CRS center for resource solutions

May 9, 2016

Derek Moore
U.S. Federal Trade Commission (FTC)
Office of the Secretary
600 Pennsylvania Avenue N.W.
Suite CC-5610 (Annex B)
Washington, DC 20580

RE: Solar Electricity Project No. P161200. Comments of Center for Resource Solutions (CRS) for consideration at the Federal Trade Commission's "Something New Under the Sun: Competition and Consumer Protection Issues in Solar Power" Workshop

Dear Mr. Moore:

Thank you for the opportunity to submit comments on the topics to be covered at the "Something New Under the Sun: Competition and Consumer Protection Issues in Solar Power" Workshop. Our comments focus specifically on the consumer protection issues to be covered.

Background on CRS

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 market design, renewable energy standard development and verification, electricity product disclosures and consumer protection, and greenhouse gas reporting and accounting.

CRS created the Green-e® certification program to provide consumer protection in the voluntary renewable energy market nearly 20 years ago. Green-e Energy is the leading certification program for voluntary renewable electricity products in North America, certifying the majority of the voluntary renewable energy market in the U.S. and Canada. In 2014, Green-e Energy certified retail sales of 38 million megawatt-hours (MWh), representing over 1% of the total U.S. electricity mix, or enough to power nearly a third of U.S. households for a month. In 2014, there were over 836,000 retail purchasers of Green-e certified renewable energy, including 50,000 businesses. 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.

Through Green-e, CRS has developed, with stakeholder input, standardized customer disclosures and requirements for marketing and advertising around renewable energy products, customized for both residential and commercial customers. CRS also has a long history of working with state and federal agencies to design and implement consumer protection policies that ensure accurate marketing and disclosure that avoids double counting of individual resources towards multiple end uses.

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For more than a decade, CRS's broader policy work has focused on renewable energy market interactions, proper renewable energy and GHG accounting, interstate REC and renewable energy tracking, and accurate public disclosures. CRS engages directly with and provides written comments to lawmakers, regulators, trade associations, policy organizations, state public utility commissions, and government agencies. CRS is also active in dozens of public processes and interactions with other sustainability organizations and government agencies to promote transparency and integrity in the voluntary carbon market, best practices for RECs and renewable energy claims, policy developments, and other best practices and policy recommendations to support the continued development of robust renewable energy markets.

General Comments

Attached to this letter please find a selection of materials developed by CRS to educate and inform solar consumers, suppliers, and other interested parties on the functionality and machinery of renewable energy markets in the U.S. and accounting and verification in these markets as it pertains to consumer claims and benefits, disclosures to consumers, and marketing claims by solar companies in order to achieve truth in advertising and avoid deceptive or misleading practices. These materials are specifically related to the consumer protection issues that will be covered at the Workshop.

Responses to Questions Included in the Workshop Notice

In addition, we have provided short responses to certain questions included in the Workshop Notice related to consumer protection below.

<u>What information is most important to consumers' decisions to install rooftop solar?</u>
Among the information that is important to a consumer's decision to install rooftop solar is information about the environmental benefits and claims associated with the solar facility and generation at the facility. Solar customers will have certain expectations about the non-financial value of their solar projects and they may face risk related to this value that may affect their investment decision. In particular, where the customer does not own the renewable energy certificates (RECs) associated with generation at the facility or where state policy or certain state programs affect the value or allocation of generation attributes, the solar customer faces risk with respect to the non-financial value of their investment. RECs are the legal, contractual instrument that convey the property rights to the attributes of renewable generation and they are essential for all consumption and delivery claims, as well as claims about the emissions associated with electricity consumption. Solar customers require information about:

- What RECs are;
- Who owns the RECs associated with the generation at the facility;
- What REC ownership means in terms of their ability to make claims about consumption of solar power and their carbon footprint;
- What claims they and others can make about generation at the facility;
- Whether existing greenhouse gas emissions regulations for the power sector affect the emissions reductions benefits of solar power generation and what, if any, mechanisms (such as the Voluntary Renewable Energy Set-aside available in the Regional Greenhouse Gas Initiative

[RGGI] states[1] and California[2]) are available to support the emissions benefits on behalf of solar users; and
- How the facility and generation will fit in/be used in the existing policy landscape.

What gaps are there in information for consumers and businesses that are considering rooftop solar?
The information about RECs, environmental benefits and claims listed above is not always provided by solar developer, installer, or marketing companies, nor is it often required as a part of standard solar terms and conditions by the state or local jurisdiction. In other cases, only limited information about REC ownership is provided without sufficient explanation to inform consumer decision making (for example, perhaps only a short statement about REC ownership is provided without any other explanation). CRS has anecdotal evidence to suggest that, in still other cases, information about the role of RECs with respect to claims and environmental benefits is inaccurate, incomplete, or contradicts other more prominent marketing claims.

Certain industry associations and consumer protection groups have made recommendations about what information should be provided as a part of contracts for solar and some provide template information.[3] These and other groups have also provided or presented this information in various forms, but this is not necessarily delivered to individual customers at the appropriate time during the transaction process.

Green-e has developed standardized customer disclosures for renewable energy purchasers, including onsite solar customers, that are required for all Green-e certified products and direct transactions.[4]

Is it standard practice for solar DG firms to retain renewable energy credits (RECs) when selling or leasing solar PV panels to consumers? Do solar DG firms make disclosures to consumers concerning the sale of RECs on a secondary market? Is information about RECs material to a consumer's decision to install rooftop solar?
First, information about RECs is absolutely material to a consumer's decision to install rooftop solar, as described above, since REC ownership will determine much of the non-financial value that they derive from the project, including their ability to claim use of solar power and any carbon footprint reductions associated with the use of solar power. This is the difference between being able to say that they are using solar power (or have "gone solar," a popular marketing claim) and that they are simply generating or producing solar power on behalf of others. REC ownership also determines the impact of their purchase of solar power relative to existing state or other policies/programs. Where RECs are used to meet the state's renewable energy mandate, then the facility is helping subsidize compliance by the local utility and helping meet the state's goals to provide solar power to electricity customers, but that may not be in line with the expectations of the consumer if they expect that their facility will be above and beyond (incremental to) what is required by law.

[1] See Section XX-5.3(d) of the RGGI Model Rule, 12/31/08 final with corrections.
[2] See title 17, CCR, section 95841.1.
[3] For example, The Solar Energy Industries Association (SEIA) *Solar Business Code* (2015), Sec. 5.11-5.15, contains information about RECs and describes REC ownership is a Material Term in a solar contract, regardless of ownership structure (e.g., purchase, lease, power purchase agreement). See: https://www.seia.org/sites/default/files/SEIA%20Solar%20Business%20Code_Sep2015.pdf.
[4] Green-e's required customer disclosures can be found in the Green-e Energy Code of Conduct: http://www.green-e.org/docs/energy/Green-e%20Energy%20Code%20of%20Conduct.docx.

Second, whether RECs are typically retained/owned by solar customers varies by location, market, supplier, and consumer preference. Where REC prices are high (or anticipated to be high in the future) due to a supply-constrained state compliance market (e.g. the mid-Atlantic states), our understanding is that RECs are typically retained by the solar developer or otherwise sold to compliance entities. Certain solar suppliers will also retain the RECs, especially in residential lease and power purchase agreement (PPA) deals, as a matter of standard business practice.

Third, again, while certain industry associations and other groups have recommended that disclosures to customers include information about RECs, particularly where RECs are sold off or not retained by the customer. CRS has anecdotal evidence, from both our Green-e activities and conversations with solar customers, that education about RECs is not well adopted. It is not clear to us whether and how most solar companies follow these recommendations.

<u>What types of disclosures are solar DG marketers or others providing to consumers? Are marketers using a standard format for such disclosures? Have standard disclosures to consumers been developed by solar DG firms or others? If so, are there any additional disclosures that would be useful to consumers?</u>

Green-e has developed standardized customer disclosures for renewable energy purchasers, including onsite solar customers, that are required for all Green-e certified products and direct transactions.[5] Again, for non-Green-e certified products and transactions, additional disclosures around the following would be useful to solar consumers:

- What RECs are;
- Who owns the RECs associated with the generation at the facility;
- What REC ownership means in terms of their ability to make claims about consumption of solar power and their carbon footprint;
- What claims they and others can make about generation at the facility;
- Whether existing greenhouse gas emissions regulations for the power sector affect the emissions reductions benefits of solar power generation and what, if any, mechanisms are available to lower emissions on behalf of solar users; and
- How the facility and generation will fit in/be used in the existing policy landscape.

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

[5] Green-e's required customer disclosures can be found in the Green-e Energy Code of Conduct: http://www.green-e.org/docs/energy/Green-e%20Energy%20Code%20of%20Conduct.docx. Also see Green-e Small Generator Attestation for disclosure for solar customers selling their RECs, located here: http://www.green-e.org/docs/energy/verif/GreenE_SmallGeneratorAttestationMar09.doc.

CC:

- John Seesel, Associate General Counsel for Energy, Office of the General Counsel

Attachments:

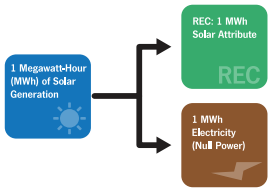
- REC Best Practices and Claims. (2014). Center for Resource Solutions.
- Solar Claims Handout. (2015). Center for Resource Solutions.
- Guidelines for Renewable Energy Claims. (2015). Center for Resource Solutions.
- Best Practices in Public Claims for Green Power Purchases and Sales. (2010). Center for Resource Solutions.
- Best Practices in Public Claims for Solar Photovoltaic Systems. (2010). Center for Resource Solutions.
- Explanation of Green-e Energy Double-Claims Policy. (2014). Center for Resource Solutions.
- The Legal Basis for Renewable Energy Certificates. (2015). Center for Resource Solutions.

-- ATTACHMENTS --

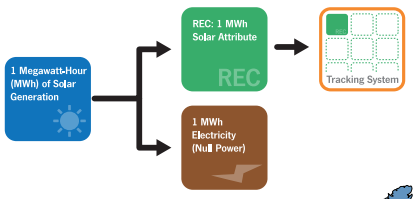
REC Best Practices and Claims

For every megawatt-hour of clean, renewable electricity generation, a renewable energy certificate (REC) is created. A REC embodies all of the environmental attributes of the generation and can be tracked and traded separately from the underlying electricity.

How RECs Work

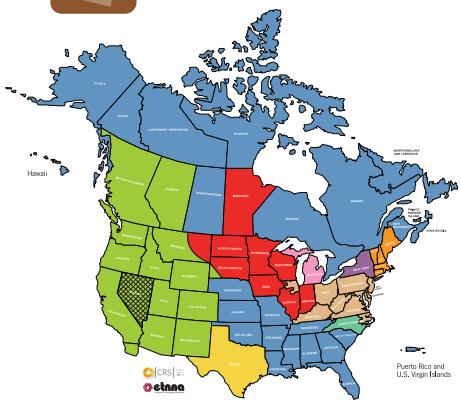


Electronic tracking systems are a useful tool for tracking ownership of RECs:



Renewable Energy Certificate Tracking Systems in North America

- **ERCOT**: Electric Reliability Council of Texas
- **MIRECS**: Michigan Renewable Energy Certification System
- **M-RETS**: The Midwest Renewable Energy Tracking System
- **NAR**: North American Renewables Registry
- **NC-RETS**: North Carolina Renewable Energy Tracking System
- **NEPOOL-GIS**: New England Power Pool Generation Information System
- **NVTREC**: Nevada Tracks Renewable Energy Credits
- **NYGATS**: New York Generation Attribute Tracking System (in development)
- **PJM-GATS**: PJM's Generation Attribute Tracking System
- **WREGIS**: WECC's Western Renewable Energy Generation Information System



Example Claims for a Solar Panel Owner or Leaseholder

Example 1

Keeps and retires RECs and is the only party to make claims about using the renewable energy.
Claim: *"We use renewable energy."*

Example 2

Does not own the RECs and makes public claims about using renewable energy.
Claim: *"We use solar power."*

DOUBLE CLAIM

Example 3

Keeps the RECs but a third party (such as a utility) makes a public claim about delivering the renewable energy to other customers, such as through a renewable portfolio standard.
Utility Claim: *"All solar installations in our territory contribute to our state requirements to deliver renewable energy to consumers."*

DOUBLE CLAIM

Example 4

Does not own the RECs but makes clear, accurate, and prominent statements about who owns the RECs.
Claim: *"We host a solar PV system, and sell the renewable energy to other parties."*

REC Best Practices

1. Be clear in your contracts and power purchase agreements: who owns the RECs? Be specific and accurate about REC ownership and renewable energy claims
2. If you are making a claim about using renewable energy, make sure you own and retire the RECs
3. Use electronic REC tracking systems if possible
4. Educate owners of solar panels about what types of claims they can make, whether they are keeping the RECs or selling them to another party
5. If you don't own the RECs, don't make public claims about using renewable energy
6. Get your sales and/or claims independently certified

CRS center for resource solutions

Learn more at green-e.org/learn

Green-e

SREC + ELECTRICITY = RENEWABLE ENERGY

Protect your clients and grow the market—use best practices when making renewable energy claims. **Renewable Energy Certificates are required to make renewable energy claims.**

SRECs (also known as RECs) Are Required for All Uses of Solar Energy

For every MWh of solar energy generation, a renewable energy certificate (REC) is created. A REC embodies all of the environmental attributes of the generation and can be tracked and traded separately from the underlying electricity.

