure Project), among others.²³

Summary of Best Practice for GHG Accounting for Delivered Electricity

As stated previously, we believe that the methodology for GHG accounting is a matter for the CEC to determine through regulatory processes and we recommend that language regarding how the accounting be done be taken out of the bill. However, to the extent that it is informative in making this decision, please consider the following and see attached comments of CRS to the CEC.

²² Foley, K. (June 26, 2015). *Analysis of Assembly Bill 1110 (GHG Consumer Disclosure)*. California Clean Power.

²³ Jones, T. (2015). *The Legal Basis of Renewable Energy Certificates*. Center for Resource Solutions. Available online at: http://www.resource-solutions.org/pub_pdfs/The%20Legal%20Basis%20for%20RECs.pdf.

The use of RECs as the basis for customer GHG claims for purchased renewable electricity in the United States, and the lack of distinction between unbundled REC purchases and bundled renewable electricity purchases with respect to Scope 2 accounting, is consistent with best practices for market-based Scope 2 emissions calculations and reporting, which are set internationally by WRI.²⁴ WRI's updated GHG Protocol Scope 2 Guidance was finalized in January of this year after a four-year long technical working group and multi-stakeholder engagement process involving hundreds of stakeholders from 23 countries, in which CRS was an active participant.

The final Scope 2 guidance says:

“Utility-specific emission factors shall be calculated based on delivered electricity, incorporating certificates sourced and retired on behalf of its customers. Electricity from renewable facilities for which the attributes have been sold off (via contracts or certificates) shall be characterized as having the GHG attributes of the residual mix in the utility or supplier-specific emission factor;”²⁵

and

“When using a supplier-specific emission factor, companies should seek to ensure that: [...] the utility or supplier discloses whether and how certificates are used in the emission factor calculation, unless there is third-party certification of the utility product. In particular, companies should seek to ensure that if the supplier has a differentiated product (e.g. a renewable energy product or tariff), the certificates or other contracts used for that product should be used only for that product and not counted in the standard product offer. [And] That the supplier-specific emission factor includes emissions from all the energy delivered by the utility, not just the generation assets owned by the supplier (e.g. what is required by some fuel mix disclosure rules). Many suppliers purchase significant portions of their energy from other generators via contracts, or through the spot market. The emission factor should reflect the emissions from all of these purchases. A supplier-specific emission rate can also reflect certificates retired for compliance purposes (such as U.S. state RPS programs) which also convey attributes for public benefit and claims.”²⁶

These rules set by WRI have been implemented by GHG inventory and reporting systems like TCR²⁷—formerly the California Climate Action Registry (CCAR), which was created by the State of California in 2001 to promote and protect businesses’ early actions to manage and reduce their greenhouse gas (GHG) emissions—and CDP, which are used by thousands of companies, organizations, governmental agencies, and municipalities reporting their emissions associated with purchased electricity. TCR’s guidance for developing utility-specific delivery metrics can be found in Chapter 19 of its Electric Power Sector (EPS) Protocol.²⁸ After TCR members have reported and verified this information, their utility-specific emission factors are published on the TCR website. TCR is in the process of updating this section of the EPS Protocol to be in conformance with WRI’s Scope 2 Guidance.

In conclusion, California has a legally enforceable and intellectually credible market and mechanism for assigning generation attributes of renewable energy, including GHG emissions, to suppliers and consumers. The GHG accounting required AB 1110 must recognize this market and mechanism, the REC, in order to be accurate and avoid double counting.

²⁴ Sotos, M. (2015) *GHG Protocol Scope 2 Guidance: An Amendment to the GHG Protocol Corporate Standard*. World Resources Institute. Available online: http://www.wri.org/sites/default/files/Scope_2_Guidance_Final.pdf.

²⁵ *Ibid.* Section 7.1, Table 7.1, pg. 60.

²⁶ *Ibid.* Section 6.11.3, pg. 56.

²⁷ <http://www.theclimateregistry.org/>

²⁸ Available online: <http://www.theclimateregistry.org/tools-resources/reporting-protocols/electric-power-sector-protocol/>.

Thank you for your consideration of our comments and please contact me with any questions, for more information, to discuss further, or if we can otherwise be of assistance.

Sincerely,



Todd Jones
Senior Manager, Policy and Climate Change Programs

CC:

Organizations in Support

- Matt Freedman, Staff Attorney, The Utility Reform Network
- Kelly Foley, General Counsel and Director of Regulatory Affairs, California Clean Power
- Doug Mangione, California State Association of Electrical Workers
- Gregory A. Partch, Executive Director, California State Pipe Trades Council
- Scott Wetch, Legislative Representative, Coalition of California Utility Employees
- Eddie Moreno, Policy Advocate, Sierra Club California
- Adam Browning, Executive Director, Vote Solar
- Bruce Word, President, Western States Council of Sheet Metal Workers

Organizations in Opposition

- Gil Topete, Director for Energy, California Municipal Utilities Association
- Dawn Weisz, Chief Executive Officer, Marin Clean Energy
- Tracy Kves, Facility Office Administrator, Northern California Power Agency
- Geof Syphers, Chief Executive Officer, Sonoma Clean Power

Green-e Governance Board Members

- Bud Beebe, Sacramento Municipal Utility District (Ret.), Chair, Green-e Governance Board
- Pierre Bull, Natural Resources Defense Council, Green-e Governance Board
- Jeff Deyette, Union of Concerned Scientists, Green-e Governance Board
- Barry Friedman, Keyes, Fox & Wiedman LLP, Green-e Governance Board
- Lars Kvale, APX, Green-e Governance Board

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- Jon Wellingshoff, Stoel Rives LLP, CRS Board of Directors

ATTACHED:

- CRS's comments to the CEC on Rulemaking to Consider Modifications to the Electricity Generation Source Disclosure Regulations and Pre-Rulemaking Draft Regulations to the Power Source Disclosure Program. June 12, 2015. Docket No. 14-OIR-01 Docket Unit, MS-4.
- Jones, T. (2015). *The Legal Basis of Renewable Energy Certificates*. Center for Resource Solutions.

ATTACHMENT 1:

CRS's comments to the CEC on Rulemaking to Consider Modifications to the Electricity Generation Source Disclosure Regulations and Pre-Rulemaking Draft Regulations to the Power Source Disclosure Program. June 12, 2015. Docket No. 14-OIR-01 Docket Unit, MS-4.



CRS

center for
resource
solutions

[SUBMITTED ELECTRONICALLY VIA EMAIL TO docket@energy.ca.gov]

June 12, 2015

Kevin Chou
Energy Analyst
California Energy Commission (CEC)
1516 Ninth Street, MS-45
Sacramento, CA 95814

RE: Docket No. 14-OIR-01 Docket Unit, MS-4. Center for Resource Solutions' (CRS's) comments on Rulemaking to Consider Modifications to the Electricity Generation Source Disclosure Regulations and Pre-Rulemaking Draft Regulations to the Power Source Disclosure Program

Dear Mr. Chou:

Center for Resource Solutions (CRS) appreciates the opportunity to comment on the Power Source Disclosure (PSD) Program Pre-Rulemaking Draft Regulations, released for public comment on May 14, 2015.

Background on CRS and Green-e®

CRS is a 501(c)(3) nonprofit organization that creates policy and market solutions to advance sustainable energy. CRS has broad expertise in renewable energy policy design and implementation, electricity product disclosures and consumer protection, and greenhouse gas (GHG) reporting and accounting. CRS administers the Green-e programs. Green-e Energy, in particular, is the leading certification program for voluntary renewable electricity products in North America. In 2013, Green-e Energy certified retail sales of 33.5 million megawatt-hours, enough to power over a quarter of U.S. households for a month. Almost 717,000 total retail customers purchase Green-e Energy certified products from 280 companies in 2013.

Stakeholder-driven standards supported by rigorous verification audits and semiannual reviews of marketing materials ensure robust customer disclosure and are pillars of Green-e Certification. Through these audits and reviews CRS is able to provide independent third-party certification of renewable energy products. Green-e program documents, including the standards, Code of Conduct, and the annual verification report, are available at www.green-e.org. CRS has also has a long history of working with state agencies to design and implement consumer protection policies that ensure accurate marketing and avoid double counting of individual resources towards multiple end uses.

In January of this year, the California Public Utilities Commission directed the three largest investor-owned utilities (IOUs) in the state—Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas and Electric Company, which together cover nearly 80% of the state—to

offer a Green-e Energy certified 100% renewable energy option to their customers.¹ As such, these products will need to comply with Green-e requirements for product disclosure including product content labels.² According to the order, “Green-e Energy certification will also provide customers with standardized, understandable information on the energy’s attributes.”³

General Comments related to the Pre-rulemaking Draft Regulations

- 1. In order to be accurate, all purchases made by utilities and CCAs, including purchases of out-of-state and/or unbundled renewable energy credits (RECs), should be included in disclosure to retail customers.**

The Draft Regulations appropriately include unbundled REC purchases with other bundled renewable electricity purchases within the total for “Eligible Renewable.”⁴ In particular, the following language in Section 1394(a)(2)(A)(3) of the Proposed Text of Draft Regulations for the Power Source Disclosure Program (“Proposed Text”) reflects an appropriate and consistent treatment of RECs in PSD: “If a retail supplier purchases electricity for which WREGIS Certificates were issued but the retail supplier does not purchase the Certificates, the retail supplier shall identify the fuel type as ‘unspecified sources of power’ and shall disclose the facility from which the electricity was purchased.”

PSD to electricity customers reflects the attributes of delivered electricity. The attributes of renewable generation, including fuel/resource type, are clearly and exclusively contained in the REC (WREGIS Certificate).⁵ For a retail customer, the REC represents the attributes of renewable generation, exclusive claim to the delivery and ultimately use of renewable generation, and proof of renewable generation that has been added to the grid within Western power grid. Whether these attributes are delivered with (“bundled”) or separate from electricity (“unbundled”) has no bearing whatsoever on the delivery of those attributes and customer’s claim to receipt of those attributes, which is precisely what is being communicated in PSD.

Questions/Requests for More Information regarding the Pre-rulemaking Draft Regulations

- 1. Please clarify Section 1394(a)(2)(A)(3) of the Proposed Text: “[for the REC Only category, a retail supplier] shall disclose the facility from which the REC was purchased. Additionally, the supplier shall disclose the fuel type of the REC only purchase.”**

¹ California Public Utilities Commission (CPUC). Decision 15-01-051 January 29, 2015. Decision Approving Green Tariff Shared Renewables Program for San Diego Gas & Electric Company, Pacific Gas and Electric Company, and Southern California Edison Company pursuant to Senate Bill 43. Available online: <http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M146/K250/146250314.PDF>.

² Green-e’s requirements for product content labels and other customer disclosure can be found in the Green-e Energy Code of Conduct, available online: http://www.green-e.org/getcert_re_stan.shtml#coccdr.

³ *Ibid.* Section 5.4, pg. 90.

⁴ Please see the Comments section below for our other concerns with the proposed “REC Only” category.

⁵ CAL. PUB. UTIL. CODE § 399.12(h). Online at: <http://www.leginfo.ca.gov/cgi-bin/displaycode?section=puc&group=00001-01000&file=399.11-399.32>. Also see Western Electricity Coordinating Council, WREGIS Operating Rules (July 15, 2013). Section 2, pg. 2, 4-5. Available online at: <https://www.wecc.biz/Corporate/WREGIS%20Operating%20Rules%20072013%20Final.pdf>.

Though this requires that retail suppliers disclose the resource type within REC Only category purchases, it is not clear from the Proposed Test or example PCLs provided in the Staff Report where this disclosure of fuel type and facilities for REC only purchases would be located. Please clarify.

