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CleanEnergy States Alliance

TWO MARKETS, OVERLAPPING GOALS

EXPLORING THE INTERSECTION OF RPS AND VOLUNTARY MARKETS FOR RENEWABLE ENERGY IN THE U.S.

Prepared for

The RPS Collaborative

by

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About This Report

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Disclaimer

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Introduction

State Renewable Portfolio Standards (RPS)[1] and voluntary markets for renewable energy in the United States share a common history—both began around the same time in the late 1990s with the expansion of retail choice and the advent of certificate trading.[2] Since then, they have grown side by side and each has been a significant driver of renewable energy development.[3] Twenty years later, they continue to share common accounting infrastructure—renewable energy certificates (RECs) and REC tracking systems. Perhaps most importantly, voluntary and RPS compliance markets share a common objective: more renewable energy delivered to grid customers.

This paper explores interactions between RPS and voluntary markets for renewable energy in the U.S. and outlines principles for supporting continued growth of both markets. These principles preserve the ability of each market to make separate and incremental contributions to renewable energy, uphold accurate accounting, reduce complexity, and increase participation.

Two Markets

In the U.S., renewable power can be sold into a state RPS market (i.e., to meet compliance demand), where it is delivered to utility or supplier customers to meet state requirements. Or it can be sold into a separate voluntary market (i.e., to meet voluntary demand by companies and individuals or because it is economical), where it is either delivered to individual voluntary buyers or delivered to customers by a utility or supplier. Renewable energy projects may also sell their electricity into the broader wholesale power market, in which case it becomes part of the regional mix and is purchased as unspecified power.

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[1] This paper uses Renewable Portfolio Standard as a general term to refer to state-level compliance programs and markets for renewable energy in the U.S., which may have different official names including Renewable Energy Standard, Clean Energy Standard, Alternative Energy Portfolio Standard, Renewable Resource Standard, and other similar names.

[2] Holt, E. and Bird, L. (January 2005). *Emerging Markets for Renewable Energy Certificates: Opportunities and Challenges*. National Renewable Energy Laboratory (NREL). NREL/TP-620-37388. Pg. 7-9. Available at: http://www.nrel.gov/docs/fy05osti/37388.pdf.

U.S. Environmental Protection Agency (EPA). Green Power Partnership. *History of Voluntary Markets*. https://www.epa.gov/greenpower/history-voluntary-markets. Accessed: May 24, 2017.

[3] See Kent, C. and O'Shaughnessy, E. (January 2017). *State of the Voluntary Green Power Market*. U.S. Environmental Protection Agency (EPA) Green Power Partnership. Webinar. January 25, 2017. Slide 5. Available at: https://www.epa.gov/sites/production/files/2017-01/documents/webinar_20170125_kent.pdf. Citing EIA (2016), Barbose (2016), O'Shaughnessy et al. (2016).

Also see Barbose, G. (March 2017). *U.S. Renewables Portfolio Standards Status Update and Review of Costs, Benefits, Impacts*. Lawrence Berkeley National Laboratory (LBNL). Presentation to Michigan State IPU Grid School, March 28, 2017. Slide 8.

Of the 29 state RPS programs in the U.S. (plus Washington DC), all but two are "consumption-based," meaning they require that a certain percentage of electricity sales, or delivered or consumed electricity, is met or supplied with renewable resources.[4] In other words, RPS programs ensure that the electricity that customers receive includes renewable energy.

The voluntary market delivers renewable energy specifically to those customers who voluntarily purchase in excess or outside of what is required by law. Thousands of businesses and millions of individuals across the country voluntarily purchase green power and thousands of renewable energy generators, utilities and competitive suppliers across the country supply it to them, amounting to billions of kilowatt-hours of renewable energy annually.[5] Demand drivers in the voluntary market include environmental leadership; carbon footprint and sustainability goals; marketing, brand and reputational benefits; recognition by peers, NGOs and federal programs like the EPA's Green Power Partnership and Leadership Awards[6]; and increasingly, cost stability and savings.[7]

The general differences and similarities between RPS and voluntary markets for renewable energy are summarized in Table 1 below and discussed in more detail in the following sections.