The Federal Trade Commission Is Cracking Down

"If a marketer generates renewable electricity but sells [RECs]...for all of that electricity, it would be deceptive for the marketer to represent...that it uses renewable energy."

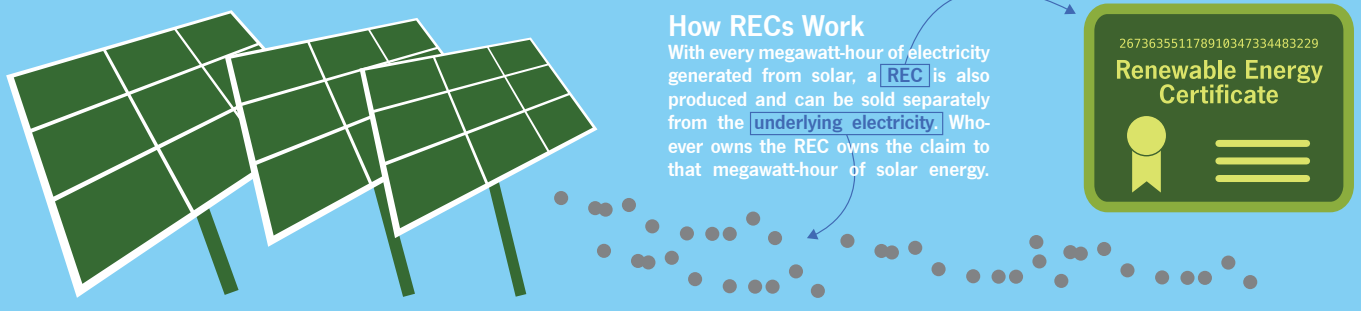
"If a business, including a home business, has solar panels and sells away all the RECs, it loses the right to tell customers it's using renewable energy."

"...using the term 'hosting' is deceptive when a marketer generates renewable power but has sold all of the renewable attributes of that power."

35 U.S. STATES AND TERRITORIES RECOGNIZE THE SUPREMACY OF RECs TO DEMONSTRATE COMPLIANCE OF REGULATED ENTITIES WITH STATE LAWS.

Double claims on RECs harm the renewable energy market

When two parties think they own the same MWh of renewable energy, this is a double claim on a single REC. Prevent double claims using REC tracking systems and Green-e certification to establish clear ownership of RECs and validate renewable energy claims.



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Green-e

Brought to you by Center for Resource Solutions and Green-e. Learn more about RECs and claims at **www.green-e.org/learn**.

Green-e is a program of the nonprofit Center for Resource Solutions. The third-party certification program works with **utilities, energy suppliers, REC sellers, communities, generators and project owners** that want to provide renewable energy that meets independent consumer-protection and certification standards.

Renewable Energy Certificate (REC) Best Practices

1. All renewable energy claims require a REC, and each REC can only be used once.
2. Make sure you own and retire RECs when you make a claim about using renewable energy, reducing your carbon footprint, or other benefits conveying the environmental benefits of renewable generation.
3. Be clear in contracts and power purchaser agreements about who owns the REC and can make a claim.
4. Pay attention to how your utility or state deals with REC ownership as it pertains to net-metering and similar programs—where the state is silent on RECs, ownership should be conveyed clearly in contracts.
5. Educate solar panel owners and hosts about whether or not they own the RECs generated and can make a renewable energy claim.
6. Use electronic tracking systems when possible.
7. Get your renewable energy sales and/or claims independently verified.

Green-e Certification Protects The Voluntary Renewable Energy Market

- Certification prevents double counting, and ensures clear REC ownership
- The renewable energy is verified and meets industry best-practices

CRS's Solar Industry Support Activities:

- Certification of solar energy products, including S-RECs
- Driving industry best-practices in the solar industry: see resources below
- Certification for on-site solar and direct solar purchases (PPAs)

Resources

- Visit the Green-e website at www.green-e.org
- "What is a Renewable Energy Certificate?" video: www.youtu.be/opJMrzNauFQ
- *Guidelines for Renewable Energy Claims*: Guidance for Consumer and Electricity Providers: www.green-e.org/learn_re_claims.shtml
- *Best Practices in Public Claims for Green Power Purchases and Sales:* www.green-e.org/learn_re_claims.shtml
- *Best Practices in Public Claims for Solar Photovoltaic Systems*: www.green-e.org/learn_re_claims.shtml
- *The Legal Basis for Renewable Energy Certificates*: www.resource-solutions.org/publications

Contact Us

Contact Green-e at info@green-e.org or (415) 561-2100.

GUIDELINES FOR RENEWABLE ENERGY CLAIMS

Guidance For Consumers and Electricity Providers

Updated February 26, 2015

Consumer Guidelines

Homes and businesses that generate onsite renewable energy—from a rooftop solar photovoltaic system, for example—can claim the renewable energy their system generates only if they are retaining the renewable energy certificates (RECs) created by the system. A REC is generated with each megawatt-hour (MWh) of renewable electricity generated. REC ownership is usually determined by the contract between the system owner and the owner of the facility the system is mounted on, which means that the owner of the house or building might not own the renewable energy.

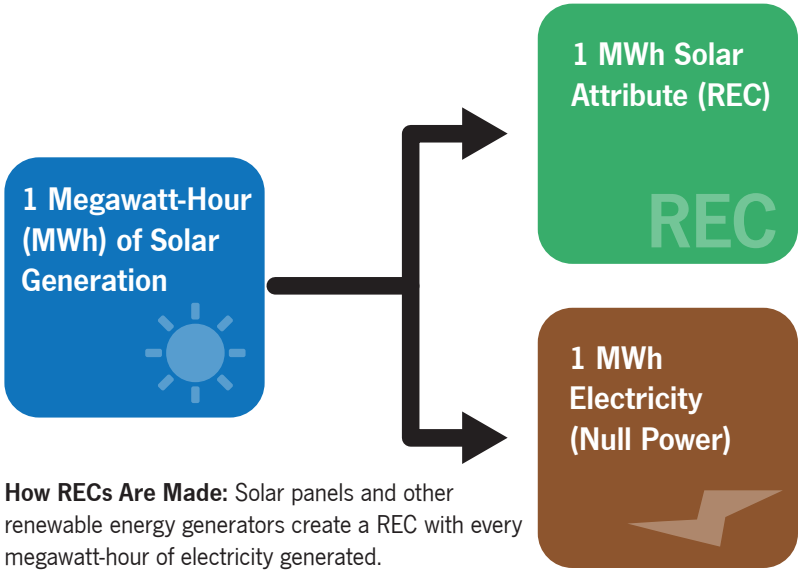
Even if you have solar panels on your house, you must retain the RECs to use the renewable energy generated on the property. If you sell the REC, you lose the right to say you are using renewable energy. Facility owners are encouraged to review their contracts for words like "renewable attributes" or "non-power attributes".

What can you say about your solar panels if you do not own the RECs?

- "We generate renewable energy and sell the RECs to our utility."
- "We generate renewable energy, but sell all of it to others."
- "We installed solar panels, but sell the renewable energy to others."

Even if you have invested in renewable energy generation by installing solar panels on your roof, you are still restricted in the public claims you can make if you sold the RECs to the installer or another party. In many cases, installers sell them to the local utility, which then adds those RECs to its portfolio. The guidance for these claims comes from several sources:

- **Federal government.** The U.S. Federal Trade Commission issued guidance about practices that may constitute false advertising—a violation of federal law—in its Guides for the Use of Environmental Marketing Claims.
- **State governments.** Many states have adopted similar guidelines and laws. These laws require the RECs to be retained if a renewable energy claim is made.
- **Your contract with the solar installer.** Your contract, which states the REC was transferred to another party, is likely to strictly prohibit you from making statements about using renewable energy, or even implying that you are using renewable energy as this may constitute a claim on the REC.



How RECs Are Made: Solar panels and other renewable energy generators create a REC with every megawatt-hour of electricity generated.

If you purchase RECs from a solar facility, you can claim renewable energy for yourself, and that you are going above and beyond the amount of renewable energy you are receiving by default from your electricity provider. You and only you may claim to use that renewable energy. You may make statements like:

- "I use solar power."
- "I use x% solar power."
- "I match 100% of my electricity use with solar RECs."

Electricity Provider Guidelines

It is important for electricity providers to provide accurate information to their customers about REC ownership.

For those providers offering customers the opportunity to participate in a community solar project, for example, customers should understand they might not be using renewable energy generated from that facility if the RECs are being retained for compliance with a statewide renewable portfolio standard or resold. If the provider keeps all of the RECs generated by the project, the program could market itself with the following statements:

- New flat-rate program enables customers to sell solar power back to the utility.
- Do your part to help Utility X meet the state's renewable energy goals.

If the provider is keeping the RECs, it cannot use phrases like: "This solar program allows you to sell excess generation back to the utility, go solar and enroll today." This statement implies that the customer is getting the benefit of using the renewable energy.

It is important to be clear not only in the customer's contract, but also in the advertising of the program. Customers should be able to see the mix of resources that is being delivered to them. This mix often differs from the fuel mix or generation mix. This delivery information should be displayed prominently, preferably as an easy-to-read pie chart or similar graphical representation. All RECs associated with reported delivered resources should be retired and should not be banked for a later year or sold.

Electricity providers that collect RECs from customers with onsite solar and sell the RECs to customers in a green pricing program should educate all their customers about the relationship between the programs. They should reiterate that only customers who purchase RECs through the green pricing program are using renewable energy.

For more information about solar claims for consumers or electricity providers, see www.green-e.org/learn.

REC Best Practices

1. Be clear in your contracts and power purchase agreements: who owns the RECs? Be specific and accurate about REC ownership and renewable energy claims.
2. If you are making a claim about using renewable energy, make sure you own and retire the RECs.
3. Use electronic REC tracking systems if possible.
4. Educate owners of solar panels about what types of claims they can make, whether they are keeping the RECs or selling them to another party.
5. If you don't own the RECs, don't make public claims about using renewable energy.
6. Get your sales and/or claims independently certified through Green-e.

Best Practices in Public Claims
for Green Power Purchases and Sales

October 7, 2010, Version 1.1

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TABLE OF CONTENTS

I. INTRODUCTION

Interest in renewable energy claims is increasing as a result of rapid growth of renewable electricity sales, particularly sales of Renewable Energy Certificates (RECs). This growth in the largely unregulated voluntary market has highlighted the need for clear guidelines on what constitutes legitimate environmental claims. In order to evaluate green electricity claims, one must first determine what constitutes a claim. Some claims are explicit and easy to identify. Others, however, can be simply implied or even unintentional. This paper identifies some typical types of claims and provides guidance to renewable energy sellers on truthful advertising practices.