Below, we provide comments and recommendations for changes to the “REC Only” category.

2. Please clarify Section 1392(c)(2)(B) of the Proposed Text: “The balancing authority is not required to provide the Energy Commission with any information submitted under subdivision (c) of this section for out-of-state power.”

The effect of this statement is unclear to us. Does this mean that power source disclosure will not include out-of-state generation where procured for delivery to retail customers? If so, this fails to accurately characterize delivered electricity by resource type. Utilities often buy and sell electricity outside of their footprint and outside individual states. Rules for PSD should not be dictated by state boundaries or programs and policies that center on state-specific electricity.

The response to this question at the May 28 workshop was that the intent was to include out-of-state power and that this represents an oversight and will be corrected. Please confirm and provide the recommended change.

Comments on the Pre-rulemaking Draft Regulations

1. The specific phrasing of the footnote explaining the “REC Only energy resource” on the Power Content Label (PCL) is inaccurate.

Appendix A(f)(4) of the Draft Regulations requires the following footnote to appear at the bottom of the PCL:

“The REC Only energy resource refers to Renewable Energy Credits that were purchased by a retail seller and does not represent actual generated electricity.”

Section 399.25 of the Draft Regulations and CAL. PUB. UTIL. CODE § 399.12(h) state that RECs represent proof that one unit of electricity was generated and delivered by an eligible renewable energy resource, making this footnote inaccurate. We recommend the following change to this footnote:

“[...] refers to Renewable Energy Credits that were purchased by a retail seller ~~and does not represent actual generated electricity~~ separate from the electricity associated with those Certificates.”

2. The proposed “REC Only” resource category is likely to be misleading. CRS recommends modification and changes to the layout of the PCL.

“REC Only” is not an energy resource. Presenting “REC Only” as a separate energy resource category misrepresents unbundled RECs as including something other than the eligible resource types above it, or in fact as a “non-resource type,” which is even more confusing. Rather, this is a category based on the nature of the underlying contractual instrument, which is not directly related to fuel source or the effective delivery of attributes. Though the value of this disclosure to retail consumers is unclear, if the Commission decides that disclosure of the type of instrument used for delivery of renewable attributes is important for consumer protection, we suggest that it explore alternative mechanisms for conveying

this information other than on the PCL, such as more detailed reports from electricity suppliers. Effectively communicating what RECs are and the role they play in all renewable energy purchasing and delivery to load is complex and we have found this requires more space and language than is typically available on a PCL.

However, if the Commission decides both that disclosure of the type of instrument used is important for consumer protection and that this disclosure should be done on the PCL, first, this should not reduce disclosure of fuel type or misrepresent unbundled RECs as a fuel type—the type of contract must be disclosed within or associated with each resource type. For example, the “wind” sub-resource type could be broken out into bundled and unbundled purchases.

Second, the use of word “only” in “REC Only” suggests that something is missing relative to the other resource categories, when in fact nothing is missing since all retail customers are receiving electricity and the electricity from specified renewable facilities is “null” without the REC. We therefore suggest using the common terminology in the industry instead: “bundled” and “unbundled.” In this case, footnotes will be necessary to explain these terms (similar to the current footnote explaining “REC only”).

Third, a better description of RECs on the PCL will be useful to customers—for example: “‘Renewable energy credit’ is a certificate of proof that one unit of electricity was generated and delivered by an eligible renewable energy resource, and it includes all renewable and environmental attributes associated with the production of electricity from the eligible renewable energy resource.”

See our suggested sample Product Content Label as Figure 1 below.

Figure 1. Suggested Sample Power Content Label, Version 1

POWER CONTENT LABEL		
ENERGY RESOURCES	POWER MIX^I	2009 POWER MIX (for comparison)^V
Eligible Renewable	17%	12%
Biomass & Biowaste	3%	2%
Bundled ^{II}	3%	2%
Unbundled REC ^{III}	0%	0%
Geothermal	5%	3%
Bundled ^{II}	5%	3%
Unbundled REC ^{III}	0%	0%
Small Hydroelectric	3%	2%
Bundled ^{II}	3%	2%
Unbundled REC ^{III}	0%	0%
Solar	1%	<1%
Bundled ^{II}	0%	<1%
Unbundled REC ^{III}	1%	0%
Wind	5%	3%
Bundled ^{II}	1%	0%
Unbundled REC ^{III}	4%	3%
Other Renewable	0%	0%
Bundled ^{II}	0%	0%
Unbundled REC ^{III}	0%	0%
Coal	8%	8%
Large Hydroelectric	15%	9%

Natural Gas	32%	42%
Nuclear	8%	13%
Other	<1%	0%
Unspecified sources of power^{IV}	20%	16%
TOTAL	100%	100%

^IThe information and percentages provided by the power content label does not represent or imply any correlation with the California Renewables Portfolio Standard and its compliance measures. For more information on the California RPS program, visit www.energy.ca.gov/portfolio.

^{II}“Bundled” refers to purchases of electricity and Renewable Energy Credits by a retailer.

^{III}“Unbundled” refers to Renewable Energy Credits that were purchased by a retailer separate from the electricity associated with those Certificates. “Renewable energy credit” is a certificate of proof that one unit of electricity was generated and delivered by an eligible renewable energy resource, and it includes all renewable and environmental attributes associated with the production of electricity from the eligible renewable energy resource.

^{IV}“Unspecified sources of power” means electricity from transactions that are not traceable to specific generation sources.

^V Percentages are estimated annually by the California Energy Commission based on the electricity sold to California consumers during the previous year.

For specific information about this electricity product, contact **Company Name**. For general information about the Power Content Label, contact the California Energy Commission at 1-844-217-4925 or www.energy.ca.gov/consumer.

Alternatively, to resolve these issues, the apparent intent of the “REC Only” category and disclosure of unbundled and bundled renewable energy purchases can be achieved with a footnote on the eligible renewables category. In this case, the PCL would simply report the eligible renewable resource categories and specify whether bundled or unbundled purchases were used in a footnote rather than in the table itself. See our suggested sample Product Content Label as Figure 2 below.

Figure 2. Suggested Sample Power Content Label, Version 2

POWER CONTENT LABEL

ENERGY RESOURCES	POWER MIX^I	2009 POWER MIX (for comparison)^{IX}
Eligible Renewable^{II}	17%	12%
Biomass & Bio waste ^{III}	3%	2%
Geothermal ^{IV}	5%	3%
Small Hydroelectric ^V	3%	2%
Solar ^{VI}	1%	<1%
Wind ^{VII}	5%	3%
Other Renewable	0%	0%
Coal	8%	8%
Large Hydroelectric	15%	9%
Natural Gas	32%	42%
Nuclear	8%	13%
Other	<1%	0%
Unspecified sources of power^{VIII}	20%	16%
TOTAL	100%	100%

^IThe information and percentages provided by the power content label does not represent or imply any correlation with the California Renewables Portfolio

Standard and its compliance measures. For more information on the California RPS program, visit www.energy.ca.gov/portfolio.

ⁱⁱPurchases of renewable energy by a retailer are either “bundled,” which refers to purchases of electricity and Renewable Energy Credits by a retailer, or “unbundled,” which refers to Renewable Energy Credits that were purchased by a retailer separate from the electricity associated with those Certificates. “Renewable energy credit” is a certificate of proof that one unit of electricity was generated and delivered by an eligible renewable energy resource, and it includes all renewable and environmental attributes associated with the production of electricity from the eligible renewable energy resource.

ⁱⁱⁱPurchases of Biomass & Bio waste were bundled purchases.

^{iv}Purchases of Geothermal were bundled purchases.

^vPurchases of Small Hydroelectric were bundled purchases.

^{vi}Purchases of Solar were unbundled purchases.

^{vii}Purchases of Wind were 1% bundled and 4% unbundled purchases.

^{viii}“Unspecified sources of power” means electricity from transactions that are not traceable to specific generation sources.

^{ix}Percentages are estimated annually by the California Energy Commission based on the electricity sold to California consumers during the previous year.

For specific information about this electricity product, contact **Company Name**.
 For general information about the Power Content Label, contact the California Energy Commission at 1-844-217-4925 or www.energy.ca.gov/consumer.

3. The word “eligible” in the “Eligible Renewable” resource category could be removed.

We agree with the views of some expressed at the May 28 workshop that to the extent that power source disclosure is unrelated to the Renewable Portfolio Standard, marking a resource as “eligible” may be misleading. If the Commission adheres to the requirement to separate the RPS obligations from PSD, then it is unclear what the word “eligible” is referring. This category appears to conflate two separate obligations of the power provider and two distinct concepts in the minds of consumers.

4. If GHG emissions disclosures are to be included as a part of power source disclosure, calculations should conform to international best practice.

To the extent that it was suggested at the May 28 workshop that PSD also include GHG emissions calculations, such calculations and disclosure would exist within the context of national and international determinations around best practice for GHG accounting for electricity delivered to retail customers.

The use of RECs as the basis for customer GHG claims for purchased renewable electricity (Scope 2 GHG emissions accounting) in the United States, and the lack of distinction between unbundled REC purchases and bundled renewable electricity purchases with respect to Scope 2 accounting, is consistent with best practices for market-based Scope 2 emissions calculations and reporting, which are set internationally by the World Resources Institute (WRI).⁶ WRI’s updated GHG Protocol Scope 2 Guidance was finalized in January after a four year long technical working group and multi-stakeholder engagement process involving hundreds of stakeholders from 23 countries, in which CRS was an active participant.

The Scope 2 guidance says:

⁶ Sotos, M. (2015) *GHG Protocol Scope 2 Guidance: An Amendment to the GHG Protocol Corporate Standard*. World Resources Institute. Available online: http://www.wri.org/sites/default/files/Scope_2_Guidance_Final.pdf.

“Utility-specific emission factors shall be calculated based on delivered electricity, incorporating certificates sourced and retired on behalf of its customers. Electricity from renewable facilities for which the attributes have been sold off (via contracts or certificates) shall be characterized as having the GHG attributes of the residual mix in the utility or supplier-specific emission factor;”⁷ and

“When using a supplier-specific emission factor, companies should seek to ensure that: [...] the utility or supplier discloses whether and how certificates are used in the emission factor calculation, unless there is third-party certification of the utility product. In particular, companies should seek to ensure that if the supplier has a differentiated product (e.g. a renewable energy product or tariff), the certificates or other contracts used for that product should be used only for that product and not counted in the standard product offer. [And] That the supplier-specific emission factor includes emissions from all the energy delivered by the utility, not just the generation assets owned by the supplier (e.g. what is required by some fuel mix disclosure rules). Many suppliers purchase significant portions of their energy from other generators via contracts, or through the spot market. The emission factor should reflect the emissions from all of these purchases. A supplier-specific emission rate can also reflect certificates retired for compliance purposes (such as U.S. state RPS programs) which also convey attributes for public benefit and claims.”⁸

These rules set by WRI have been implemented by GHG inventory and reporting systems like The Climate Registry (TCR) and CDP (formerly the Carbon Disclosure Project), which are used by thousands of companies, organizations, governmental agencies, and municipalities reporting their emissions associated with purchased electricity (Scope 2 emissions). TCR’s guidance for developing utility-specific delivery metrics can be found in Chapter 19 of its Electric Power Sector (EPS) Protocol.⁹ After TCR members have reported and verified this information, their utility-specific emission factors are published on the TCR website. TCR is in the process of updating this section of the EPS Protocol to be in conformance with WRI’s Scope 2 Guidance.