While investor-owned utilities are regulated by state agencies, there is often less oversight of publicly owned utilities.[1] REC transactions by these types of utilities and by other sellers are largely unregulated. Center for Resource Solutions administers the Green-e® certification program, which includes Green-e Energy and Green-e Climate.[2] These consumer-protection programs ensure that sellers offering certified products follow best practices in claims and marketing, and Green-e Energy certifies the majority of the voluntary renewable energy transactions in the United States. This paper serves as a reference to understand best practice in marketing claims as viewed by Center for Resource Solutions; it does not supersede or modify the Green-e Energy National Standard or any other Green-e program governing documents.

This paper will be updated from time to time to address new developments in the voluntary renewable energy market (as noted by the document's version number).

II. BACKGROUD INFORMATION

The complexity of renewable energy marketing warrants a brief overview. Some common questions are answered below.

1. What is a REC and what does it represent, contain, track, and identify?

A REC[3] represents the non-energy attributes, including all the environmental attributes, of one megawatt-hour (MWh) of renewable electricity generation. The renewable energy market has developed the REC as a tradable commodity of renewable energy attributes which can be sold "bundled" with the electricity with which it was generated or separately from the underlying

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[1] Publicly owned utilities include rural cooperatives, municipal utilities, federal power authorities, and others.

[2] The Green-e® name and symbol are registered trademarks of Center for Resource Solutions.

[3] Renewable Energy Certificate (REC) is the most prevalent and preferred term. However, RECs are also sometimes referred to as "green tags," "tradable renewable certificates (TRCs)," or "renewable energy credits."

electricity, allowing for a larger and more efficient national market for renewable energy. RECs are based on actual facility generation (in MWh) rather than facility capacity, measured in megawatts. Ownership of a REC provides contractual rights to the non-energy attributes of one MWh of renewable energy generation. RECs are used by government agencies (such as state utility regulatory commissions) to document compliance with renewable procurement requirements, such as state-level renewable portfolio standards (RPSs)[4], and by the voluntary renewable energy market to demonstrate renewable energy purchases.

RECs are valuable because there is a unique demand for renewable energy beyond the value of the electricity itself. Regulators and environmentally conscious organizations and individuals are often willing to pay more for energy from renewable sources.

2. Why are RECs purchased and what is a voluntary REC?

There are two main reasons that RECs are purchased. First, utilities and other load-serving entities purchase RECs in order to meet state and local laws and regulations requiring minimum amounts of renewable energy use, including RPSs. Because a REC represents one MWh of renewable generation, utilities can use RECs determined to be eligible by the state or local government to substantiate their compliance with these requirements. These utilities or load serving entities are said to be participating in the *compliance market* for RECs.

Many companies and individuals want to purchase renewable energy, even though they are not required to by law. Companies may want to use renewable energy in order reduce or offset emissions from their electricity use and make particular marketing claims about this clean-energy use, and individuals may want to similarly address the emissions from their electricity use and support renewable energy. Such purchases are intended to increase the renewable generation on the grid beyond the levels needed to satisfy RPSs or other state requirements.

In 1997 this *voluntary market* for renewable energy started to form as states deregulated their electric utility sectors and allowed customers for the first time the ability to choose their electricity provider. Many of these providers offered their customers renewable energy, often for an additional fee. This difference in cost reflected the need for renewable generators to be able to sell electricity for more than the typical market price for electricity because renewable electricity is generally more expensive to build than other forms of electricity (e.g. oil, coal, or natural gas).

The REC market is now an essential component of the voluntary renewable energy market. The market for RECs initially developed to overcome a market barrier for renewable energy generators. Due to the physical constraints of the electricity grid, renewable generators have few, if any, choices about who they can sell their electricity to. Once electricity is generated, it must be purchased by an entity within a relatively defined geographic region that is served by at most a few different utilities or load-serving entities. Before the REC market, if none of these entities were willing to pay more for renewable energy, the generator could be forced to sell its power

[4] For a definition of RPS and other terms you will find in this document, please see the Green-e Dictionary at www.green-e.org.

below the cost of production, or cease operation. Today, the REC market allows renewable generators to sell their "undifferentiated" electricity to a local buyer, and the environmental benefits, embodied in the REC, to a different party who is interested in the environmental benefits. RECs allow renewable generators to find willing buyers for their renewable attributes.

3. Can you give me an analogy to help understand the electrical grid?

One can view the grid as a lake fed by many different streams, some originating in the mountains from glaciers, others coming from springs or rainwater. Once the water becomes comingled, there is no way to tell where any one molecule of water originated. A cup of water pulled from the lake has a probability of containing some water from each source, and it's impossible to distinguish water that came from snowmelt from water that came from a spring.

The electricity flows into the grid in a similar way. The grid, like the lake, is supplied by a variety of sources, some that produced more pollution than others. Once in the grid, the electricity that flows out into individual houses and businesses is considered to be an average of all sources of generation.

An additional layer of complexity results from the structure of the grid that pools electricity regionally. Much like a system of lakes connected by channels, electricity can be transmitted out of one region and into another region of the grid. These regions are overseen by the North American Electric Reliability Corporation (NERC) and referred to as NERC regions.

4. Is buying a REC like making a donation?

RECs are not donations. RECs are commodities that are created when renewable energy is produced that can be bought and sold on various markets, and then "retired" when a purchaser makes a green energy claim. Purchasing a REC is not a donation to either the marketer or the generator, because when you buy a REC you are buying a real (though intangible) commodity. RECs signify the sole and full claim that renewable energy was put onto the grid on behalf of the final purchaser who uses the REC. Organizations and individuals are willing to pay more for renewable energy, not because the electricity makes their lights or appliances behave any differently than when electricity comes from coal, but because renewable energy has certain benefits to the environment, the economy, energy security, and local economic development.

5. Who can claim a REC, and how?

REC claims can be made in a number of ways. Any statement or press release about using renewable electricity, cutting back on greenhouse gas (GHG) emissions from electricity through the use of renewable electricity, or receiving any other environmental benefits of renewable energy use constitute the claiming of a REC. When a person or company claims to be using renewable electricity or any of the environmental attributes within a REC, they claim sole ownership and use of that REC, and the REC must be retired through state agencies or tracking

systems[5] (this is usually done on behalf of consumers by the REC seller). Once a REC is claimed and retired, either by public statements, use toward a state RPS, retired in a tracking system or through other means, it is considered double-counting of the benefits of the renewable energy generation if another party claims the retired REC.

6. What is "double selling" and "double counting"?

The broadly defined nature of claims and the intangible nature of RECs can result in problems with double selling and double counting, where RECs are claimed by more than one party. Double selling can occur if a REC seller sells the same REC to multiple parties. Double counting of RECs could occur if a utility is counting the same renewable MWh to meet both its RPS requirements and to meet sales of a voluntary green pricing program, or if a solar panel owner claims to be using renewable electricity while the RECs are contractually retained by another party.

In order to avoid double selling and double counting, contracts for the sale of energy and RECs should be clear and explicit about the ownership of RECs and the environmental attributes they contain.[6] Renewable energy contracts that are silent on the ownership of RECs can create confusion as to REC ownership, which is detrimental to renewable energy markets and may result in double selling or double counting.

The attributes contained within RECs are primarily environmental attributes, such as the zero or low level of emissions created when renewable energy is generated as well as the impact that the renewable energy has on the grid, such as the carbon dioxide (CO_2) emissions not created when renewable energy displaces energy derived from coal. The ownership of these generation attributes is what enables a person to make a truthful claim about renewable energy. RECs can be traded multiple times before finally reaching the entity making emission-reduction claims, so long as intermediaries are not making claims based on the RECs they have held temporarily. Once a claim is made, the RECs are considered "retired" and should not be resold to another party or claimed by another party. Retirement can take place formally within a tracking system, or more frequently, through emissions avoidance or renewable energy claims. In short, retirement of a REC is considered to be a claim and vice versa.

IV. COMMON CLAIMS ISSUES AND EXAMPLES

In addition to the analogies provided in the previous section, examples of common claims issues can provide a deeper understanding of the kinds of statements one can make about renewable energy.

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[5] See Appendix.

[6] A reference for contractual terms can be found at: The Environmental Markets Association, "*Master Renewable Energy Certificate Purchase and Sale Agreement*." March 21, 2007. v. 1. Accessible at: www.environmentalmarkets.org.

1. What is the primary environmental benefit of renewable energy?

The most significant benefit of renewable energy is that it creates low or no emissions of carbon dioxide and other pollutants. Generating electricity from renewable sources prevents emissions that would otherwise be released from fossil fuel generation. Because there needs to be a steady supply of electricity to meet the constant demand, when renewable generation is added, dirtier fossil fuel generation can be turned down or taken offline.[7] So, when renewable energy generation is delivered onto the grid it prevents a more polluting source, like natural gas, from being used to generate an equivalent amount of electricity.

2. What environmental attributes are in my REC?

A REC embodies the environmental benefits of that MWh of clean electricity, including avoided emissions, but definitions of the exact environmental attributes of each REC vary according to where the REC is generated, registered, or used. As identified above, the main environmental attribute of a REC generated in the U.S. or Canada is the carbon dioxide emissions arising from renewable electricity generation.

When a REC is used to meet the reporting requirements of an environmental program, like a state RPS, the EPA Green Power Partnership, a city's annual carbon goals or in a Green-e Energy certified sale, that program will have specific rules about how that REC is counted and what use of that REC means. As with the laws mentioned above, it is important to be aware of the definition of RECs of the program or standard toward which a REC is being claimed.

Many generators have signed up with renewable energy tracking systems to track renewable energy generation. These tracking systems are essentially electronic databases and are used much like online bank accounts to track and trade renewables. Because RECs can carry different environmental attributes between tracking systems, RECs sold in one tracking system may appear to have different attributes than RECs sold in another tracking system. A savvy buyer who is interested in purchasing RECs containing particular attributes may need to do further research into the generation location and relevant laws surrounding renewable energy, if those particular attributes are not contained in the definition of a REC used by the tracking system. A nonprofit established in 2008 called the Environmental Tracking Network of North America is working with tracking systems to adopt one consistent REC definition.

2. How does the Voluntary Market Interact with Cap-and-Trade?

Cap-and-trade programs as a means to address climate change present challenges to the voluntary renewable energy market. These programs typically target emitters of certain pollutants that contribute to global warming and subject emissions of those pollutants to a maximum level, or cap. Once a pollutant is capped, the development of new renewable

[7] For simplicity we assume a constant demand.

resources has no impact on the level of the cap and therefore on the total level of emissions unless emission levels are lowered based on renewable energy purchases. If no such mechanism is in place, once a particular pollutant is capped, purchase of renewable energy and RECs will reduce the purchasers own emissions footprint, but any renewable energy or RECs produced after the start date of the cap will no longer result in global reductions of that particular pollutant.

Ten states in the northeastern U.S. states have implemented cap and trade system for CO_2 from the electricity sector called the Regional Greenhouse Gas Initiative (RGGI). While the rules for implementing this cap vary from state to state, all but one of the states participating in RGGI have developed mechanisms to reduce emissions (through allowance retirement) based on the amount of voluntary renewable energy purchases in the region.

The Green-e Energy program, which certifies renewable energy products, requires that a REC or renewable electricity product must contain all of the environmental attributes associated with the renewable generation at the point of generation, to the greatest extent possible based on current law.[8] This means that:

- Where there is a cap and trade program, but emissions allowances are not assigned to renewable energy generators, RECs do not contain these emission benefits.

- Where there is a cap and trade program, and the regulation provides that emissions allowances may be assigned to a renewable electricity generator, then a REC may contain the capped pollutants emissions benefits if appropriate allowances are secured.

- In instances where pollutants are not regulated within a cap and trade program, all RECs are assumed to contain emission reduction benefits.