There is also agreement by the U.S. Environmental Protection Agency (EPA), the U.S. Department of Energy (DOE), and the U.S. Federal Trade Commission (FTC), among others, on the supremacy of RECs, whether bundled or unbundled, for making claims about the emissions associated with delivered renewable electricity.¹⁰

Thank you very much for the opportunity to comment. We would be happy to supply any other supporting or clarifying information that would be helpful.

Sincerely,



Todd Jones
Senior Manager, Policy and Climate Change Programs

⁷ *Ibid.* Section 7.1, Table 7.1, pg. 60.

⁸ *Ibid.* Section 6.11.3, pg. 56.

⁹ Available online: <http://www.theclimateregistry.org/tools-resources/reporting-protocols/electric-power-sector-protocol/>.

¹⁰ Jones, T. (2014) *The Legal Basis of Renewable Energy Certificates*. Center for Resource Solutions. Available online at: http://www.resource-solutions.org/pub_pdfs/The%20Legal%20Basis%20for%20RECs.pdf

ATTACHMENT 2:

Jones, T. (2015). *The Legal Basis of Renewable Energy Certificates*. Center for Resource Solutions.



CRS

center for
resource
solutions

The Legal Basis for Renewable Energy Certificates

Todd Jones
Robin Quarrier
Maya Kelty

Updated June 17, 2015

Center for Resource Solutions
1012 Torney Ave. 2nd Floor
San Francisco, CA 94129
www.resource-solutions.org

ACKNOWLEDGEMENTS

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There is a strong legal basis for the use of renewable energy certificates (RECs)¹ as instruments that represent the attributes of renewable electricity generation. RECs are not controlled by any one organization or group of organizations, and neither are they instruments of recognition or donation. Rather, RECs are a part of the machinery of U.S. electricity markets, used to demonstrate renewable electricity purchasing, delivery, and use within the broader context of functioning voluntary and compliance renewable electricity markets.²

As shown in this report,³ multiple governmental entities at different levels, state legislation and regulation, regional electricity transmission authorities, non-governmental organizations (NGOs), trade associations, and market participants have recognized that RECs represent and convey the renewable, environmental and/or social attributes of renewable electricity generation to the owner, along with the legal right to claim usage of that renewable electricity. These entities recognize further that without RECs such a claim could not otherwise be substantiated,⁴ either by utilities and electric service providers (ESPs) for the purpose of demonstrating compliance with state laws, or by utilities/ESPs, other companies, and individuals for the purpose of meeting voluntary targets.

- Thirty-six (36) U.S. states and territories recognize that RECs can be used to track and transact renewable electricity on the grid.⁵ This is not contradicted by the remaining states and territories.
- Thirty-five (35) U.S. states and territories recognize the supremacy of RECs to demonstrate compliance of regulated entities with state laws requiring provision of renewable electricity to grid customers, such as Renewable Portfolio Standards (RPSs), or participation in voluntary state programs for provision of renewable electricity to grid customers.⁶ The remaining seven (7) states and territories with such mandates or goals do not track or allocate generation to specific users or deliverers of electricity.⁷
- Twenty-four (24) U.S. states and territories explicitly recognize RECs as representing “attributes” of generation (or similar);⁸ twenty-four (24) recognize them as mechanisms for “tracking” or “trading” (or equivalent) electricity or attributes;⁹ sixteen (16) describe them as representing electricity or energy “generation” (or equivalent);¹⁰ five (5) recognize them as “proof of generation,” or equivalent;¹¹ and three (3) explicitly identify RECs as “property.”¹²

For example, according to the State of Iowa:

Because of the laws of physics that govern operation of the electric transmission system, it is impossible to ensure that electricity produced by a particular renewable source is specifically and exclusively directed, in a physical sense, to the purchasing entity. An accounting system that verifies compliance must therefore rely on

an agreed-upon abstract medium of exchange similar to the way the financial markets rely on money to represent value. In the renewable energy area, Tradable Renewable Certificates (TRCs) have been developed as a medium of exchange representing the renewable attributes of renewable energy. TRCs can be used to show compliance with energy-based RPS mandates.¹³

According to the State of New York, which began developing its certificate-based tracking system—NYGATS—this year:

Unbundling [energy from its environmental attributes] allows NYSERDA, as the RPS Program's central procurement administrator, to acquire environmental attributes from generators instead of the rights that prevent generators from selling or transferring their environmental attributes to others. Increased control of the attributes can provide more assurance that double counting of attributes is avoided. If a certificate-based tracking system is developed, then the title to the environmental attributes could be in the form of renewable energy certificates (RECs), which would be easily transferred to NYSERDA as proof of its acquisition of renewable attributes. Thus, unbundling of attributes has the potential of strengthening significantly the market for renewable energy and opportunities for achieving the objectives of the RPS Program.¹⁴

Renewable energy tracking and certificate-issuing entities cover the whole of the U.S. and Canada. With the exception of the North American Renewables Registry (NAR), all of these multi-jurisdictional entities were established with the support of U.S. states, which have designated specific tracking systems to be used for issuing and tracking certificates and verifying compliance with state policies or programs.

- Seven (7) of these regional tracking systems define their certificates explicitly as “attributes” of renewable generation.¹⁵ PJM-GATS and the forthcoming NYGATS tracking systems have “generation attribute” as a part of the name of the entity—Generation Attribute Tracking System.
- All define their instruments as the mechanisms for “tracking” or “trading” (or equivalent) attributes or proof of generation for the purposes of compliance with state programs and/or voluntary programs.¹⁶

The U.S. Federal Energy Regulatory Commission (FERC) has also recognized that “environmental attributes” can be traded separately and are not necessarily bound to or conveyed with the “energy or capacity,” such that Public Utility Regulatory Policy Act (PURPA) avoided cost contracts for energy and capacity produced by a facility do not necessarily include any environmental attributes unless this is specified in the contract or determined by applicable state law.¹⁷

On Oct 1, 2003, FERC issued an order declaring that avoided cost contracts entered into pursuant to PURPA, absent express provisions to the contrary, do not inherently convey to the purchasing utility any RECs.¹⁸ Rather, the power purchase price that the utility pays under such a contract compensates a generation facility only for the energy and capacity produced by that facility and not for any environmental attributes associated with the facility. FERC later reaffirmed this order by denying a request for rehearing in 2004:

[Those seeking a rehearing] oppose having this Commission rule that contracts for the sale of QF [Qualifying Facility] capacity and energy entered into pursuant to PURPA convey only the capacity and energy, and do not convey RECs, to the purchasing utility (absent express provision in the contracts to the contrary). We disagree.¹⁹

If avoided cost rates are not intended to compensate a QF for more than capacity and energy, it follows that other attributes associated with the facilities are separate from, and may be sold separately from, the capacity and energy. Indeed, states in creating RECs that are unbundled and tradeable have recognized this. The very fact that RECs may be unbundled and may be traded under State law indicates that the

*environmental attributes do not inherently convey pursuant to an avoided cost contract to the purchasing utility.*²⁰

*We note that cogeneration facilities, to receive QF status, are required to produce both electricity and useful thermal output. [...] The thermal output that is a pre-requisite to a cogeneration facility's achieving QF status is saleable separately from the capacity and energy of the cogeneration facility. [...] If the thermal output of a cogeneration QF is separately saleable, the renewable attributes of a small power production QF are similarly separate.*²¹

The U.S. Department of Energy (DOE) Federal Energy Management Program (FEMP) recognizes that RECs “represent the technology and environmental (non-energy) attributes of energy generated from renewable sources,” and it affirms that they “can be sold separately from the mega-watt hour of generic electricity with which it is associated,” which “enables customers to offset a percentage of their annual energy use with certificates generated elsewhere.”²² FEMP requires that federal agencies retain ownership of RECs in order to demonstrate renewable energy consumption to comply with the Energy Policy Act of 2005 and Executive Order 13423, and it affirms that, “Retention of a REC that explicitly states that the Federal agency retains or precludes transfer to other parties of all renewable energy and non-energy attributes of the project is the best evidence of meeting this standard.”²³

In its guidance to federal agencies complying with Executive Order 13514, The White House Council on Environmental Quality (CEQ) also recognizes that “RECs are essential to claims concerning renewable energy and adjustments to GHG emissions,” and that, “Whatever acquisition method is used [for renewable energy], the REC must be owned by the agency in order to qualify for adjustment to their Scope 2 emissions to meet GHG reduction targets.”²⁴

U.S. case law also supports the legal basis of RECs as attributes and property rights. For example, the Superior Court of New Jersey has recognized that “One Renewable Energy Certificate represents the environmental benefits or attributes of one megawatt-hour of generated renewable energy,” and RECs are considered “property.”²⁵

The Connecticut Supreme Court has recognized that:

*The certificates verify that specified units of electricity have been generated using renewable fuel or have been produced with low emissions and, pursuant to state law, can be purchased to satisfy the state renewable energy requirements. See General Statutes § 16-245a (b). Thus, the certificates effectively “unbundled” the renewable energy attribute of the electric product from the generic energy component for accounting purposes and allowed them to be traded separately.*²⁶

It too refers to certificates as “property.” The United States Court of Appeals, Second Circuit has recognized that:

*Generally speaking, RECs are inventions of state property law whereby the renewable energy attributes are “unbundled” from the energy itself and sold separately. The credits can be purchased by companies and individuals to offset use of energy generated from traditional fossil fuel resources or by government agencies to satisfy certain requirements that these agencies purchase a certain percentage of their energy from renewable sources.*²⁷

The Armed Services Board of Contract Appeals (ASBCA), the body that resolves contract disputes between government contractors and the US Military, also agrees that RECs, “are personal property, given their exclusive nature and transferability,” and on this basis denied an appeal in August of 2013 to a delivery order that characterized RECs as “energy savings.”²⁸ The Board found that RECs are not simply financial

incentives offered by New Jersey relating to the generation of renewable energy that constitute energy savings. Rather, “SRECs simply reflect the clean, renewable aspect of electricity produced by a solar facility.”²⁹ It found that although the electricity produced by a solar array reduces the amount of energy the owner must purchase, and though RECs may generate revenue that could be used to pay energy costs, the certificates themselves do not reduce those energy costs.³⁰ Furthermore, the ASBCA found that even were the definition of energy savings to be expanded to include the sale of excess electricity generated by solar facilities, “SRECs are not electrical energy. They are marketable certificates, representing the clean, renewable nature of a solar facility's electrical production that has been severed from the electricity for the very purpose of being sold separately.”³¹

The supremacy of RECs to demonstrate the voluntary usage of renewable electricity and the attributes of its production is recognized by the U.S. Environmental Protection Agency (EPA), the U.S. DOE, the U.S. Federal Trade Commission (FTC), The Climate Registry, the CDP (formerly the Carbon Disclosure Project), and Center for Resource Solutions (CRS)/Green-e, among others.

- The U.S. EPA and the U.S. DOE have recognized RECs as “property rights to the environmental benefits from generating electricity from renewable energy sources.”³²
- The Western Area Power Administration, the power marketer within the DOE, recognizes RECs as “the environmental, social, and other positive attributes of power generated by renewable resources,” which “include the tons of GHGs that were avoided by generating electricity from renewable resources instead of fuels, such as coal, nuclear, oil, or gas.”³³
- The Environmental Markets Association (EMA) recognizes RECs as “the property rights to the environmental benefits from generating electricity from renewable energy sources” that “can be sold and traded and the owner of the REC can legally claim to have purchased renewable energy.”³⁴
- The American Bar Association (ABA) has recognized that “parties can create a record of the verification and disposition of the environmental attributes of the REC that can travel with further downstream transactions in the particular REC.”³⁵
- According to the FTC, “If a marketer generates renewable electricity but sells renewable energy certificates for all of that electricity, it would be deceptive for the marketer to represent, directly or by implication that it uses renewable energy.”³⁶
- Last year, the U.S. Commodity Futures Trading Commission (CFTC) recognized that “market participants often engage in environmental commodity transactions in order to transfer ownership of the environmental commodity (and not solely price risk), so that the buyer can consume the commodity in order to comply with the terms of mandatory or voluntary environmental programs.”³⁷
- The legitimacy of voluntary renewable energy usage and ownership claims through RECs was recognized by the California Energy Commission in 2009, when they ruled that a claim against RECs by a utility after the RECs had already been claimed by voluntary purchasers is not allowed as it would lead to a double-recovery.³⁸

According to the U.S. Federal Trade Commission:

Once renewable electricity is introduced into the grid, it is physically indistinguishable from electricity generated from conventional sources. Consumers, therefore, cannot determine for themselves the source of the electricity flowing into their homes. Because electricity transactions can be tracked, however, retail customers can “buy” renewable power by either: (1) purchasing renewable energy certificates (RECs); or (2) purchasing renewable power through contracts with their utility. Under the REC method, a renewable electricity generator splits its output into two components: (1) the electricity itself; and (2) certificates representing the renewable attributes of that electricity. Specifically, generators that produce renewable electricity sell their

electricity at market prices for conventionally produced power and then sell the renewable attributes of that electricity through separate certificates. Organizations purchase RECs to characterize all or a portion of their electricity usage as “renewable” by matching the certificates with the conventionally produced electricity they normally purchase.³⁹

According to the U.S. EPA:

RECs were created to help convey the attributes of electricity generated from renewable resources to buyers. Analogous to the utility delivering the physical electricity through wires, RECs serve as the means to deliver the environmental and non-power attributes of renewable electricity generation to buyers—separate from the physical electricity,” and as such, “RECs are increasingly seen as the ‘currency’ of renewable electricity and green power markets.”⁴⁰

Certification through Green-e Energy along with the same tracking systems that are used for state compliance programs (and/or verification of contracts with the original generator) are used in the U.S. voluntary renewable energy market to provide equivalent assurances related to ownership, full aggregation,⁴¹ and avoidance of double counting to voluntary buyers.

RECs are essential to any renewable electricity usage claim in the U.S. Despite any differences between states and voluntary programs in terms of eligibility requirements,⁴² RECs are uniformly used as the primary means of tracking grid-connected renewable electricity generation and the ownership of, and rights to claim, all of its associated attributes. The evidence is overwhelming that trading a REC in the U.S., whether bundled or unbundled with underlying electricity, effectively transfers ownership rights over all of the attributes of the associated renewable electricity generation to the REC purchaser. RECs therefore allow trading of differentiated electricity products despite the physical inability to identify the exact generating source supplying electricity to an individual customer or facility, and it is inappropriate for renewable energy or attribute reporting and accounting systems to disregard or deemphasize RECs on the basis of the distribution of electricity on a shared grid.

END NOTES

¹ Renewable energy certificate (REC) in this document is a term used to describe the various REC and equivalent instruments in the U.S., with perhaps different names as used by various state, regional, and voluntary programs, but with the same basic features as described in this document.

² Renewable energy certificate (and equivalent instrument) state definitions:

- AZ: ARIZ. ADMIN. CODE § R14-2-1801(N) (2007), http://apps.azsos.gov/public_services/Title_14/14-02.pdf
- CA: CAL. PUB. UTIL. CODE § 399.12(h)(1) (2003), <http://www.leginfo.ca.gov/cgi-bin/displaycode?section=puc&group=00001-01000&file=399.11-399.32>
- CO: 4 COLO. CODE REGS. § 723-3-3(3652)(y) (2014), <http://cdn.colorado.gov/cs/Satellite/DORA-PUC/CBON/DORA/1251631146828#tab3>
- CT: CONN. GEN. STAT. §16-245(a-b) (1998), <http://www.cga.ct.gov/2011/pub/chap283.htm#Sec16-245a.htm>
(RECs are not specifically defined in CT law. The above Connecticut General Statute citation mentions RECs and states that the CT RPS uses the operating rules of NEPOOL-GIS, *available at*, <http://www.nepoolgis.com/documents/>)
- DC: D.C. MUN. REGS. PUB. SERV. COMM’N. 15, 29 § 16738 (2999.1) (2015), http://www.dcpsc.org/pdf_files/commorders/orderpdf/orderno_16738_FC945.pdf
- DE: 26-3000-3008 DEL. ADMIN. CODE § 1.1 (2013), <http://regulations.delaware.gov/AdminCode/title26/3000/3008.shtml#TopOfPage>
- IA: IOWA CODE ANN. § 476.41, AEP-07-1 (West 2007), https://iub.iowa.gov/files/archive/orders/2007/1121_aep071.pdf
(No explicit definition exists, but references Tradable Renewable Certificates as a means of exchanging renewable attributes.)
- IL: 20 ILL. COMP. STAT. 3855 / 1-10 (2014), <http://www.ilga.gov/legislation/ilcs/ilcs5.asp?ActID=2934&ChapAct=20%26nbsp%3BILCS%26nbsp%3B3855%2F&ChapterID=5&ChapterName=EXECUTIVE+BRANCH&ActName=Illinois+Power+Agency+Act>
- IN: IND. CODE ANN. §8-1-37-3 (2011), <https://iga.in.gov/documents/8850f79f>
(No explicit definition exists, but references Tradable Renewable Certificates as a means of exchanging renewable attributes.)
- KS: KAN. ADMIN. REGS. § 82-16-1 (k) (2010), http://www.kssos.org/pubs/register%5C2010%5CVol_29_No_44_November_4_2010_p_1577-1616.pdf

KAN. STAT. ANN. § 66-1257 (e) (2009), http://www.kslegislature.org/li/b2015_16/statute/066_000_0000_chapter/066_012_0000_article/066_012_0057_section/066_012_0057_k/
- MA: 225 MASS. CODE REGS. 14.02 (2010), <http://www.mass.gov/eea/docs/doer/renewables/biomass/225-cmr-14-00-final-reg-doer-081712-clean-copy.pdf>
(Definition for GIS Certificate and Generation Attribute.)

- MD: H.B. 226, 2013 Leg., Reg. Sess. (Md. 2013), <http://mgaleg.maryland.gov/2013RS/bills/hb/hb0226e.pdf>
- ME: 65-407-311 ME. CODE R. § 2 (F) (LexisNexis 2007),
<http://www.maine.gov/sos/cec/rules/65/407/407c311.doc>
(Definition for GIS Certificate.)
- ME. REV. STAT. tit. 35, § 3210 (B-2) (2006), <http://www.mainelegislature.org/legis/statutes/35-A/title35-Asec3210.html>
(REC definition.)
- MI: MICH. COMP. LAWS § 460.1011 (2008)
[http://www.legislature.mi.gov/\(S\(yospjiegx0ccymhf3zjwow4ed\)\)/mileg.aspx?page=getObject&objectName=mcl-460-1011](http://www.legislature.mi.gov/(S(yospjiegx0ccymhf3zjwow4ed))/mileg.aspx?page=getObject&objectName=mcl-460-1011)
(MCL § 460.1041 (2008) gives more information on REC resource eligibility and use [tracking, trading, compliance, etc.])
- MN: MINN. STAT. § 216B.1691 (4) (2007)
<https://www.revisor.mn.gov/statutes/?id=216b.1691#stat.216B.1691.4>
- MO: MO. CODE REGS. ANN. tit. 4, §240-20.100 (2010)
<http://www.sos.mo.gov/adrules/csr/current/4csr/4c240-20.pdf>
- MT: MONT. CODE ANN. §69-3-2003 (14) (2005)
<http://leg.mt.gov/bills/mca/69/3/69-3-2003.htm>
- NC: N.C. GEN. STAT. ANN. § 62-133.8 (6) (West 2008)
http://www.ncga.state.nc.us/EnactedLegislation/Statutes/HTML/BySection/Chapter_62/GS_62-133.8.html
- ND: N.D. ADMIN. CODE 69-09-08-02 (5) (2011)
<http://www.legis.nd.gov/information/acdata/pdf/69-09-08.pdf?20150409160640>
(ND has two separate definitions for Renewable Energy Certificate and Renewable Energy Credit.)
- NH: N.H. REV. STAT. ANN. § 34.362 (2007),
<http://www.gencourt.state.nh.us/rsa/html/XXXIV/362-F/362-F-2.htm>
- NJ: S.B. 1925, SEN. COMM., (N.J. 2012),
http://www.njleg.state.nj.us/2012/Bills/AL12/24_PDF
- NM: N.M. CODE R. § 17.9.572.7 (E) (LexisNexis 2013),
<http://164.64.110.239/nmac/parts/title17/17.009.0572.htm>
- N.M. STAT. ANN. § 62-16-3 (F) (2007), *available at*:
<http://www.nmonesource.com/nmnxadmin/nmpublic.aspx>
- NV: NEV. REV. STAT. § 704.7803 (2002),
<http://www.leg.state.nv.us/nrs/NRS-704.html#NRS704Sec7801>
(Definition for Portfolio Energy Credit.)
- NEV. ADMIN. CODE § 704.8908 (2002),
<http://www.leg.state.nv.us/nac/NAC-704.html#NAC704Sec8908>

- NY: N.Y. ENERGY LAW SERDA ACT, tit. 9, § 1851 (18) (2012),
<http://www.nyserda.ny.gov/-/media/Files/About/NYSERDA-Act.pdf>
 (Definition for Generation Attribute Certificate.)
- OH: OHIO ADMIN. CODE 4901:1-40-01 (BB) (2009),
<http://codes.ohio.gov/oac/4901%3A1-40>
- OR: OR. ADMIN. R. § 330-160-0015 (15) (2008),
http://arcweb.sos.state.or.us/pages/rules/oars_300/oar_330/330_160.html
- OR. REV. STAT. § 469A.005 (1) (12) (2007),
https://www.oregonlegislature.gov/bills_laws/lawsstatutes/2013ors469A.html
- PA: 52 PA. CODE § 75.1 (2009), *available at*: http://www.pacode.com/secure/data/052/chapter75/052_0075.pdf
 (Definition for Alternative Energy Credit.)
- PR: S.B. 1519, SEN. COMM. § 82 (P.R. 2010), *available at*:
<http://www.oslpr.org/download/en/2010/A-0082-2010.pdf>
- RI: R.I. GEN. LAWS § 39-26-2 (13) (2004),
<http://webserver.rilin.state.ri.us/Statutes/TITLE39/39-26/39-26-2.HTM>
 (Definition for NE-GIS Certificate.)
- SD: S.D. CODIFIED LAWS § 49-34A-101 (2008),
http://legis.sd.gov/Statutes/Codified_Laws/DisplayStatute.aspx?Type=Statute&Statute=49-34A-101
 (RECs are not specifically define in law. Most “utilities use M-RETS or WREGIS to track and retire credits, which specifically defines a REC as including all attributes” [Hamrin, 2014].)
- TX: 16 TEX. ADMIN. CODE § 25.5 (101) (2014),
[http://texreg.sos.state.tx.us/public/readtac\\$ext.TacPage?sl=T&app=9&p_dir=F&p_rloc=153710&p_tloc=29622&p_ploc=14913&pg=16&p_tac=&ti=16&pt=2&ch=24&rl=142](http://texreg.sos.state.tx.us/public/readtac$ext.TacPage?sl=T&app=9&p_dir=F&p_rloc=153710&p_tloc=29622&p_ploc=14913&pg=16&p_tac=&ti=16&pt=2&ch=24&rl=142)
- TEX. UTIL. CODE ANN. § 25.173(c) (13) (2000),
<http://www.puc.texas.gov/agency/rulesnlaws/subrules/electric/25.173/25.173.pdf>
- UT: UTAH CODE ANN. §10-19-102 (10) (2008),
<http://le.utah.gov/xcode/Title10/Chapter19/10-19-S102.html>
- VA: VA. CODE ANN. § 56-585.2 (2007),
<http://leg1.state.va.us/cgi-bin/legp504.exe?000+cod+56-585.2>
- VT: VT. STAT. ANN. tit. 30, § 8002 (22) (2013),
<http://legislature.vermont.gov/statutes/section/30/089/08002>
- WA: WASH. ADMIN. CODE § 480-109-007 (17) (2007),
<http://app.leg.wa.gov/WAC/default.aspx?cite=480-109-007>
- WASH. REV. CODE § 19.285.030 (20) (2006),
<http://apps.leg.wa.gov/RCW/default.aspx?cite=19.285>
- WI: WIS. ADMIN. CODE PSC § 118-02 (7r) (10) (2007),
http://docs.legis.wisconsin.gov/code/admin_code/psc/118
 (WI has two separate definitions for Renewable Resource Credit and Renewable Energy Certificate.)