Another example of a cap and trade system was implemented by the Clean Air Act[9], which provided for a cap and trade mechanism to combat acid rain. Under this particular cap and trade system, sulfur dioxide (SO_2) allowances are not issued to renewable energy facilities. Therefore, a generator may produce any amount of renewable energy and not affect the overall amount of SO_2 emitted because the total amount of SO_2 is already limited by law.

Many states have implemented regional caps on nitrogen oxides (NO_x), and in some of these states allowances can be set aside for renewable energy generators. As a result, RECs in these states with these allocations for renewable energy states can contain the environmental attributes of NO_x reductions. Renewable generators in states and regions with no NOx caps may also legitimately claim to reduce NOx emissions. The net result is that the ability of renewable energy generation to reduce NOx emissions varies depending on whether or not the generator is located in a region with a NOx cap and whether within that cap there are allowances allocated to renewable generators.

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[8] Center for Resource Solutions, *Green-e Energy Standard*, v.1.6. Available at: www.green-e.org/getcert_re_stan.shtml.

[9] 42 U.S.C. 7401

In sum, environmental claims should not be made related to capped and traded pollutants unless the claimant's renewable energy actually contains all of those benefits.

Claim Example 2-A: Marketer/customer claim

A REC marketer supplies a buyer with the following message: "Thank you for your purchase of 10 MWh of our renewable energy product. With your purchase you have reduced the emissions of seven pounds of acid-rain causing pollutants such as SO_2!" Unless the marketer has independently procured sufficient SO_2 allowances to account for this amount of electricity generation, this is not a valid claim. If the marketer has not matched the energy product with an SO_2 allowance, then this purchase of renewables does not result in any actual reduction of SO_2 as the renewable generator was not granted allowances under the cap, nor were any allowances retired as a result of the renewable power production.

3. What is the difference between "renewable," "green," and "clean" electricity?

Renewable energy sources include, but are not limited to, wind, sun, heat from the earth's interior, oceans and rivers, and biomass. The National Association of Attorneys General's *Environmental Marketing Guidelines for Electricity* ("NAAG Guidelines") opted for the common meaning of the word "renewable," focusing on "replenishability" on a reasonably short time scale, and applying it to energy sources, rather than specific technologies.[10]

However, use of renewable resources can still have environmental impacts, so "renewable" is not always equated with "green," "clean" or similar terms. For example, certain hydroelectric projects have impacts on fish and river ecosystems.[11] "Clean" often implies that there is little or no pollution associate with using a fuel source, so nuclear is often called "clean" because it emits very little carbon dioxide when generating electricity, though uranium, the fuel in nuclear reactors, is not replenishable or renewable. "Green" is often treated similarly, and is a more general term indicating overall lower-impact power; while it is commonly used interchangeably with "renewable," "green" could be used to describe non-renewable but overall low-impact energy.

According to the NAAG Guidelines, it is deceptive to represent or imply that electricity is derived from renewable sources when it is not. It is also deceptive to claim or imply that a renewable energy source has no significant negative environmental impacts by sole virtue of the fact that it is renewable. For example, the claim "good for the earth" would be a deceptive claim related to some hydroelectric projects, and that the claim "renewable" would be deceptive for

[10] NAAG Guidelines (Dec. 1999) Accessible at: http://apps3.eere.energy.gov/greenpower/markets/marketing.shtml?page=2&companyid=169.

[11] E.g. Under the NAAG definition, there is no basis to distinguish between large-scale and small-scale hydro, yet large-scale hydro has been shown to cause significant environmental destruction and is not generally considered "green".

biomass facilities that source fuel from a clear-cut old growth forest.

4. Are there any special considerations for utility green pricing programs?

When a utility offers its customers a green pricing option, it is providing customers with an option to purchase renewable energy beyond the amount in the utility's overall fuel mix. As only one party can claim a discrete amount of renewable energy, in this case the green pricing customers (and not the general ratepayers) have paid for the renewable energy generation by their purchase of the green pricing product. These green pricing customers own the right to make renewable claims commensurate with their additional purchase.

Claim Example 4-A: Customer claim

A utility in a state with RPS requirements must procure 10 percent of its basic generation from renewables. Thus, 10 percent of the basic fuel mix, not including any voluntary sales made in a green pricing program, must be renewable. Say the utility offers an additional green pricing option providing customers with 25, 50, or 100 percent renewable energy. A customer participating in the green pricing program can make legitimate environmental claims based on the percentage of renewable energy they are buying through the green pricing program. In the case that they are buying a green pricing product that is made up of 25 percent renewables and 75 percent utility mix, the maximum environmental claim that can be made by the customer is 32.5 percent renewables (which includes the 10 percent renewables from the RPS). If consumers buy the 50 percent renewable option, they are getting 55 percent total renewables.

Claim Example 4-B: Utility claim

In the case above, assume that because of the extra renewable energy that the utility supplies to its green pricing program, it ends up selling in total three percent more renewables than it is obligated to under its RPS obligations. What percent renewable should the electric utility claim its power to be? While it provides 10 percent renewables to all customers through its RPS obligations, a voluntary subclass of customers has brought the utility's total sales up to 13 percent renewable. But three percent of that total is being distributed to a select group of customers who are paying extra for this benefit. If the utility reported that its overall mix was 13 percent renewable, then general customers (not participants in the green pricing program) would likely expect that they were receiving 13 percent renewable energy. But this is not the case, as three percent of the renewables are specifically being assigned to green pricing customers. Therefore, on a disclosure label the utility should report its green pricing sales independently of its system mix, and report its system mix as being 10 percent renewable.

5. What do you call the electricity after you have sold the RECs?

With the increase in the volume of REC sales comes a commensurate increase in sales of electricity from renewable energy facilities that has been stripped of its environmental value. In some cases, buyers and sellers of that "null" electricity may wish to make environmental claims.

Buyers of electrical output from a renewable facility that do not also buy RECs should not make environmental claims as they have not purchased that right. A buyer purchases RECs for the specific purpose of making environmental claims based on that renewable generation.

Claim Example 5-A: Utility claim

Utility Y is selling RECs from a biomass facility it owns in State A. Utility Y sells the RECs from the facility to utility Z in state B.[12] Can utility Y claim the renewable energy output of its biomass facility in its disclosure label?

In this example, utility Y should not report as renewable power the MWh associated with the RECs on any environmental disclosure or other utility power mix statement. The renewable attributes belong to utility Z, and cannot be claimed by more than one party. The way in which RECs are handled on a utility disclosure label is a state decision, but one that affects other states as well. It is important that the utility regulators in states A and B communicate to ensure that the RECs are counted only once.

How then, should utility Y represent the MWh (now stripped of RECs) associated with the facility on its state disclosure label? While the energy is no longer considered renewable, it is likewise not derived from coal or any other identifiable source. There are several ways that these MWh can be accounted for. The most common method is to ascribe the average system mix to those MWh; some sort of average emissions rate must be assigned to these null MWh so that they do not have an influence on the overall emissions rate of the MWhs they are mixed in with. The renewable energy output from utility Y's renewable facility should be labeled as system power (or "null power") in utility Y's resource disclosure label and labeled as renewable power (biomass) in the label of the utility in state B that bought the RECs. Again, utility commissions in both states should be aware of the transaction so the proper information will be conveyed to consumers.

Regulators should understand that the method for calculating the state mix for environmental disclosure purposes can limit the market for RECs by effectively prohibiting their separation from the underlying electricity. This limitation may apply even if the RECs are not used for a state program. Such calculation methods may have the counterproductive effect of discouraging renewable generation.

Many state regulators rely on REC tracking systems to substantiate renewable energy claims in utility disclosures. This best practice eliminates any double claim that could occur as well as the potential for null power to be claimed as renewable power.

Claim Example 5-B: Host claim

A winery paid for and installed a small (<10 kilowatt capacity) solar photovoltaic ("PV") system to power its wine-making operations. The winery then sold the RECs to a company that

[12] This scenario would be the same if Utility Y was selling RECs to a marketer rather than to Utility Z.

aggregates RECs from many sources (typically called a REC aggregator, marketer or seller) who resold the RECs. Can the winery claim to be using renewable energy? Can the winery claim to generate renewable energy?

When the winery sold the RECs from its PV system, it also sold the ability to claim that they are using renewable energy. The winery cannot claim to be a renewable-powered facility because to do so would result in a double claim of the REC. All of the renewable and other environmental attributes from the renewable generation were transferred to the aggregator at the time of the REC sale. In an FTC study of consumer perceptions conducted in parallel with the release of the Proposed Revisions to the Green Guides, 62 percent of respondents stated that the companies claiming to "host a renewable energy facility" were using renewable energy. As a result the winery should not make singular statements that they are hosting or generating renewable energy, as to do so would mislead consumers. When RECs are sold from an on-site generation facility, reference to the generation facility should always contain language about the RECs being sold. For example, if the winery said it is generating solar electricity, it should at the very least also say that the solar electricity is being sold to another party, or that the RECs are being sold and not retained.

Example 5-C: Utility claim

A utility is selling the RECs from its wind farm to a REC marketer. The utility wants to advertise its commitment to the environment and launches an ad campaign with language about green power and pictures of the wind farm. The utility also says that it has invested in renewable energy. In this example, the customers (and potential customers) of the utility are under the false impression that they are purchasing renewable energy for their homes or businesses. In fact, the claims for all of the renewable attributes of that power were transferred to the marketer with the RECs. To avoid double-counting and false advertising, the utility must not advertise that they supply green power. If the utility discusses the generation of renewable energy it must also disclose that it is selling off the RECs from the renewable facility and that the wind power is not part of the system mix provided to utility customers.

6. What is the impact of participating in a greenhouse gas registry on the types of claims one can make?

Participating in a greenhouse gas registry can impact the statements one can make about renewable energy.

Claim Example 6-A: Participant in greenhouse gas registries

The owner of a renewable energy facility, participating in a greenhouse gas registry or trading platform, should report generation as null power if the generation owner did not retain ownership of the RECs. Null power is considered to have emissions equivalent to an average of the overall system. Thus, null power is neither emissions-free, nor is it considered renewable. Similarly, a registry participant who reports electricity usage under Scope II (emissions associated with

electricity use) should report system average emissions if the electricity purchased was null power. Assigning system power emissions attributes to null power is considered a best practice in U.S. electricity sector emissions accounting, and is implemented by several U.S. electricity generation tracking systems and regulatory programs.[13]

7. Can I sell both RECs and carbon offsets from renewable energy derived from captured methane, and what kinds of claims can I make?

The process of methane capture and destruction is one of the rare cases in which both a carbon offset and REC may be produced in the same process. When making claims associated with renewable energy derived from capturing methane and using it as a power plant fuel, it is important to distinguish between the emissions benefits related to the methane capture and conversion (the greenhouse gas capture benefit), and the emissions benefits related to the generation of net-zero emission electricity (renewable energy benefit). Because generating electricity from flaring methane isn't necessary to capture the carbon benefits of methane destruction, generating electricity from the heat of flaring is a separate activity and claims made surrounding the renewable energy benefits are separate and in addition to the claims made for methane capture.

Carbon benefits result from the destruction of methane through flaring. For the carbon accounting of the GHG emission reductions from methane flaring, project developers should follow IPCC guidelines, or other established GHG protocols. For the generation of electricity, the RECs can be treated as having zero emissions, just as they are for most other renewable energy sources, because the carbon emissions of fuel burning are accounted for in the flaring process.

Claim Example 7-A: Facility Owner Claim

A farm storing manure in an open lagoon installs a manure digester. The farm plans to capture the biogas and burn it to create electricity. The farm wants to sell two different commodities – the GHG reductions from the abatement of methane emissions from the lagoon, and the RECs from the generation of renewable energy. The benefits of the RECs are generated from the displacement of grid power, and as such, the RECs' attributes do not include the avoided lagoon emissions. The other commodity created is the GHG reductions from the avoided lagoon emissions. These are produced by the digester as opposed to the electric generator.