³ This paper is not intended to be a comprehensive or exhaustive listing of all sources supporting the use of RECs. There may be many other specific laws, regulations, etc. that also support the key findings described.

⁴ While this document primarily describes RECs that are issued by tracking systems, RECs may be created and conveyed in contracts even if a renewable generator is not registered with a tracking system.

⁵ Listing of state regulations that support use of RECs to track and transact renewable electricity on the grid:

- AZ: ARIZ. ADMIN. CODE § 14-2-1803 (E) (2007),
http://apps.azsos.gov/public_services/Title_14/14-02.pdf
- CA: CAL. PUB. UTIL. CODE § 399.21 (a)(1) (2003),
<http://www.leginfo.ca.gov/cgi-bin/displaycode?section=puc&group=00001-01000&file=399.11-399.32>
- CO: 4 COLO. CODE REGS. § 723-3 (3659) (n) (LexisNexis 2014),
<http://cdn.colorado.gov/cs/Satellite/DORA-PUC/CBON/DORA/1251631146828>
- CT: 283 CONN. GEN. STAT. § 16-245a (b) (1998),
<http://www.cga.ct.gov/2011/pub/chap283.htm#Sec16-245a.htm>
- DC: D.C. MUN. REGS. tit. PSC Order15, §29 No. 16738 (2901.3) (2012), *available at*:
http://www.dcpsc.org/pdf_files/commorders/orderpdf/orderno_16738_FC945.pdf
- DE: 26-3000-3008 DEL. ADMIN. CODE § 1.1 (2013),
<http://regulations.delaware.gov/AdminCode/title26/3000/3008.shtml#TopOfPage>

DEL. CODE ANN. tit. 26, § 359 (a) (2005),
http://delcode.delaware.gov/title26/c001/sc03a/index.shtml#P11_150
- IA: IOWA CODE § 476.44A (2003), <http://coolice.legis.iowa.gov/Cool-ICE/default.asp?category=billinfo&service=IowaCode&ga=83&input=476.44A>
- IL: 20 ILL. COMP. STAT. ANN. 3855/1-75 (2013),
<http://www.ilga.gov/legislation/ilcs/ilcs5.asp?ActID=2934&ChapterID=5>
- IN: S.B. 251, GEN. ASSEM., REG. SESS. (IN. 2011),
<http://www.in.gov/legislative/bills/2011/SE/SE0251.1.html>
- KS: KAN. ADMIN. REGS. 82-16-6 (d) (2010), *available at*:
http://www.kssos.org/pubs/register%5C2010%5CVol_29_No_44_November_4_2010_p_1577-1616.pdf
- MA: 225 MASS. CODE REGS. 14.08 (1) (2010), <http://www.mass.gov/eea/docs/doer/renewables/biomass/225-cmr-14-00-final-reg-doer-081712-clean-copy.pdf>
(Endorses use of NEPOOL GIS tracking system in its operating rules.)
- MD: MD. CODE REGS. 20.61.01.03 (2015),
<http://www.dsd.state.md.us/comar/comarhtml/20/20.61.01.03.htm>
(Endorses use of GATS tracking system.)

- MD. CODE ANN. PUB. UTIL. COS. §7–708 (LexisNexis 2004),
<http://mgaleg.maryland.gov/webmga/fmStatutesText.aspx?article=gpu§ion=7-708&ext=html&session=2015RS&tab=subject5>
- ME: ME. REV. STAT. tit. 35, § 3210-C (B-2) (2006), *available at*:
<http://www.mainelegislature.org/legis/statutes/35-A/title35-Asec3210.html>
- MI: MICH. COMP. LAWS § 460.201 (l) (2008),
<http://www.legislature.mi.gov/documents/2015-2016/executiveorder/pdf/2015-EO-10.pdf>
- MICH. COMP. LAWS § 460.1041 (1) (2008),
[http://www.legislature.mi.gov/\(S\(w4fn5oomxpa0k0gtcmrbmhjs\)\)/mileg.aspx?page=getObject&objectName=mcl-460-1041](http://www.legislature.mi.gov/(S(w4fn5oomxpa0k0gtcmrbmhjs))/mileg.aspx?page=getObject&objectName=mcl-460-1041)
- MN: MINN. STAT. ANN. § 216B.1691 (2013),
<https://www.revisor.mn.gov/statutes/?id=216b.1691#stat.216B.1691.4>
- MO: MO. CODE REGS. ANN. tit. 4, §240-20.100 (1) (J) (2010),
<http://www.sos.mo.gov/adrules/csr/current/4csr/4c240-20.pdf>
- MT: 20 ILL. COMP. STAT. ANN. 3855/1-75 (2013), <http://leg.mt.gov/bills/mca/69/3/69-3-2003.htm>
- NC: N.C. GEN. STAT. ANN. § 62-133.8 (k) (West 2008),
http://www.ncga.state.nc.us/EnactedLegislation/Statutes/HTML/BySection/Chapter_62/GS_62-133.8.html
- ND: H.B. 1506, 60 LEG. ASSEMB., (N.D. 2007),
<http://www.legis.nd.gov/assembly/60-2007/bill-text/HBIO0500.pdf>
- NH: N.H. REV. STAT. ANN., § 34:362-F:6 (I) (2007),
<http://www.gencourt.state.nh.us/rsa/html/XXXIV/362-F/362-F-6.htm>
- NJ: N.J. Admin. Code § 14:8-1.2 (2015), *available at*: <http://www.lexisnexis.com/hottopics/njcode/> (free public access Official Publisher of the New Jersey Administrative code)
- ND: N.D. CENT. CODE ANN. § 49-02-25 (West 2015),
<http://www.legis.nd.gov/cencode/t49c02.pdf?20150610172444>
- NM: N.M. STAT. ANN. § 62-16-5 (2007),
<http://www.nmprc.state.nm.us/utilities/renewable-energy-act/05.html>
- NV: NEV. REV. STAT. § 704.7821 (7) (2002),
<http://www.leg.state.nv.us/nrs/NRS-704.html#NRS704Sec7801>
- NEV. ADMIN. CODE § 704.8872 & 8933 (2002),
<http://www.leg.state.nv.us/nac/NAC-704.html#NAC704Sec8831>
- NY: N.Y. PUB. SERV. LAW, § 03-E-0188, (2006),
<http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={99B37D71-602B-47F1-8989-5729836A3809}>
- OH: OHIO ADMIN. CODE 4901:1-40-04 (D) (2) (2009), <http://codes.ohio.gov/oac/4901%3A1-40>

- OR: OR. REV. STAT. ANN. § 757.600 (West 2015),
https://www.oregonlegislature.gov/bills_laws/lawsstatutes/2013ors757.html
- PA: 73 PA. STAT. ANN. § 1648.3 (e) (2) (West 2004),
73 PA. STAT. ANN. § 1672.213.3(e) (2) (West 2004),
<http://www.legis.state.pa.us/cfdocs/legis/li/uconsCheck.cfm?yr=2004&sessInd=0&act=213>
- PR: P.R. LAWS ANN. tit. 82, §1519 (2010), <http://www.oslpr.org/download/en/2010/A-0082-2010.pdf>
- RI: R.I. GEN. LAWS § 39-26-2 (12) (2004),
<http://webserver.rilin.state.ri.us/Statutes/TITLE39/39-26/INDEX.HTM>
(Endorses use of NE-GIS tracking system.)
- SD: S.D. CODIFIED LAWS § 49-34A-94 (2006),
S.D. CODIFIED LAWS § 49-34A-101 (2006),
<http://puc.sd.gov/commission/dockets/rulemaking/2011/RM11-001/finalrules.pdf>
- TX: TEX. UTIL. CODE ANN. §25.173(d) (2000),
<http://www.puc.texas.gov/agency/ruleslaws/subrules/electric/25.173/25.173.pdf>
- UT: UTAH ADMIN. CODE r. 10-19-102 (4) (2008),
UTAH ADMIN. CODE r. 10-19-102 (12) (2008),
<http://le.utah.gov/UtahCode/section.jsp?code=10-19>
- VA: VA. CODE ANN. § 56-585.2 (2015),
<https://leg1.state.va.us/cgi-bin/legp504.exe?000+cod+56-585.2>
- VT: VT. STAT. ANN. tit. 30, § 8006 (2013),
<http://legislature.vermont.gov/statutes/section/30/089/08006>
- WA: WASH. ADMIN. CODE § 480-109-007 (17) (2007),
<http://apps.leg.wa.gov/WAC/default.aspx?cite=480-109>

WASH. REV. CODE § 19.285.030 (20) (2006),
<http://apps.leg.wa.gov/RCW/default.aspx?cite=19.285>
- WI: WIS. STAT. § 196.378 (2014),
<https://docs.legis.wisconsin.gov/statutes/statutes/196/378>

⁶ Listing of state regulations that support use of RECs to demonstrate compliance of regulated entities with state laws requiring provision of renewable electricity

- AZ: ARIZ. ADMIN. CODE § 14-2-1803 (D-F) (2007),
ARIZ. ADMIN. CODE § 14-2-1804 (2007),
http://apps.azsos.gov/public_services/Title_14/14-02.pdf
- CA: CAL. PUB. UTIL. CODE § 399.21 (a) (West 2003),
<http://www.leginfo.ca.gov/cgi-bin/displaycode?section=puc&group=00001-01000&file=399.11-399.32>
- CO: 4 COLO. CODE REGS. §72-3 (3659) (n) (LexisNexis 2014),
<http://cdn.colorado.gov/cs/Satellite/DORA-PUC/CBON/DORA/1251631146828>

- COLO. REV. STAT. § 40-2-124 (1) (d) (2014), *available at*:
<http://www.lexisnexis.com/hottopics/colorado/>
- CT: 283 CONN. GEN. STAT. § 16-245a (b) (1) (1998),
<http://www.cga.ct.gov/2011/pub/chap283.htm#Sec16-245a.htm>
- DC: D.C. MUN. REGS. tit. PSC § 16738 (2901.1) (2012), *available at*:
http://www.dcpsc.org/pdf_files/commorders/orderpdf/orderno_16738_FC945.pdf
- DE: 26-3000-3008 DEL. CODE REGS. § 3.2.2 (LexisNexis 2013),
<http://regulations.delaware.gov/AdminCode/title26/3000/3008.shtml#TopOfPage>
- DEL. CODE ANN. tit. 26, § 358 (a) (2005),
 DEL. CODE ANN. tit. 26, § 360 (a) (2005),
http://delcode.delaware.gov/title26/c001/sc03a/index.shtml#P11_150
- IA: IOWA UTIL. CODE § AEP-07-1 (2007),
https://iub.iowa.gov/files/archive/orders/2007/1121_aep071.pdf
- IL: 20 ILL. COMP. STAT. 3855/1-75 (2007),
<http://www.ilga.gov/legislation/ilcs/ilcs5.asp?ActID=2934&ChapAct=20%26nbsp%3BILCS%26nbsp%3B3855%2F&ChapterID=5&ChapterName=EXECUTIVE+BRANCH&ActName=Illinois+Power+Agency+Act>
- IN: 170 IND. ADMIN. CODE r.17.1-3-4 (2012),
<http://www.in.gov/legislative/iac/T01700/A00171.PDF>
- KS: KAN. ADMIN. REGS. § 82-16-6 (d) (2010), *available at*:
http://www.kssos.org/pubs/register%5C2010%5CVol_29_No_44_November_4_2010_p_1577-1616.pdf
- MA: 225 MASS. CODE REGS. 14.09 (2010),
<http://www.mass.gov/eea/docs/doer/renewables/biomass/225-cmr-14-00-final-reg-doer-081712-clean-copy.pdf>
- MD: MD. CODE ANN., PUB. UTIL. COS. §7-709 (LexisNexis 2004),
<http://mgaleg.maryland.gov/webmga/fmStatutesText.aspx?article=gpu§ion=7-709&ext=html&session=2015RS&tab=subject5>
- ME: ME. REV. STAT. tit. 35-A, § 3210 (8) (2000), *available at*:
<http://www.mainelegislature.org/legis/statutes/35-A/title35-Asec3210.html>
- MI: MICH. COMP. LAWS § 460.1041 (2) (2008),
[http://www.legislature.mi.gov/\(S\(w4fn5oomxpa0k0gtcmrbmhjs\)\)/mileg.aspx?page=getObject&objectName=mcl-460-1041](http://www.legislature.mi.gov/(S(w4fn5oomxpa0k0gtcmrbmhjs))/mileg.aspx?page=getObject&objectName=mcl-460-1041)
- MN: MINN. STAT. § 216B.1691 (4) (b) (2007),
<https://www.revisor.mn.gov/statutes/?id=216b.1691#stat.216B.1691.4>
- MO: MO. CODE REGS. ANN. tit. 4, § 40-20.100 (2010),
 4 CSR 240-20.100 (3), p.39 (2010),
<http://www.sos.mo.gov/adrules/csr/current/4csr/4c240-20.pdf>

- MT: MONT. CODE ANN. § 69-3-2004 (7) (2005),
<http://leg.mt.gov/bills/mca/69/3/69-3-2004.htm>
- NC: N.C. GEN. STAT. § 62-133.8 (a) (6) (2008),
 N.C. GEN. STAT. § 62-133.8 (b) (2) (e) (2008),
http://www.ncga.state.nc.us/EnactedLegislation/Statutes/HTML/BySection/Chapter_62/GS_62-133.8.html
- ND: N.D. CENT. CODE § 49-02-28, (2007),
 N.D. CENT. CODE § 49-02-31, (2007),
<http://www.legis.nd.gov/cencode/t49c02.pdf?20150409160556>
- NH: N.H. REV. STAT. ANN. § 34:362-F:6 (I) (2007),
<http://www.gencourt.state.nh.us/rsa/html/NHTOC/NHTOC-XXXIV-362-F.htm>
- NJ: N.J. ADMIN. CODE § 14:8-2.8 (2014),
[http://www.state.nj.us/bpu/pdf/rules/R%202014%20d%20048%20\(46%20NJR%20549\(a\)\)%20\(2\).pdf](http://www.state.nj.us/bpu/pdf/rules/R%202014%20d%20048%20(46%20NJR%20549(a))%20(2).pdf)
 S.B. 1925, SEN COMM. (N.J. 2012),
http://www.njleg.state.nj.us/2012/Bills/AL12/24_.PDF
- NM: N.M. STAT. ANN. § 62-16-5 (2007),
<http://www.nmprc.state.nm.us/utilities/renewable-energy-act/index.html>
 N.M. CODE R. § 17.9.572.17 (A) (2013), *available at:*
<http://164.64.110.239/nmac/parts/title17/17.009.0572.htm>
- NV: NEV. REV. STAT. § 704.7803 (2002),
<http://www.leg.state.nv.us/nrs/NRS-704.html#NRS704Sec7803>
 NEV. REV. STAT. § 704.7821 (4) (2002),
<http://www.leg.state.nv.us/nrs/NRS-704.html#NRS704Sec7821>
 NEV. ADMIN. CODE § 704.8875 (7) (2014),
<http://www.leg.state.nv.us/nac/NAC-704.html#NAC704Sec8875>
- NY: N.Y. PUB. SERV. ORDER, § 03-E-0188, (2006),
<http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={99B37D71-602B-47F1-8989-5729836A3809}>
- OH: OHIO ADMIN. CODE 4901:1-40-04 (D) (2009),
<http://codes.ohio.gov/oac/4901:1-40-04>
- OR: OHIO REV. CODE ANN. § 469A.070 (LexisNexis 2007),
https://www.oregonlegislature.gov/bills_laws/lawsstatutes/2013ors469A.html
- PA: 73 PA. CONS. STAT. § 1648.3 (e) (2) (2004),
 73 PA. CONS. STAT. § 1672-213-3 (e) (4) (i) (2004),
<http://www.legis.state.pa.us/cfdocs/legis/li/uconsCheck.cfm?yr=2004&sessInd=0&act=213>
- PR: P.R. LAWS ANN. tit. 1519 § 82 (2010), *available at:*
<http://www.oslpr.org/download/en/2010/A-0082-2010.pdf>

- RI: R.I. GEN. LAWS § 39-26-4 (2004),
<http://websvr.rilin.state.ri.us/Statutes/TITLE39/39-26/39-26-4.HTM>
- 90-60 R.I. CODE R. § 015 (7.2) (2007),
<http://sos.ri.gov/documents/archives/regdocs/released/pdf/PUC/4694.pdf>
- SD: S. D. CODIFIED LAWS § 49-34A-101 (2008),
 S. D. CODIFIED LAWS § 49-34A-106 (2008),
http://legis.sd.gov/Statutes/Codified_Laws/DisplayStatute.aspx?Statute=49-34A&Type=Statute
- TX: TEX. UTIL. CODE ANN. Â§ 39.904 (PURA) (b) (West 1999),
<http://www.statutes.legis.state.tx.us/Docs/UT/htm/UT.39.htm#39.904>
- UT: UTAH CODE ANN. § 10-19-201 (LexisNexis 2008),
<http://le.utah.gov/xcode/Title10/Chapter19/10-19-S201.html>
- VA: VA. CODE ANN. § 56-585.2 (2007),
<http://leg1.state.va.us/cgi-bin/legp504.exe?000+cod+56-585.2>
- WA: WASH. ADMIN. CODE § 194-37-120 (2) (2008),
<http://apps.leg.wa.gov/WAC/default.aspx?cite=194-37>
- WI: WIS. STAT. § 196.378 (2) (bm) (2001),
<http://docs.legis.wisconsin.gov/statutes/statutes/196/378/2/bm>
- WIS. ADMIN. CODE PSC § 118-04 (2007),
http://docs.legis.wisconsin.gov/code/admin_code/psc/118/04

⁷ Meaning, they either have capacity-based targets or generation-based targets where all generation in the state is counted toward the RPS.

⁸ Listing of state regulations to support that RECs represent “attributes” of generation (or similar):

- AZ: ARIZ. ADMIN. CODE § 14-2-1804 (E) (2007),
http://apps.azsos.gov/public_services/Title_14/14-02.pdf
 (Ariz. Admin. Code § 14-2-1804 (E) states that RECs are not whole if some of the environmental attributes are stripped. A definition of a REC including the term “attribute” is not in the law itself.)
- CA: CAL. PUB. UTIL. CODE § 399.12 (h) (2) (Deering 2003),
<http://www.leginfo.ca.gov/cgi-bin/displaycode?section=puc&group=00001-01000&file=399.11-399.32>
- CAL. PUB. UTIL. CODE § 04-06-014 (2) (Deering 2004)
- CO: 4 Colo. Code Regs. § 723-3 (3652) (y) (LexisNexis 2014)
<http://cdn.colorado.gov/cs/Satellite/DORA-PUC/CBON/DORA/1251631146828#tab3>
- DE: 26-3000-3008 DEL. ADMIN. CODE § 1.1 (2013)
<http://regulations.delaware.gov/AdminCode/title26/3000/3008.shtml#TopOfPage>
- IA: IOWA CODE § 476.44A (2003)
<http://coolice.legis.iowa.gov/Cool->

[ICE/default.asp?category=billinfo&service=IowaCode&ga=83&input=476.44A](http://www.legis.iowa.gov/legislation/bills/summary.cfm?code=83&number=476.44A)

- IL: 20 ILL. COMP. STAT. 3855/1-10 (2007),
<http://www.ilga.gov/legislation/ilcs/ilcs5.asp?ActID=2934&ChapAct=20%26nbsp%3BILCS%26nbsp%3B3855%2F&ChapterID=5&ChapterName=EXECUTIVE+BRANCH&ActName=Illinois+Power+Agency+Act>
- KS: KAN. ADMIN. REGS. § 82-16-1 (k) (2010),
http://www.kssos.org/pubs/register%5C2010%5CVol_29_No_44_November_4_2010_p_1577-1616.pdf
- MA: 225 MASS. CODE REGS. 14.02 (2010),
<http://www.mass.gov/eea/docs/doer/renewables/biomass/225-cmr-14-00-final-reg-doer-081712-clean-copy.pdf>
- MD: MD. CODE ANN., PUB. UTIL. COS. § 7-701 (n) (LexisNexis 2004),
<http://mgaleg.maryland.gov/webmgaleg/frmStatutesText.aspx?article=gpu§ion=7-701&ext=html&session=2015RS&tab=subject5>
- ME: ME. REV. STAT. tit. 35-A, § 3210 (8) (2000),
<http://www.mainelegislature.org/legis/statutes/35-A/title35-Asec3210.html>

65-407-311 ME. CODE R. § 2 (F) (LexisNexis 2007),
<http://www.maine.gov/sos/cec/rules/65/407/407c311.doc>
- MN: MINN. STAT. §216B. 1691 (2007), *available at*:
<https://www.edockets.state.mn.us/EFiling/edockets/searchDocuments.do?method=showPoup&documentId=%7B9BC0C548-1B8D-4FAF-B96F-F97BA88B0ABB%7D&documentTitle=4872137>
(Describes how Minnesota uses MRET's definition of RECs, which specifies that the RECs must remain "whole".)
- MT: MONT. CODE ANN. § 69-3-2003 (14) (2005),
<http://leg.mt.gov/bills/mca/69/3/69-3-2003.htm>
- ND: N.D. ADMIN. CODE 69-09-08-02 (8) (2011),
<http://www.legis.nd.gov/information/acdata/pdf/69-09-08.pdf?20150409160640>
- NJ: N.J. ADMIN. CODE § 14:8-2.2 (LexisNexis 2015), *available at*:
<http://www.lexisnexis.com/hottopics/njcode/>