[13] For example, the New England Generation Information System (NEGIS) is used by several states to calculate the average system mix. NEGIS assigns average system mix characteristics to any electrical power that is not paired with a certificate that identifies a specific generator.

8. Can you bundle RECs with null electricity, and what is "green power"?

A growing number of electricity sellers are taking the opportunity to provide renewable energy options to their customers. Some of these electricity providers may be able to directly contract with renewable generators, but others may only be able to purchase RECs on behalf of their customers and bundle them with the electricity they are already providing.

During the development of the Green-e Energy National Standard, Center for Resource Solutions conducted a focus group study, finding a common assumption among consumers of electricity that the generation of their power is taking place locally. The range of what is considered "local generation" may vary quite a bit throughout the country, however most consumers understand electricity consumption to have not only national and global effects (such as greenhouse gas emissions), but also more localized social, environmental, and economic implications as well. Thus, when choosing to purchase renewable energy, a consumer would not expect just to benefit from the global benefits of renewable energy we all share, but also more local benefits. As a result, RECs bundled with the undifferentiated electricity and represented as a "renewable electricity" product should be generated in the same region as the underlying electricity is consumed in unless labeled otherwise.

What is considered the same region for purposes of renewable electricity generation is somewhat ambiguous. Electrical regions can be defined as the utility service territory, the state, or the NERC region or subregion in which the consumer is located. Green-e Energy allows participants to define in-region renewable electricity generation as that which is generated within the NERC region, because energy within a NERC region is relatively free flowing. As such, an increase in renewable energy generation within the region has a broad impact on the entire NERC region, and therefore can have an impact on the electricity mix that is serving customers in that region.

An important step for making emissions claims when pairing RECs with energy is that the total emission rates (CO_2 per kWh) for the underlying electricity associated with this product should be at or below the system average for the NERC region. Making claims that compare renewable purchases with power from a broader area than electricity is reasonably drawn from may result in deceptive or inaccurate marketing. For example, if the renewable generation takes place outside of the NERC region where the customer is located and the average emissions in that region are "dirtier" (or cleaner) than the average system mix of the NERC region where the customer is located, then accurate carbon equivalency claims would indicate that these sources (not the local ones) are being turned down with the customers renewable energy purchase.

Claim Example 8-A: Marketer Claim

A marketer buys wholesale electricity out of the spot electricity market, and then purchases enough wholesale RECs generated in the same NERC region to match the electricity they procure. They then "bundle" these two commodities, and when serving their customers represent their product as renewable electricity. This type of claim is accurate.

Claim Example 8-B: Marketer Claim

A marketer buys wholesale electricity in the Northeast to serve its customers in that region, and then purchases the corresponding number of RECs from Texas to meet its electricity load. The marketer then bundles these two commodities and represents their product as renewable electricity.

Without disclosing the fact that the marketer is buying RECs from another region, this may be a misleading claim, as consumers may assume they are getting something other than what the marketer is actually providing.

Claim Example 8-C: Utility Claim

A utility has an average system mix of 50 percent coal, 25 percent natural gas, 25 percent nuclear power, and no green pricing program. Later, it begins a green pricing program that is supplied solely by RECs generated in the same NERC region without any changes to its sources of electricity supply. After a certain point, 10 percent of the utility's customer base has enrolled and is paying extra for what they are told is 100 percent renewable energy. The utility has not actively changed its underlying electricity supply, and has only purchased RECs for the green pricing program. The remaining 90 percent of the customer base has been given a new power disclosure label of the system mix, stating the mix has changed to 44 percent coal, 28 percent natural gas and 28 percent nuclear power.

What this change in reported system mix means is that the utility has allocated only coal-derived electricity to the green power program participants to underlie the RECs it has purchased for the program. In this case, representing this retail green pricing product as 100 percent renewable is deceptive, as the mix being purchased by the green pricing customers is dirtier than what they would have otherwise gotten from the utility as system mix electricity. What's more, the green pricing customers are actually paying to make regular customers' electricity cleaner, since a smaller proportion of coal electricity remains in the system mix.

9. Can a utility sell RECs from a facility paid for by ratepayers?

Utilities are involved renewable energy in a number of ways. They offer green pricing programs, they use RECs to meet RPS obligations, they may own renewable generation facilities, and they frequently include renewables in their general mix. Utilities and regulators have several options of how to collect money from ratepayers to pay for these programs.

Including renewables in the general rates of an electric utility, with associated costs and benefits shared by all ratepayers, is an important component in developing renewable energy markets. Whether mandated through a state RPS, developed as part of an internal goal, or simply through the realization that renewable resources can be a cost-effective source of clean electricity, renewable energy provides price stability and reduces risk related to carbon regulation.

Including renewable resources in general rates allows certain environmental claims to be made

by the utility and its customers. In other words, if a utility's electricity resource mix is five percent renewable generation, then each customer can assume to be five percent renewable-powered. This is the case so long as the utility retains and retires the RECs associated with all renewable energy being counted toward that five percent.

Conflicts with claims arise when a renewable facility has been paid for by regular electricity ratepayers. Should a utility be allowed to sell the RECs from a renewable energy facility that has been paid for through the general tariff? The answer depends on the ability of utility regulators to prevent double selling. In the event that RECs from one of these facilities are sold to other parties, regulators must be able to reimburse and inform ratepayers appropriately in order to avoid double claims.

RECs from facilities that are paid for through the general utility tariff should become the property of the ratepayers. Accordingly, any revenue from the sale of such RECs should be treated like an off-system sale to ensure that ratepayers are appropriately compensated.
When reporting power generation to relevant authorities, this generation should treated as system mix. As such, this generation should not be called renewable energy in state emission disclosures or for system mix calculations. Furthermore, if a utility sells RECs, then the utility should not be representing to its ratepayers that they are getting electricity from renewables.

Claim Example 9-1: Utility Claim

A utility has bought a biomass generation facility. The facility was purchased with funds from electricity rates. The state PUC has approved recovery of these costs. Two years after the purchase, the utility launches a voluntary green pricing program.

Can the utility use renewable energy from the biomass facility to supply the green pricing product to its customers? If so, what disclosures and reimbursements must be given to the ratepayers who have paid for the biomass facility?

The general utility customers assume that they are still getting electricity from a biomass facility that they paid for, however the utility is delivering all of its biomass energy to the green pricing customers. This constitutes a double claim of the biomass attributes.

If the utility chooses this path, at minimum, it should amend its fuel disclosure label (removing the percent generated from biomass) and remove all images and mentions of the biomass facility from informational materials concerning its overall power mix going forward. The PUC may also require the utility to reimburse the ratepayers for the construction costs of the biomass facility.

10. Who gets default ownership of RECs if the electricity contract is silent?

Both federal and state legislation can influence ownership of environmental attributes. In many cases, government provides default provisions for ownership of RECs if contracts are not explicit. For example, in 2003 the Federal Energy Regulatory Commission ("FERC") issued a ruling stating:

> *"contracts for the sale of [qualifying facility] capacity and energy entered into pursuant to [the Public Utility Regulatory Policies Act] PURPA do not convey RECs to the purchasing utility (absent an express provision in a contract to the contrary). While a state may decide that a sale of power at wholesale automatically transfers ownership of the state created RECs, that requirement must find its authority in state law, not PURPA."*[14]

This ruling has resulted in considerable confusion in the marketplace regarding ownership of RECs from PURPA qualifying facilities.

To avoid looking to both state and federal law to determine ownership of the RECs, electricity contracts should be explicit as to the ownership of the RECs. The following examples illustrate problems that are likely to arise in the REC market if contracts fail to clearly assign the attributes encompassed in the RECs being sold.

Example 10-A: Utility Claim

In this example, a utility signed a contract with a qualifying facility wind farm in 2000 to buy electricity pursuant to PURPA. The contract is silent on whether the sale of electricity includes the sale of RECs. The state legislature is also silent as to whether RECs from qualifying facilities are included in contracts for the sale of electricity.

Either party may believe that they have valid title to the RECs. The wind farm owner may interpret the ruling as an articulation and continuation of prior policy, under which RECs must be expressly transferred, lest they remain with the generator. As the wind farm has not expressly sold the RECs and there is no applicable state legislation, the wind farm believes it owns the RECs.

At the same time, the utility may believe that since the contract originated before the FERC ruling that the FERC ruling does not apply to the contract in question, but rather that the utility owns all output (electricity and RECs) from the wind farm. Absent a ruling from the state regulator or legislature, neither party can be sure who owns the RECs and neither party has the right to use the RECs, leaving both parties open to substantial risk when making any renewable energy claims.

Claim Example 10-B: Utility Claim

This example starts with the same facts as Example 10-A, except that in this case there is 2004 state legislation specifying that when contracts are silent on the issue, the in-state qualifying facilities retain the rights to the RECs they generate. In this example, if the utility wanted to purchase the RECs, it would need to renegotiate the contract with the wind farm or pursue an additional contract for the RECs. Prior to such action, the utility may not make any claims related to the renewable nature of the electricity it buys from the wind farm; the utility cannot claim that the energy it purchases is wind energy, renewable energy, or that it was generated with

[14] 105 FERC 61,004 ruling (Oct. 1, 2003), rehearing denied 107 FERC 61,016 (Apr. 15, 2008).

zero emissions.

V. CONCLUSION

Continued growth in the voluntary market for renewable energy has created the need for clear guidelines on what constitutes legitimate environmental claims. The complexities of the renewable energy market and the electricity grid can result in confusion and double claims. To avoid making unintentional claims, contracts should clearly specify ownership of the environmental attributes contained in renewable energy. Renewable energy generators, marketers, purchasers, and utility companies should all be aware of the specific claims that they have purchased and sold and help to provide the clarity that the market needs to flourish.

VI. APPENDIX

The increasing prevalence of REC tracking systems should help to provide certainty as to REC ownership and reduce claims disputes. Renewable energy generation ownership can be accounted for in two different ways: through contract-path auditing and through tracking systems. Tracking systems are databases with basic information about each MWh of renewable power generated in the region and are becoming the preferable method because they can be highly automated, contain specific information about each MWh, and are accessible over the Internet to market participants. Electronic tracking systems allow RECs to be transferred among account holders much as in online banking. Renewable energy tracking systems assign a unique identification number for each MWh of renewable electricity generated in a particular region. The database tracks certain information for each megawatt hour, including facility location, generation technology, facility owner, fuel type, nameplate capacity, the year the facility began operating, and the month/year the MWh was generated. Since each MWh has a unique identification number and can only be in one account at any time, this reduces ownership disputes.

A tracking system are used by regulators as a registry of generating facilities, as a means of verifying compliance with a state RPS, for aiding in the creation of disclosure labels, for verifying green pricing supply and for other purposes such as verifying wholesale supply for green power products. Tracking systems are not substitutes for certification and verification, as tracking systems only monitor wholesale transactions—individual retail green power customers do not hold accounts on tracking systems.

There are several regional tracking systems in operation in the U.S., and more under development. Fully operational regional tracking systems include the New England Generation Information System (NEGIS); the Electric Reliability Council of Texas (ERCOT); the Western Renewable Energy Generation Information System (WREGIS); the Midwest Renewable Energy Tracking System (M-RETS); and Pennsylvania, New Jersey, and Maryland (PJM)'s Generation

Attribute Tracking System (PJM/GATS), as well as the North American Registry, which allows generators not covered by any of other the other regional tracking systems to track their attributes. The Environmental Tracking Network of North America (ETNNA) is a trade association working to promote compatibility among certificate issuing and tracking systems in North America.[15]

[15] The ETNNA website can be found at: www.etnna.org.

Best Practices in Public Claims
for Solar Photovoltaic Systems

October 7, 2010, Version 1.1

SOLAR PHOTOVOLTAIC CLAIMS AND FREQUENTLY ASKED QUESTIONS

As markets for renewable energy grow, there is increasing interest in securing and selling Renewable Energy Certificates ("RECs") and renewable electricity. Some renewable electricity generation technologies, like solar photovoltaics ("PV"), are slow to be widely adapted to market transactions because of the administrative costs of aggregating output into products that can be readily sold into compliance and voluntary electricity markets.