S.B. 1925, 2012 LEG. REG. SESS. (N.J. 2012),
http://www.njleg.state.nj.us/2012/Bills/AL12/24_.PDF
- NM: N.M. STAT. ANN. § 62-16-3 (F) (2007),
<http://public.nmcompcomm.us/nmpublic/gateway.dll/?f=templates&fn=default.htm>

N. M. CODE R. § 17.9.572.7 (E) (LexisNexis 2013),
<http://164.64.110.239/nmac/parts/title17/17.009.0572.htm>
- NY: N.Y. PUB. SERV. LAW § 03-E-0188 (2006),
<http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={99B37D71-602B-47F1-8989-5729836A3809}>
- OH: OHIO ADMIN. CODE 4901:1-40-01 (BB) (2009),

<http://codes.ohio.gov/oac/4901%3A1-40>

- OR: OR. ADMIN. R. 330-160-0015 (15) (2008),
http://arcweb.sos.state.or.us/pages/rules/oars_300/oar_330/330_160.html
("Representation of the environmental, economic, and social benefits.")
- PR: P.R. LAWS ANN. tit. 1519 § 82 (2010),
<http://www.oslpr.org/download/en/2010/A-0082-2010.pdf>
- RI: R.I. GEN. LAWS § 39-26-2 (10) (12) (2004),
<http://webserver.rilin.state.ri.us/Statutes/TITLE39/39-26/39-26-2.HTM>
- TX: 16 TEX. ADMIN. CODE tit. 16, § 25.5 (108) (2014),
[http://texreg.sos.state.tx.us/public/readtac\\$ext.TacPage?sl=T&app=9&p_dir=F&p_rloc=153710&p_tloc=29622&p_ploc=14913&pg=16&p_tac=&ti=16&pt=2&ch=24&rl=142](http://texreg.sos.state.tx.us/public/readtac$ext.TacPage?sl=T&app=9&p_dir=F&p_rloc=153710&p_tloc=29622&p_ploc=14913&pg=16&p_tac=&ti=16&pt=2&ch=24&rl=142)
- UT: UTAH CODE ANN. § 10-19-102 (4) (LexisNexis 2008),
<http://le.utah.gov/xcode/Title10/Chapter19/10-19-S102.html>
("Attributes" are only explicitly included in the definition for "bundled" energy certificates.)
- VT: VT. STAT. ANN. tit. 30, § 8002 (22), (6) (2013),
<http://legislature.vermont.gov/statutes/section/30/089/08002>
- WA: WASH. ADMIN. CODE § 480-109-007 (2007),
<http://app.leg.wa.gov/WAC/default.aspx?cite=480-109-007>

⁹ Listing of state regulations to support that RECS are mechanisms for "tracking" or "trading" (or equivalent) electricity or attributes:

- AZ: ARIZ. ADMIN. CODE. § 14-2-1801 (N), 1803 (C) (2007),
http://apps.azsos.gov/public_services/Title_14/14-02.pdf
- CA: CAL. PUB. UTIL. CODE § 399.25 (c) (Deering 2003),
<http://www.leginfo.ca.gov/cgi-bin/displaycode?section=puc&group=00001-01000&file=399.11-399.32>
- CT: 283 CONN. GEN. STAT. § 16-245a (b) (1998),
<http://www.cga.ct.gov/2011/pub/chap283.htm#Sec16-245a.htm>
- DC: D.C. MUN. REGS. tit. 16738, § 2903.1 (2012),
http://www.dcpsc.org/pdf_files/commorders/orderpdf/orderno_16738_FC945.pdf
- DE: 26-3000-3008 DEL. CODE REGS. § 1.0 (LexisNexis 2013),
<http://regulations.delaware.gov/AdminCode/title26/3000/3008.shtml#TopOfPage>
- IA: IOWA CODE § 476.44A (2003), *available at*: <http://coolice.legis.iowa.gov/Cool-ICE/default.asp?category=billinfo&service=IowaCode&ga=83&input=476.44A>
- IOWA UTIL. CODE § AEP-07-1 (2007)
https://iub.iowa.gov/files/archive/orders/2007/1121_aep071.pdf

- IL: 20 ILL. COMP. STAT. 3855/1-10 (2007),
<http://www.ilga.gov/legislation/ilcs/ilcs5.asp?ActID=2934&ChapAct=20%26nbsp%3BILCS%26nbsp%3B3855%2F&ChapterID=5&ChapterName=EXECUTIVE+BRANCH&ActName=Illinois+Power+Agency+Act>
- IN: IND. CODE § 8-1-37-3 (2011),
<https://iga.in.gov/documents/8850f79f>
- KS: KAN. ADMIN. REGS. § 82-16-6 (d) (2010),
http://www.kssos.org/pubs/register%5C2010%5CVol_29_No_44_November_4_2010_p_1577-1616.pdf
- ME: ME. REV. STAT. tit. 35-A § 3210-C (2) (B-2) (2006),
<http://www.mainelegislature.org/legis/statutes/35-A/title35-Asec3210.html>
- MI: MICH. COMP. LAWS § 460.1041 (1) (2008),
[http://www.legislature.mi.gov/\(S\(h24m2tk1wgbvelfvc5dmx0cp\)\)/mileg.aspx?page=getObject&objectName=mcl-460-1041](http://www.legislature.mi.gov/(S(h24m2tk1wgbvelfvc5dmx0cp))/mileg.aspx?page=getObject&objectName=mcl-460-1041)
- MN: MINN. STAT. § 216B.1691 (4) (2007),
<https://www.revisor.mn.gov/statutes/?id=216b.1691#stat.216B.1691.4>
- MO: MO. CODE REGS. ANN. tit 4, § 240-20.100 (1) (J) (2010),
<http://www.sos.mo.gov/adrules/csr/current/4csr/4c240-20.pdf>
- MT: MONT. CODE ANN. § 69-3-2003 (14) (2005),
http://leg.mt.gov/bills/mca_toc/69_3_20.htm
- NC: N.C. GEN. STAT. § 62-133.8 (a) (6), (i) (7) (2008),
http://www.ncga.state.nc.us/EnactedLegislation/Statutes/HTML/BySection/Chapter_62/GS_62-133.8.html
- ND: N.D. CENT. CODE § 49-02-24 (2007),
<http://www.legis.nd.gov/cencode/t49c02.pdf?20150409160556>
- PA: 52 PA. CODE § 75.1 (2009),
http://www.pacode.com/secure/data/052/chapter75/052_0075.pdf
- PR: P.R. LAWS ANN. tit. 1519 § 82 (2010),
<http://www.oslpr.org/download/en/2010/A-0082-2010.pdf>
- SD: S.D. CODIFIED LAWS § 49-34A-96, 102 (2008),
http://legis.sd.gov/Statutes/Codified_Laws/DisplayStatute.aspx?Type=Statute&Statute=49-34A-96
- TX: TEX. UTIL. CODE. ANN. § 25.173(c) (15), (d) (2000),
<http://www.puc.texas.gov/agency/rulesnlaws/subrules/electric/25.173/25.173.pdf>
- UT: UTAH CODE ANN. § 10-19-102 (4) (12) (LexisNexis 2008),
<http://le.utah.gov/xcode/Title10/Chapter19/10-19-S102.html>
- VT: VT. STAT. ANN. tit. 30, § 8002 (22) (2013),
<http://legislature.vermont.gov/statutes/section/30/089/08002>
- WA: WASH. ADMIN. CODE § 480-109-007 (2007),
<http://app.leg.wa.gov/WAC/default.aspx?cite=480-109-007>

WI: WIS. ADMIN. CODE P.S.C. § 118.02 (7r) (c) (2007),
http://docs.legis.wisconsin.gov/code/admin_code/psc/118/02/7r/c

¹⁰ Listing of state regulations to support that RECs represent electricity or energy “generation” (or equivalent):

CA: CAL. PUB. UTIL. CODE § 399.12 (h) (1) (Deering 2003),
<http://www.leginfo.ca.gov/cgi-bin/displaycode?section=puc&group=00001-01000&file=399.11-399.32>

DC: D.C. MUN. REGS. tit. 16738, § 2999.1 (2012),
http://www.dcpsc.org/pdf_files/commorders/orderpdf/orderno_16738_FC945.pdf

DE: 26-3000-3008 DEL. CODE REGS. § 1.1 (2013),
<http://regulations.delaware.gov/AdminCode/title26/3000/3008.shtml#TopOfPage>

IN: IND. CODE § 8-1-37-3 (2011),
<https://iga.in.gov/documents/8850f79f>

KS: KAN. STAT. ANN. § 66-1257 (e) (2009),
http://www.kslegislature.org/li/b2015_16/statute/066_000_0000_chapter/066_012_0000_article/066_012_0057_section/066_012_0057_k/

ME: ME. REV. STAT. tit. 35, § 3210-C (B-2) (2006),
<http://www.mainelegislature.org/legis/statutes/35-A/title35-Asec3210.html>

MI: MICH. COMP. LAWS § 460.1011 (d) (2008),
[http://www.legislature.mi.gov/\(S\(ylkrq5o10thudmo0ik3ha25y\)\)/mileg.aspx?page=getObject&objectName=mcl-460-1011](http://www.legislature.mi.gov/(S(ylkrq5o10thudmo0ik3ha25y))/mileg.aspx?page=getObject&objectName=mcl-460-1011)

MN: MINN. STAT. § 216B.1691 (4) (2007),
<https://www.revisor.mn.gov/statutes/?id=216b.1691#stat.216B.1691.4>

NC: N.C. GEN. STAT. § 62-133.8 (a) (6) (2008),
http://www.ncga.state.nc.us/EnactedLegislation/Statutes/HTML/BySection/Chapter_62/GS_62-133.8.html

ND: N.D. ADMIN CODE 69-09-08-02 (5) (2011),
<http://www.legis.nd.gov/information/acdata/pdf/69-09-08.pdf?20150409160640>

NH: N.H. REV. STAT. ANN. § 34:362-F:2 (III) (2007),
<http://www.gencourt.state.nh.us/rsa/html/NHTOC/NHTOC-XXXIV-362-F.htm>

NV: NEV. ADMIN. CODE § 704.8908 (1997),
<http://www.leg.state.nv.us/nac/NAC-704.html#NAC704Sec8908>

PA: 73 PA. CONS. STAT. § 1648.3 (e) (2) (2004) /1672 Pa. Legs. § 213, 3 (e)(4)(ii) (2004),
<http://www.legis.state.pa.us/cfdocs/legis/li/uconsCheck.cfm?yr=2004&sessInd=0&act=213>

PR: P.R. LAWS ANN. tit. 1519 § 82 (2010),
<http://www.oslpr.org/download/en/2010/A-0082-2010.pdf>

TX: TEX. UTIL. CODE ANN. § 25.173(c) (13) (2000),
<http://www.puc.texas.gov/agency/ruleslaws/subrules/electric/25.173/25.173.pdf>

WI: WIS. ADMIN. CODE P.S.C. § 118-02 (2007),
http://docs.legis.wisconsin.gov/code/admin_code/psc/118/02/7r

¹¹ Listing of state regulations that support that RECs are “proof of generation” (or equivalent):

CA: CAL. PUB. UTIL. CODE § 399.12 (h) (1) (2003),
<http://www.leginfo.ca.gov/cgi-bin/displaycode?section=puc&group=00001-01000&file=399.11-399.32>

MO: MO. CODE REGS. ANN. tit. 4 § 240-20.100 (1) (J) (2010),
<http://www.sos.mo.gov/adrules/csr/current/4csr/4c240-20.pdf>

MT: MONT. CODE ANN. § 69-3-2003 (14) (2005),
<http://leg.mt.gov/bills/mca/69/3/69-3-2003.htm>

VA: VA. CODE ANN. § 56-585.2 (2007),
<http://leg1.state.va.us/cgi-bin/legp504.exe?000+cod+56-585.2>

WA: WASH. ADMIN. CODE § 480-109-007 (17) (2007),
<http://apps.leg.wa.gov/WAC/default.aspx?cite=480-109>

¹² Listing of state regulations to support that RECs are “property:”

PA: 52 PA. CODE § 75.1 (2009),
http://www.pacode.com/secure/data/052/chapter75/052_0075.pdf

PR: P.R. LAWS ANN. tit. 1519 § 82 (2010),
<http://www.oslpr.org/download/en/2010/A-0082-2010.pdf>

VT: VT. STAT. ANN. tit. 30 § 8002 (22) (B) (2013),
<http://legislature.vermont.gov/statutes/section/30/089/08002>

¹³ IOWA UTIL. BD. AEP-07-1 (2007), available at: https://iub.iowa.gov/files/archive/orders/2007/1121_aep071.pdf
(Order Approving Facilities and Associated Capacities, Adopting Requirements for M-RETS Participation, and Requiring Report; *In Re: Interstate Power & Light Co. & Midamerican Energy Co.* AEP-07-1, 2007 [Nov. 21, 2007])

¹⁴ N.Y. PUB. SERV. COMM’N. CASE 03-E-0188 (2006), available at:
<http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={99B37D71-602B-47F1-8989-5729836A3809}> (Order regarding Retail Renewable Portfolio Standard. Recognizing Environmental Attributes and Allowing Participation of Projects with Physical Bilateral Contracts, Issued and Effective June 28, 2006)

¹⁵ List of tracking systems that define certificates explicitly as “attributes” of renewable generation:

ERCOT: ERCOT. 2005. *Glossary - R*. Electric Reliability Council of Texas, Inc. <http://www.ercot.com/glossary/r>

M-RETS: MRETS. 2014. *Midwest Renewable Energy Tracking System Operating Procedures*.

Midwest Renewable Energy Tracking System, Inc. p. 78, 83 <http://www.mrets.org/wp-content/uploads/sites/8/2014/03/Operating-Procedures-09-09-14.pdf>

NAR: NAR 2013, p. vii http://www.narecs.com/wp-content/uploads/sites/2/2013/10/NAR-Operating-Procedures_April_2013.pdf

NEPOOL-GIS: NEPOOL-GIS 2015, Appendix 1.1 p. 1 http://www.nepoolgis.com/wp-content/uploads/sites/3/2015/01/GIS-Operating-Rules-effective-1_1_15.doc

NYGATS: NYSERDA. 2015. RFP 3014: New York State Generation Attribute Tracking System (NYGATS). p. 3 <http://www.nysersda.ny.gov/-/media/Files/FO/Current%20Funding%20Opportunities/RFP%203014/3014Summary.pdf>.

(No NYGATS Operating Rules exist at publication date. As of February 2015, NYSERDA has released the RFP for NYGATS in order to obtain a qualified contractor to design and implement the system.)

PJM-GATS: PJM-GATS. 2014. *Generation Attribute Tracking System (GATS) Operating Rules*. p.4 <http://www.pjm-eis.com/~media/pjm-eis/documents/gats-operating-rules.ashx>

WREGIS: WREGIS 2013. *WREGIS Operating Rules*. Western Electricity Coordinating Council at 2 <http://www.wecc.biz/Corporate/WREGIS%20Operating%20Rules%20072013%20Final.pdf>

¹⁶ List of tracking systems that define their instruments as the mechanisms for “tracking” or “trading” (or equivalent) attributes or proof of generation for the purposes of compliance with state programs and/or voluntary programs:

ERCOT: ERCOT. 2005. *Glossary - R*. Electric Reliability Council of Texas, Inc.

<http://www.ercot.com/glossary/r>

ERCOT. 2005. *Renewable Energy Credit*. Electric Reliability Council of Texas, Inc.

<http://www.ercot.com/services/programs/rec/>

M-RETS: MRETS. 2014. *Midwest Renewable Energy Tracking System Operating Procedures*. Midwest Renewable Energy Tracking System, Inc. p. 6, 15 <http://www.mrets.org/wp-content/uploads/sites/8/2014/03/Operating-Procedures-09-09-14.pdf>

MIRECS: MIRECS 2012 <http://www.mirecs.org/wp-content/uploads/sites/4/2014/02/MIRECS-Operating-Procedures-111312.pdf>

NAR: NAR 2014, p. 1 http://www.narecs.com/wp-content/uploads/sites/2/2013/10/NAR-Operating-Procedures_April_2013.pdf

NEPOOL-GIS: NEPOOL-GIS 2015, A1.1 p. 3–4 http://www.nepoolgis.com/wp-content/uploads/sites/3/2015/01/GIS-Operating-Rules-effective-1_1_15.doc

NC-RETS: NCRETS 2011, p. iii, 1 <http://www.ncrets.org/wp-content/uploads/sites/7/2014/03/NC-RETS-Operating-Procedures.docx>

NYGATS: NYSERDA. 2015. RFP 3014: New York State Generation Attribute Tracking System (NYGATS). p. 3 <http://www.nysenda.ny.gov/-/media/Files/FO/Current%20Funding%20Opportunities/RFP%203014/3014Summary.pdf>.

(No NYGATS Operating Rules exist at publication date. As of February 2015, NYSERDA has released the RFP for NYGATS in order to obtain a qualified contractor to design and implement the system.)

PJM-GATS: PJM-GATS. 2014. *Generation Attribute Tracking System (GATS) Operating Rules*. p. 13, 38 <http://www.pjm-eis.com/~media/pjm-eis/documents/gats-operating-rules.ashx>

WREGIS: WREGIS 2013. *WREGIS Operating Rules*. Western Electricity Coordinating Council. p. 16–20 <https://www.wecc.biz/Corporate/WREGIS%20Operating%20Rules%20072013%20Final.pdf>

¹⁷ *Federal Energy Guidelines: FERC Reports (FERC) Am. Ref-Fuel Co., Covanta Energy Grp., Montanay Power Corp., & Wheelabrator Technologies Inc.*, 105 FERC ¶ 61004 (Oct. 1, 2003), available at: http://www.cfcae.org/sites/default/files/federal/FERC_Order_on_REC.pdf

¹⁸ *Federal Energy Guidelines: FERC Reports (FERC) Am. Ref-Fuel Co., Covanta Energy Grp., Montanay Power Corp., & Wheelabrator Technologies, Inc.*, 107 FERC ¶ 61016 (Apr. 15, 2004) available at: <http://www.ferc.gov/whats-new/comm-meet/041404/E-28.pdf>

¹⁹ *Id* at 4.

²⁰ *Id* at 6.

²¹ *Id* at 6.

²² *Exec. Order No. 13,423*. Prepared by U.S. Department of Energy Office of Energy Efficiency and Renewable Energy, Federal Energy Management Program (FEMP). January 28, 2008. Section 2.2.12. Pg.4. http://www1.eere.energy.gov/femp/pdfs/epact05_fedrenewenergyguid.pdf.

²³ *Id* at 8.

²⁴ The White House, Council on Environmental Quality (CEQ) *Federal Greenhouse Gas Accounting and Reporting Guidance* Rev. 1 (June 2012), available at: http://www.whitehouse.gov/sites/default/files/microsites/ceq/revised_federal_greenhouse_gas_accounting_and_reporting_guidance_060412.pdf.

²⁵ *In re Ownership of Renewable Energy Certificates ("RECs")*, 389 N.J. Super. 481, 913 A.2d 825 (App. Div. 2007), <http://law.justia.com/cases/new-jersey/appellate-division-published/2007/a5191-04-opn.html>.

²⁶ See *Wheelabrator Lisbon, Inc. v. Connecticut Dep't of Pub. Util. Control*, No. CV054003405, 2006 WL 894895 (Conn. Super. Ct. Mar. 20, 2006) aff'd sub nom. *Wheelabrator Lisbon, Inc. v. Dep't of Pub. Util. Control*, 283 Conn. 672, 931 A.2d 159 (2007)

²⁷ See *Wheelabrator Lisbon, Inc. v. Dep't of Pub. Util. Control*, 283 Conn. 672, 931 A.2d 159 (2007)

²⁸ *Honeywell Int'l Inc. v. ICM Controls Corp.*, No. 11-CV-569 JNE/TNL, 2013 WL 6169671 (D. Minn. Nov. 22, 2013) (Opinion by Administrative Judge Melnick on the Government's Motion for Partial Dismissal and the Parties' Cross-motions for Partial Summary Judgment), <http://www.pubklaw.com/rd/boards/asbca57779.pdf>.

²⁹ *Id* at 8.

³⁰ *Id* at 8.

³¹ *Id* at 8.

³² *Guide to Purchasing Green Power: Renewable Electricity, Renewable Energy Certificates, and On-Site Renewable Generation* (March 2010), available at: http://www.epa.gov/greenpower/documents/purchasing_guide_for_web.pdf.

Quick Guide: Renewable Energy Certificates (RECs), (2011), available at: <http://www.nrel.gov/docs/fy11osti/52105.pdf>.

³³ Western Area Power Administration, *Request for Proposals Regarding the Purchase of Renewable Energy Certificates* (July 25, 2012), available at: <http://ww2.wapa.gov/sites/western/renewables/pmtags/Documents/RECRFP072512.pdf>.

³⁴ Environmental Markets Association, *Glossary of Terms: Renewable Energy Credits* (Last visited June 10, 2015) available at: <http://www.emahq.org/news-resources/glossary-terms>

³⁵ American Bar Association, et al., *Master Renewable Energy Certificate Purchase and Sale Agreement 1.0* at iv (2007), available at: <http://apps.americanbar.org/enviro/committees/renewableenergy/RECMasterContract.pdf>.

³⁶ FTC Guides For the Use of Environmental Marketing Claims 16 C.F.R. § 260.15 (2015), available at: <https://www.ftc.gov/enforcement/rules/rulemaking-regulatory-reform-proceedings/guides-use-environmental-marketing-claims>

³⁷ Commodity Futures Trading Commission, *Further Definition of "Swap," "Security-Based Swap," and "Security-Based Swap Agreement"; Mixed Swaps; Security-Based Swap Agreement Recordkeeping*, RIN 3038-AD46, 97-98 (July 2012).

³⁸ See Barkalow, Gina, Theresa Daniels, Lorraine Gonzalez. 2010. *Renewables Portfolio Standard 2006 Procurement Verification Draft Staff Report*. California Energy Commission. CEC-300-2009-006-SD, available at: <http://www.energy.ca.gov/2009publications/CEC-300-2009-006/CEC-300-2009-006-SD.PDF>.

³⁹ Federal Trade Commission *Federal Proposed Revisions to the Green Guides*, 152 (Oct. 2010). available at: <http://www.gpo.gov/fdsys/pkg/FR-2010-10-15/html/2010-25000.htm> (last visited June 10, 2015, 4:43 PM)

⁴⁰ See EPA's Green Power Partnership, *Renewable Energy Certificates* (2008), http://www.epa.gov/greenpower/documents/gpp_basics-recs.pdf.

⁴¹ “Full aggregation” means that individual attributes contained in the REC have not been sold, counted, or claimed separately and that the REC contains all legally-available attributes of renewable electricity.

⁴² See Ed Holt & Ryan Wiser, *The Treatment of Renewable Energy Certificates, Emissions Allowances and Green Power Programs in State Renewable Portfolio Standards* Lawrence Berkeley National Laboratory (2007), <http://www.cesa.org/assets/Uploads/Treatment-RECs-LBNL2007.pdf>.