PV is typically installed in small amounts on residential and commercial rooftops. Rooftop PV requires many participating rooftops in order to produce a significant amount of electricity. This type of generation is called distributed generation ("DG") because the multiple small units are located at or near where the energy will be consumed, in contrast to central station generation that feeds a locality from a distance. Because of the smaller size of DG units, a relatively large geographic area is needed to generate a significant amount of RECs.

This document presents a series of questions and answers regarding PV and the issues specific to selling and claiming RECs from such systems. Though the paper focuses mainly on PV, many of the issues discussed below pertain to other types of distributed generation as well.

Fundamental to this discussion is the agreed-upon definition of a REC as representing all of the "greenness" of electricity produced from renewable resources like PV. A REC includes everything that differentiates the effects of generating electricity with renewable resources instead of using other types of resources. It is important to remember that a REC also embodies the *claim* to the greenness attributes of renewable electricity generation, and only the ultimate consumer of the REC has rights to the claim; once a producer or owner of a REC has sold it, rather than consuming it themselves, they have sold the claim and cannot truthfully state that they are using renewable electricity, or that the electricity that was produced with the REC is renewable. For background on the voluntary renewable energy market, renewable energy, RECs and other topics that underlie much of the discussion presented here, please see www.green-e.org/learn.shtml.

This paper is considered a living document and will be updated with new information periodically.

Questions addressed in this paper:

- Why do people install and use PV?
- Do tax credits (Investment Tax Credit and Production Tax Credit) and other incentives affect REC ownership?

- Who owns and can claim the RECs generated by PV?
- When does the installer of the PV own the RECs?
- If RECs are sold, what is the perception created by the PV panels?
- Is selling RECs from my small system economical?
- What kinds of claims about PV systems and RECs can the sellers, buyers and ultimate users of RECs from small PV systems make?
- What are the risks of making renewable electricity claims when RECs have been sold off?
- If not all of the RECs are sold, what claims are valid?
- What happens to the electricity from which a REC has been stripped off?

Why do people install and use PV?

Most people are motivated to pay for a PV system because they want to use renewable electricity in their home and don't want their electricity consumption to cause pollution and emissions of greenhouse gases. Other benefits of PV are that the owners generate their own electricity and can avoid paying ever-rising utility electricity costs, and the owner gains a marketing value.

The reason that an individual installs PV will affect their willingness to sell solar RECs, since RECs must be retained by the system owner (and not sold) in order for the project owner to accurately claim that they are using solar power generated by their PV system.

Do tax credits (Investment Tax Credit and Production Tax Credit) and other incentives affect REC ownership?

The Investment Tax Credit ("ITC") and Production Tax Credit ("PTC") are monetary incentives given to owners of PV systems by the federal and/or local government. The ITC lowers the price of buying a PV system based on the generating capacity of the system (for example, the price might be lowered by $2 per watt of capacity). The PTC is a payment based on the actual amount of electricity your PV system produces (for example, one cent per kilowatt-hour produced), which can be paid up front based on estimated production, or periodically based on actual metered production. These incentives encourage people to buy and use solar PV.

Typically, neither the ITC nor the PTC has anything to do with RECs. Unless explicitly stated otherwise by the provider of an ITC or PTC, accepting these payments does not affect REC ownership. In most cases PV system owners do not give up their rights to their RECs just because they receive these particular incentives. Other incentives that are granted based on use of renewable energy are more likely to require the recipient of such an incentive to give up their RECs in exchange for the incentive.

A REC is *not* a subsidy or incentive like the ITC or PTC. Although a REC may incent investment in renewable technology, it is not given by the Government, but rather created in the course of producing electricity from a renewable resource. A REC is a *commodity* produced along with electricity production by PV and other renewable electricity

technologies. Accepting money for a REC means that the buyer takes all rights to the REC and the claims it embodies. RECs are often touted as a tool to pay off a PV system more quickly, but they are different from the ITC and PTC, since a seller can no longer claim to be using solar electricity while selling the RECs from their electricity production.

Who owns and can claim the RECs generated by PV?

The basic answer is it depends on the laws of the state in which the PV system is installed and on the contract between the system host[1] and the installer or provider of the system.

Rules on REC ownership by PV system owners vary by state; however, many states have not specifically addressed the issue. It could be argued that when state law is silent on ownership of a REC, the owner of the PV system has the right to the REC, because a primary motivation for installing PV is to be able to make the claim that the owner is using renewable electricity. However, until a state clearly defines REC ownership, one must look to specific language within contracts to determine REC ownership.

Electric utilities or other programs that offer incentives or subsidies for installing PV may give such money in exchange for the RECs generated by the PV. It is important to thoroughly review all program rules before signing up for such programs because of this potential.

If the PV system owner retains all of the rights to their RECs, then the contract(s) between system host, system owner, the electricity user and/or the REC buyer dictates who can own the RECs and can make the claims. The types of contracts and relationships between seller and buyer will be discussed in another section, but what is most important is that a system owner that contractually sells their RECs can no longer claim to be using renewable electricity from that system. Similarly, a system host that does not own the PV system it is hosting cannot claim to be using renewable electricity unless they are buying RECs from the installed system or another generation facility. In the case that the host is buying RECs from another facility, statements made by the host should make it clear that the renewable electricity they are buying is not from the system they host.

When does the installer of the PV own the RECs?

There are two common ways in which RECs from PV systems are accounted for: through a Power Purchase Agreement ("PPA") between a system owner and the host of the system or purchaser of the power generated, and through a PPA between a PV system installer and the owner of the system.

In a typical PPA, a company will install and own a PV system on the host's roof, but the

[1] A system host is the owner of the building or land upon which a PV system is installed. The host might not own the system, instead simply allowing the system owner to install the PV system on the host's property.

installing company will own the system and sell the host the electricity that the PV system generates, while keeping the RECs that are generated by the PV system for the installing company.

In these kinds of PPA agreements, it should be explicitly stated that the system owner, and not the host, owns the RECs and that the host understands that they cannot and should not make any claims or statements about the use of renewable electricity from the system. System hosts see advantages in this kind of agreement as they do not have to spend money up front on the cost of the PV system, and usually buy the electricity at a fixed cost in a multi-year contract, which protects the hosts from utility rate increases.

It is also possible to modify the contract such that the system's RECs are also delivered to the host, so that the host acquires the environmental attributes associated with the solar electricity being produced on their roof. In this case the cost of the electricity will typically appear higher because it includes the cost of RECs in addition to the cost of electricity.

A second common situation is when the PV system is purchased by the host. In this model, the building owner owns the PV system and consumes the electricity from the PV system. In these situations, installers that sell PV systems to building owners are increasingly interested in keeping the RECs generated by the PV systems they install.

These contracts between system buyer and installer should explicitly state which party retains all RECs generated by the PV system. If the installer retains the RECs (typically in order to sell them to an end-user or other seller), the system owner cannot claim to be using renewable electricity, even though the owner owns the PV system itself. In this case, the installer typically installs an electricity meter that allows them to monitor the PV system's output, so that the installer knows how many RECs they have earned without having to visit the building. In exchange for the REC ownership rights, installers often charge less for installation and/or equipment.

It is advisable that REC ownership always be made explicit in contracts, whether the system buyer / host is to retain the RECs or the installer / system leasing company will take the RECs, in order to avoid ownership issues down the road.

If RECs are sold, what is the perception created by the PV panels?

An average person seeing a building with PV on its roof will assume that the building is using solar electricity that is generated by those panels, since most people do not know much about RECs and the possibility that the environmental attributes associated with the renewable electricity have been sold. To a large extent this cannot be avoided, and the building owner will gain some amount of benefit from this perception.

However, the host of a system from which all of the RECs have been sold must not make any statements that would lead a person to believe the host is using solar electricity from the system. When discussing electricity use of the building, staying silent about REC

sales to intentionally allow a person to maintain their incorrect perception is disingenuous, reinforcing the misperception about renewable electricity use.

The issue of a perceived claim being an actual claim is still not fully resolved, but it is always simplest and cleanest for the owner of the building on which the PV system is installed to avoid controversy in these cases by keeping RECs and making legitimate renewable electricity claims.

Is selling RECs from my small system economical?

Economies of scale apply to most transactions of commodities, including REC transactions. Most wholesale buyers of RECs look to purchase as many as possible in one transaction to keep transaction costs per REC low. Purchases of tens of thousands of RECs are common. In contrast, a 5-kilowatt (5 kW) residential PV system will produce roughly 9 to 10 RECs per year. To date, very few sellers of RECs find it economical to spend the time to purchase RECs 10 at a time when they have to supply customers purchasing hundreds or thousands of RECs per year.

It is often cost-prohibitive for the potential REC buyer to spend an appropriate amount of time to educate small PV system owners about what a REC is so that they truly understand what they are giving up, to develop, sign and keep current legal documents with each PV system owner, to get the system owner to sign periodic documents attesting to their system's generation, and to track purchases from a large number of system owners. On the other side of the transaction, many PV system owners find it to be not worth their while to go through the trouble of a contracting process and creation of documents to transfer title of the RECs (contracts, for example) in order to sell less than $100-worth of RECs per year (assuming that they get $10 per REC, though prices will necessarily vary).

What kinds of claims about PV systems and RECs can the sellers, buyers and ultimate users of RECs from small PV systems make?

When all of the RECs are sold from a PV system, the user of the system’s electrical output can no longer make the claim that they are using solar electricity, renewable electricity, or emissions-free electricity. A system owner or host selling RECs cannot make any statement that would imply that their electricity use is different from a neighbor without solar panels. The ultimate consumer of RECs has bought the RECs in order to make those claims.

What can generators, buyers, sellers and users of RECs say? It is best to always be as clear as possible. Deciphering the subtleties and semantics of REC claims is often very difficult for the public. The FTC Green Guides section on Renewable Energy can be helpful in determining what kinds of claims one can make. For more information see: http://www.ftc.gov/opa/reporter/greengds.shtm

System hosts and system owners that do not retain the system’s RECs

The Federal Trade Commission (FTC) has recently stated that simply statements such as "I host a renewable energy system" are misleading to and misunderstood by the majority of consumers. Therefore, it is advised that any claims about electricity use and PV systems by entities that do not own the RECs explicitly state that the RECs or renewable electricity from the system is being sold to other parties.

The statements below are technically accurate, but without further explanation the public could easily make the incorrect assumption that PV on a building's roof means that the building uses solar electricity. When using the statements below, or any permutation, be cautioned that the FTC's guidance is not yet final and may change.

System hosts and owners that do not retain the system's RECs ***should not*** **say** the following without also clearly disclosing that some or all of the RECs from the system are sold to others:

- I generate 100% renewable electricity
- I have PV on my roof
- I host / own a solar PV system

Buyers of the RECs from PV, who wish to re-sell the RECs rather than consume the RECs, may say

- I have solar RECs in my portfolio
- I have bought solar RECs to re-sell
- I am a REC aggregator / seller / marketer

Buyers of RECs that wish to re-sell RECs *should not* state that because they own RECs they are using renewable electricity, since a renewable electricity use claim constitutes consumption of RECs.

Buyers of RECs from PV that wish to green their electricity may say

- I am using solar electricity for a portion of my electricity use
- I am using renewable electricity for a portion of my electricity use
- I buy solar RECs for a portion my home electricity use
- I support solar electricity by buying RECs
- A portion of my building / property / process is powered by solar electricity

Owners of PV systems that retain their RECs for their own use may say
The same claims as Buyers of RECs from PV may be made, as well as:

- I am using solar electricity generated by my PV system
- I generate solar electricity

Note that when final FTC guidelines are published they may require alternative language.

What are the risks of making renewable electricity claims when RECs have been sold off?

The predominant risks for the seller include breaching your contract with the buyer, and negative media attention from promoting false information to customers and the general

public about your use of renewable electricity. The Federal Trade Commission (FTC) and the National Association of Attorneys General (NAAG) have both put out guidance on green claims[2] as a basis for bringing complaints against companies making false statements or otherwise publishing false information.

The FTC has recently released proposed updates to its environmental claims guidance,[3] and the issue of hosting an on-site renewable electricity system is specifically addressed. While their guidance is not yet final at the time of the last revision of this document, the currently proposed language states that simply saying that a PV host is "hosting" a solar facility is not sufficient to avoid a double claim on the RECs. This guidance is based on a survey that found that two-thirds of respondents did not understand the significance of the term "hosting" an on-site system, and thought that hosting a system meant that the renewable output of the facility was used on-site.

Once final language is released by the FTC, the guidance provided in this document may be updated as well. The current guidance provided by this document is meant to encourage clarity and disclosure in the interim until the FTC publishes its final guidelines.

If not all of the RECs are sold, what claims are valid?

The examples cited have pertained to cases where all the RECs created by the generation are sold. However, sometimes a generator or host wishes to make some environmental claims (by consuming a portion of their RECs) and sell only some of their RECs. In these cases the generator or host must accurately reflect the ratio of renewable and non-renewable electricity they are using.

As an example, consider a building that consumes 10,000 kilowatt-hours (kWh) of electricity per year that has a 5 kW PV system on its roof. This particular PV system produces 10,000 kWh per year, meaning it produces 10 RECs per year (one REC is produced with every 1,000 kWh of electricity from the PV system). The building owner sells 4 RECs but keeps 6 RECs. Under these circumstances the building owner can accurately say that the building is 60% solar powered that year, since they have enough RECs to cover 60% of the building's electricity use for the year.

This type of scenario is not very common, since RECs are typically all sold or all kept contractually. However, there is no reason a contract between a PV system buyer and installer couldn't specify that the buyer keeps only a certain portion of the RECs.

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[2] The FTC guidelines are available at http://www.ftc.gov/bcp/grnrule/guides980427.htm, and the NAAG guidelines are available at http://apps3.eere.energy.gov/greenpower/buying/consumer_protection.shtml?page=1&companyid=169

[3] The proposed updates are available at http://www.ftc.gov/os/fedreg/2010/october/101006greenguidesfrn.pdf

If the building became more energy efficient and used only 6,000 kWh of electricity per year, the building could then claim to be 100% solar powered and legitimately sell 4 RECs, the amount equivalent to their surplus power production.

What happens to the electricity from which a REC has been stripped off?

If a building has a visible PV system on its roof but sells the RECs, there is a natural question as to what happens to the electricity that the PV system generated.

Electricity always flows along the path of least resistance, and no place, person, appliance or electric utility can know exactly where their electricity is coming from because of this characteristic of electricity. The only way to for an electricity buyer or consumer to claim ownership of electricity from a particular electricity generator is to have a contract with that generator that states that the electricity buyer is receiving electrical output from the specific generator. The generator puts the contracted amount of electricity onto the grid at the same time the buyer takes out that amount of electricity elsewhere on the grid. Since the buyer is the only one with that particular contract proving ownership of that amount of electricity from that generator, they buyer has used electricity from that generator.

This is the same for electricity from PV, wind, coal, nuclear or anything else; all electricity generated has some set of attributes that identifies it as coming from that particular resource type. You can think of a REC as that identifying contract for a particular amount of renewable electricity generation.

So, when a REC is sold from a PV system, the electricity generated follows the path of least resistance like all other sources of electricity connected to the grid, and despite the likelihood that the electricity flows into the building on which the PV system sits[4] it must be treated like the output of any other generator that is connected to the grid. Treatment like any other source means two things: that the owner of the REC (the contract in the above paragraph) that is pulling electricity out of the grid is the only one with an identifiable claim to the solar REC, and that the building hosting the PV is responsible for the emissions associated with the electricity delivered from the grid too any average customer of the electric utility of which the building is a customer.. In this way, emissions in the electricity sector aren't created or destroyed, but the responsibility for their existence is accounted for.

It is important to remember that electricity without a particular REC associated with it is no longer zero emissions; the “lack-of-emissions” aspect of renewable electricity travels with the REC, and it is the primary reason that anyone buys a REC. Electricity without a REC must be assigned the average emissions of local generation attributed to it in order to avoid double claims.

[4] Though where the electricity flows depends on the configuration of the PV system.

Explanation of Green-e Energy Double-Claims Policy

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INTRODUCTION

This document is intended to articulate the Green-e Energy program ("Green-e Energy")'s standard approach to resolving questions and disputes regarding the eligibility of renewable energy certificates ("RECs") for use in Green-e Energy certified transactions or products, when multiple parties have made statements related to the environmental attributes of the REC or underlying electricity. This document is not intended to serve as an instruction manual on best practices for making claims, and neither is it intended as guidance for the end-user of the certified REC. Center for Resource Solutions (CRS) has published documents that serve this function.[1] Instead, this document is intended to provide clarity to generators, utilities, REC marketers, and other interested stakeholders on how statements by entities that do not own the RECs may affect the eligibility of those RECs for Green-e Energy certification. This paper reviews example statements made by entities that do not own the legal rights to a REC in order to determine if a claim on the REC has been made. Such claims could infringe upon the REC owner's property rights and render the REC ineligible for Green-e Energy certification.

OPERATING PRINCIPLES

A REC is a property right that gives the REC owner the exclusive right to the environmental and social attributes of one megawatt-hour (MWh) of renewable electricity generation on the electric grid.[2] RECs signify the exclusive and complete ownership of renewables, and entitle the REC user to claim the renewable attributes associated with the REC to the exclusion of any other party.

There are several different meanings to the word "claim," such as a general statement, an ownership right, or the expression of an ownership right. Herein the phrase "double claim" refers to a statement by someone other than the REC end user that renders the REC ineligible for Green-e Energy certification. Double claims are typically public statements or representations that directly or through implication confer the use of renewable electricity or any of the environmental attributes within the REC (including avoided emissions) to a party who is not the REC owner. The effect of a double claim is that the environmental

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[1] Green-e Energy encourages interested parties to review Center for Resource Solutions, *Best Practices in Public Claims for Green Power Purchases* (Oct. 2011), available at http://www.green-e.org/docs/energy/Best Practices in Public Claims.pdf.

[2] See Environmental Tracking Network of North America, *North American Association of Issuing Bodies Double Counting Best Practices* (May 2006), available at http://www.etnna.org/publications.html; see also Center for Resource Solutions, *Best Practices in Public Claims for Green Power Purchases and Sales* (Oct. 2010), available at available at http://www.green-e.org/docs/energy/Best Practices in Public Claims.pdf; see also *In re Ownership of Renewable Energy Certificates*, 389 N.J. Super. 481 (App. Div. 2007) (stating that "One Renewable Energy Certificate represents the environmental benefits or attributes of one megawatt-hour of generated renewable energy" and referring to RECs as property rights).

benefits of that REC are counted twice, once by the legitimate REC owner and once by the other claimant, which can result in environmental benefits that are "double counted".

Green-e Energy has three primary concerns in evaluating whether a statement is a double claim: 1) preventing the double-counting of renewable attributes to ensure the stability and integrity of the voluntary REC market, 2) supporting accurate disclosures to prevent consumer confusion in the marketplace, and 3) supporting the contractual expectations of REC purchasers to provide stability to voluntary REC transactions. To facilitate these goals, Green-e Energy has developed the following set of factors to distinguish statements that constitute double claims (invalidating the RECs for Green-e Energy purposes) from statements that are simply confusing to consumers and require immediate clarification, but may not render the associated RECs ineligible.

The best practice for entities without ownership rights to a REC is to make no public statement regarding use or delivery of any of the attributes associated with the REC. However, Green-e Energy recognizes that certain statements regarding renewable generation may be required by law (for example, through generation portfolio fuel mix disclosures) to be made by parties without the contractual ownership of RECs, and may be industry practice in certain regions. To address this confusion, Green-e Energy has developed a policy that considers a variety of factors in assessing whether a confusing statement creates a double claim on the associated REC, or whether the statement can be clarified, resulting in the REC's potential eligibility for Green-e Energy.

To assess whether a statement regarding ownership of renewable energy attributes is a true double claim, Green-e Energy evaluates it according to the following criteria:

1. Is the statement clear and accurate? Clear and accurate statements protect the integrity of RECs and preserve the contractual and legal rights of REC owners. These statements are not only factually accurate, but they are also clear about who owns the RECs. Statements about generation from utility-scale generators tend to fall into this category, assuming that the statement-maker is not using the environmental benefit of the renewable generation for marketing purposes (as may be the case for onsite generation units at manufacturing facilities). No additional clarification is required for statements that are already clear and accurate.

2. Is the statement confusing? Confusing statements are those that the public is likely to misinterpret. Such statements may lead the public to believe that the statement-maker is using or supplying renewable energy to an organization or region when that is not the case. These statements may be factually true in some cases, such as when a manufacturer talks about the generation produced from their solar panels—however, without qualification and clarification, these statements are likely to mislead the public and infringe on the rights of the REC owner, who has exclusive rights to the environmental attributes of the renewable energy.

Confusing statements are evaluated based on several factors (discussed further later) to determine whether the statement can be clarified, or whether it constitutes a double claim that renders the REC ineligible for Green-e Energy certification. These misleading statements typically require immediate clarifying action by statement-makers and/or REC owners, including, but not limited to: sending notices to the audience of the initial statement, clarifying and revising the original language, and updating documents that contain the statement, such as sustainability reports or annual reports. Without such immediate clarifying measures, confusing statements may be considered double claims, thereby making the RECs associated with them ineligible.

Under Green-e Energy policy, confusing statements must immediately be clarified, or such statements may be determined to be double claims. Statement-makers with Green-e Energy certified products that mislead customers about RECs they do not own may be subject to any or all of the following consequences if

the statement is not immediately clarified: providing customers a refund; breach-of-contract litigation; a terminated relationship with Green-e; public notice on the Green-e website or other forms of public disclosure and/or prosecution or other legal action by the Federal Trade Commission, state attorneys general, the National Advertisers Division of the Better Business Bureau or other regulatory bodies with jurisdiction over deceptive marketing or advertising practices.

3. Is the statement a double claim? Double claims are statements that make RECs ineligible for use in a Green-e Energy certified product and communicate REC retirement on behalf of an end user (though the RECs may actually remain unretired in a Renewable Energy Certificate Tracking System). Double claims made by statement-makers without ownership rights of the REC infringe on the true REC owner's legal rights and undermine the integrity of the REC market generally. Green-e Energy cannot certify sales of RECs that have been claimed by another party, as this double claiming results in double counting the renewable benefits—a party other than the rightful REC owner receives all or part of the REC value (through marketing advantage, positive public image provided by the perception of using or offering renewable energy, or other benefits), while the rightful REC owner may be making similar statements based on the same RECs.

CRITERIA USED IN ASSESSING CONFUSING STATEMENTS

Green-e Energy uses the following factors to evaluate whether a statement by a participant complies with the requirements outlined in the *Green-e Energy Code of Conduct and Customer Disclosure Requirements*. Green-e Energy evaluates statements on a case-by-case basis, as the context of any statement is critical. Green-e Energy seeks to treat similar situations consistently, and has developed several criteria to evaluate statements in their full context.

The following set of criteria are used to guide decision-making on confusing statements affecting certified products. Green-e Energy evaluates such statements and determines what, if any, clarifying measures must be taken and if the particular RECs can be certified. Without immediate clarifying action to confusing statements the participant may be unable to complete Green-e Energy verification requirements, including signing the *Green-e Energy Participant Attestation* in good faith for the affected RECs. The statements may also be considered double claims, rendering the RECs ineligible for Green-e Energy certification.

Statement Evaluation Factors include:

- **Who is the statement-maker?**
    - Whether or not the statement-maker was in the chain of custody is a factor. This is important to evaluate because statement-makers who are in the chain of ownership have a greater likelihood of invalidating affected RECs than parties outside the chain of custody. One reason for this is that such connection relates to the believability of the statement. A customer will look to a primary source of information about the renewable energy provided by a company with more authority than a secondary source.

- **Is the statement about generation or installation or capacity, as opposed to delivery or consumption of renewable energy?**
    - Green-e Energy generally holds that accurate, generation-based statements with enough clear and meaningful information do not constitute a double claim against the associated RECs. Generation-based statements are common in the industry and frequently required by law. Statements regarding delivery, receipt, or consumption, on the other hand, can be

double claims, implying ownership and use of the environmental or renewable attributes of the REC, and thereby render it ineligible for Green-e Energy.
    - If the generator uses most of the generation onsite, then they should clarify that they are selling the renewable energy to others and using traditional grid power onsite.
    - If the generator is a utility-scale electricity provider, then statements about the amount of renewable energy generated should be accompanied with information about the amount of renewable energy actually delivered to customers, along with the specific resource types delivered to its customers.

- **How misleading is the statement to the average consumer?**
    - One of Green-e Energy's primary concerns is ensuring that consumers receive accurate and truthful information. Green-e Energy evaluates statements contextually to determine whether the statement is deceptive or misleading to consumers. To this end, Green-e Energy considers not only whether the statement is true, but also whether it is likely to cause confusion about REC ownership or renewable energy use. Green-e Energy looks at the full context of statements, including how and where the statement appears, and whether clarifying/qualifying information is provided elsewhere on a given website or in a given document.

- **Was the REC in question registered in a tracking system, and was it from a facility marked as Green-e Energy Eligible?**
    - Green-e Energy believes that, for RECs to be traded as fungible commodities, purchasers must be able to have confidence in the chain of custody of RECs registered in a tracking system, even though those RECs may not have yet gone through Green-e Energy verification. Similarly, Green-e Energy recognizes that a purchaser is often limited to the information provided in the tracking system and that additional due diligence may be impossible. Therefore, registration in tracking systems and pre-vetting by Green-e Energy (designating the generation facility as Green-e Energy Eligible for a certain period of generation) weighs in favor of REC validity. At the same time, for the purposes of marking facilities as Green-e Energy Eligible, Green-e Energy cannot conduct an extensive review of possible third-party statements that could jeopardize RECs from the facility, especially statements made after initial facility review and the facility's listing on the Green-e website, and does not guarantee that RECs from facilities labeled Green-e Energy Eligible will be able to pass through Green-e Energy verification. The ultimate responsibility of clearing title to a REC and ensuring that no false claim has been made that could jeopardize its eligibility falls upon the REC purchaser/owner unless the RECs have been traded in a Green-e Energy certified transaction, in which case the onus is on the provider of the certified product.

- **What is the timing of the statement in relation to the transfer of REC ownership?**
    - The timing of the statement in relation to the REC transaction is important because the REC may have been claimed prior to sale, bringing into question the validity of the transfer of ownership of the REC since the REC would have effectively already been retired at the time the statement was made. Similarly, if the REC purchaser knew or should have known that there had been a statement made about the REC that could jeopardize its validity at the time of purchase, the timing of the statement could be a relevant factor in Green-e Energy decision-making.

- **What is the apparent purpose of the statement-maker in making the statement?**
    - Green-e Energy assesses the apparent purpose of the statement to determine whether it will make the associated REC ineligible. For example, Green-e Energy understands certain statements may be required by law or be standard industry practice (e.g.,fuel disclosure requirements) and seeks to differentiate such statements from those that are intended to be used for marketing purposes or for purposes of identifying what resources were used to generate the electricity the consumer is actually buying. Misleading statements with marketing objectives are generally more likely to render RECs ineligible for Green-e Energy certification, as these statements are exploitive of potential customers' desire to purchase goods from companies demonstrating good social responsibility, the very benefit that prompts many to purchase RECs. Such false marketing can be considered greenwashing, and jeopardizes consumer trust of the REC market.

- **What is the scope of the statement?**
    - This factor goes to how prominent and far-reaching the statement was. Green-e Energy will look at how many customers were potentially impacted by the statement, and evaluate the force or impact of the statement based on context (where and how the statement appears). As a general rule, clarifying actions should parallel or exceed the reach and impact made by the original statement. For example, if the original statement was made in a press release, typically the clarifying language should be disseminated to the same audience as the initial press release at a minimum.

- **Can the REC owner sign the Green-e Energy Participant Attestation in good faith?**
    - Green-e Energy is concerned about whether the REC owner knew or had reason to know that the statement-maker had made prior statements concerning the RECs in question. Green-e Energy can only certify RECs from program participants that can sign the Green-e Energy Participant Attestation that is part of its annual verification obligation, which includes the following language. The participant declares that:

> all the renewable attributes, including any emissions offsets or claims and all CO2 benefits... were transferred to customers or retired on their behalf and were not sold separately to other customers or used to make other renewable energy claims; the renewable MWh reported for Certified sales were sold once by Participant as part of a Green-e Energy Certified product; Participant made no specific purchases and/or generation of energy that has already been claimed, including claims inadvertently made through generator advertising stating where renewable generation will be delivered; for the renewable MWh sold by Participant, Participant: a) did not sell, market or otherwise represent as renewable energy the electrical energy that was generated with the reported RECs; and b) did not use the electrical energy that was generated with the reported RECs to meet any federal, state or local renewable energy requirement, renewable energy procurement, renewable portfolio standard, or other renewable energy mandate. To best of my knowledge, no other party participated in the actions described in a, and b above with the electrical energy that was generated with the RECs claimed by Participant.[3]

[3] Center for Resource Solutions, Green-e Energy Participant Attestation, RY 2013.

- **Is there Green-e Energy precedent for this type of statement?**
    - Green-e Energy strives to treat similar situations consistently. To this end, Green-e Energy will consider how analogous previous claims-related issues were resolved, and use this precedent to inform its assessment, while being aware that situations that are similar overall may differ in significant ways.

EXAMPLES AND EXPLANATIONS

This series of examples and explanations is intended to serve as a guide for how Green-e Energy evaluates statements and applies the factors listed above. This is not meant to be an exhaustive list of confusing statements, neither is it intended to serve as a strict rule for particular situations. Rather, it is meant to further explain the types of factors that Green-e Energy may apply in accordance with this claims policy. While these examples and explanations are designed to illustrate how Green-e Energy approaches certain types of statements in certain contexts, Green-e Energy still approaches each statement on a case-by-case basis and retains substantial flexibility in its decision-making.

Delivery or Consumption-Based Statements

- Statements made by organizations without REC ownership rights, but within the chain of custody of the REC, that state or imply that the statement-maker owns some or all of the renewable attributes of the REC (by using renewable electricity or delivering renewable to their customers) are generally considered double claims. These statements include:
    - "We are using wind power." In this example, the electricity user is claiming the renewable ("wind") attributes of the REC, and the REC associated with the generation is effectively retired. This would be considered a double claim under this policy.
    - "We are delivering wind power." Similarly, in this example the producer or electricity provider is claiming for their electricity customers, and the associated RECs are effectively retired. This would be considered a double claim under this policy.
    - "The average emissions from our retail electricity deliveries are lower because we have renewables in our portfolio." While more subtle than the previous examples, this statement may result in a double claim on the corresponding RECs because the statement-maker is claiming the zero emissions attribute of the renewable generation toward electricity delivered to all customers. The main factor that would render the associated RECs ineligible is that it is delivery-based.
    - "We are selling energy generated by the XYZ wind project to our electricity customers." At a minimum, this is a misleading statement if the utility does not own the RECs being generated by the XYZ wind project. It may also constitute a double claim. An average consumer may be led to believe that the utility is selling renewable wind electricity, when in fact it is selling null power, which is electricity that has had is attributes sold separately, and cannot be identified as coming from a particular resource type. Green-e Energy would evaluate the statement in its entire context to determine what clarifying action would be required, and whether the statement would be considered a double claim against the associated RECs. The context would include what other information the utility is providing to its customers about what it is delivering, where the statement appears and its apparent

purpose, as well as the scope and level of accuracy or truth. For example, if some of the RECs are being conveyed to the named customers, this type of statement may be true without double claiming RECs sold to other parties (it would be important for the statement-maker to clarify how many RECs were sold off, however); on the other hand, if all RECs from the facility are being sold to a third party, this type of statement may be considered a double claim.

- "We purchase electricity from XYZ wind farm" If this statement is made by a load-serving entity, the public would generally think that the electricity purchased is being delivered to customers and an analysis similar to the previous example would apply.

Generation-Based Statements

- A generator's website describes the environmental benefits of a specific renewable energy facility for which they do not own the RECs.
    - While generation-based statements generally are not considered double claims against the RECs associated with them, these types of statements may be confusing to customers, and are generally considered confusing statements that must be clarified. One of the primary factors is whether the statement implies that the statement-maker is delivering the environmental benefits it describes to its customers (through RECs), which implies that the generator owns the RECs associated with the facility. Green-e Energy generally requires that these types of statements be clarified to reflect that the generator does not own the renewable attributes of the facility.
    - In cases where the generation is used onsite, for example in manufacturing facilities, generation-based statements are more likely to be confusing or create a double claim. This is because statements about generation in the case of onsite use are more likely to be commercial in nature, and the purchasers of goods sold from that facility are likely to believe that the energy used in that facility was renewable.

Utility Fuel Disclosure Requirements

- A utility sells RECs from a renewable facility it owns to a third party. The utility then labels its output from the facility as "renewable" on its fuel mix or power mix disclosure label.
    - A statement by the utility that it is generating renewable electricity when it is selling the RECs to another entity may be a misleading statement, and potentially a double claim. While generation-based statements are typically not considered claims, the utility's statement may imply that it is delivering renewables to its customers, which is not the case since the RECs are being sold to a third party. Green-e Energy recognizes that utilities are often required by law to report their fuel mix based on interconnected generation facilities, and typically, a utility that follows the legal requirements for fuel disclosure will not render the RECs ineligible for Green-e Energy certification. However, Green-e Energy takes a holistic approach in evaluating statements and may determine that the RECs are ineligible or that certain clarifying measures are necessary if the context suggests that the statement was designed as marketing, or as disclosure language to be used by customers to calculate the environmental impact of their electricity use, or that it is likely to mislead consumers into believing that the utility is retaining the ownership rights of the RECs associated with the

facility. Green-e Energy may require a similar disclosure of the types of energy delivered to be made in visual proximity to the fuel-mix disclosure.

- As a best practice, the utility should not report the MWh associated with the RECs as renewable energy, since it has sold this right to the REC owner. The utility should report this generation as "null power" and can ascribe the characteristics of the residual mix[4] to those MWh (or, if residual mix data is not available, system power). If the utility is required by law to report all generation in a fuel mix disclosure, regardless of delivery to customers, then best practice would be for the utility to also provide information in a similar format about the delivered resource mix. •

[4] This represents the generation that was not used in voluntary renewable energy products. For example, the PJM-GATS and NEGIS tracking systems track the attributes of all electricity generation, and calculate and assign the residual mix to generation that is delivered to users without a specific generation attribute certificate retired on its behalf. The World Resources Institute's Greenhouse Gas Protocol also has guidance on residual mix calculation.

The Legal Basis for Renewable Energy Certificates

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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(yospjegx0ccymhf3zjwow4ed))/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/nmnxtadmin/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, 8 § 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

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/frmStatutesText.aspx?article=gpu&section=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

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/rulesnlaws/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/frmStatutesText.aspx?article=gpu&section=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

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

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://webserver.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

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/webmga/frmStatutesText.aspx?article=gpu&section=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 MRETs 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

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

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

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/rulesnlaws/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.nyserda.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.nyserda.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., Montenay Power Corp., & Wheelabrator Technologies Inc.,* 105 FERC ¶ 61004 (Oct. 1, 2003), *available at:* http://www.cfcae.org/sites/default/files/federal/FERC_Order_on_RECs.pdf

[18] *Federal Energy Guidelines: FERC Reports* (FERC) *Am. Ref-Fuel Co., Covanta Energy Grp., Montenay 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/environ/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.