Table 1. U.S. Renewable Energy Market Landscape Summary

	Market type	Demand Drivers	Tracking and Verification Tool	Geographic Scope	Eligibility and Oversight
RPS Markets	Consumption-based (in all but 2 states)	State law	RECs and regional REC tracking systems	Subnational, varies by state	Set by state
Voluntary Market	Consumption-based	Environmental leadership, sustainability goals, cost benefits	RECs and regional REC tracking systems	National	Set by third-party standards (e.g. Green-e), which may include state- or region-specific requirements

Tracking and Verification

Both RPS and voluntary markets require a mechanism for determining who is getting the renewable energy that is generated. Renewable energy (and in fact all specified generation) cannot be physically delivered on a shared grid to specific customers; delivery and use can only be determined contractually. In the U.S., RECs are used as the essential accounting and tracking

[4] Iowa and Texas have "capacity-based" RPS programs, which specify quotas in terms of MW of capacity. See dsireusa.org.

[5] See http://www.epa.gov/greenpower/. Also see the National Renewable Energy Laboratory's (NREL's) market analysis at http://www.nrel.gov/analysis/green-power.html and http://www.nrel.gov/analysis/market_green_power.html.

[6] Visit https://www.epa.gov/greenpower for more information.

[7] See "Why GPP Partners Use Green Power," https://www.epa.gov/greenpower/green-power-partnership-program-success-metrics. Accessed May 25, 2017.

tool in both markets to allocate renewable generation to specific customers and to purchase green power, either to demonstrate RPS compliance or meet voluntary demand.

RECs provide a standardized currency for renewable energy. They can help facilitate transactions, lower transaction costs, increase market participation, and increase available electricity product options. Each REC represents the generation attributes of one megawatt-hour (MWh) of renewable electricity that has been added to the grid. These attributes include the renewable fuel type, location, the greenhouse gas emissions profile (emissions per MWh) and the other environmental and social impacts and benefits of the generation. RECs are created at the point of generation, owned by the generator and then transacted to electricity distributors and suppliers (e.g., utilities) or directly to electricity consumers, either bundled with the electricity or separate from electricity. RECs are either created by a generator or issued by one of several electronic certificate tracking systems (REC tracking systems) that cover different regions of the U.S. Even in the case that a renewable generator is not registered with a tracking system, RECs are de facto created for each MWh of generation and may be transferred and retired contractually.

All options for voluntarily using and purchasing renewable electricity in the U.S., including onsite generation, must include RECs to substantiate a renewable energy usage or environmental claim.[8] In RPS markets, RECs are retired by load-serving entities (LSEs) and other regulated entities to verify that they are complying with state requirements to provide their customers with renewable energy. In other words, RECs are required for state RPS programs to claim that renewable electricity is delivered to or generated on behalf of customers in that state and for customers in that state to claim to be receiving renewable electricity due to the RPS.

REC tracking systems provide exclusive issuance, trading, and retirement of RECs within markets for renewable energy to support compliance and credible claims. They also provide verification of generation data and can help ensure full aggregation of attributes. In these tracking systems, RECs are electronically serialized and issued to generators with accounts; they are tracked between account holders, and ultimately permanently retired or cancelled electronically by the entity making the claim or on behalf of an end-user making a claim.

Each renewable generator registered with a tracking system has certificates issued for all its production that is put onto the grid. RECs are issued for all generation from registered

[8] See 16 C.F.R. § 260.15(a) and (d). And US Federal Trade Commission (FTC). (2012). *Guides for the Use of Environmental Marketing Claims; Final Rule*. 260.15(a) and (d). Available at: https://www.ftc.gov/sites/default/files/documents/federal_register_notices/guides-use-environmental-marketing-claims-green-guides/greenguidesfrn.pdf.

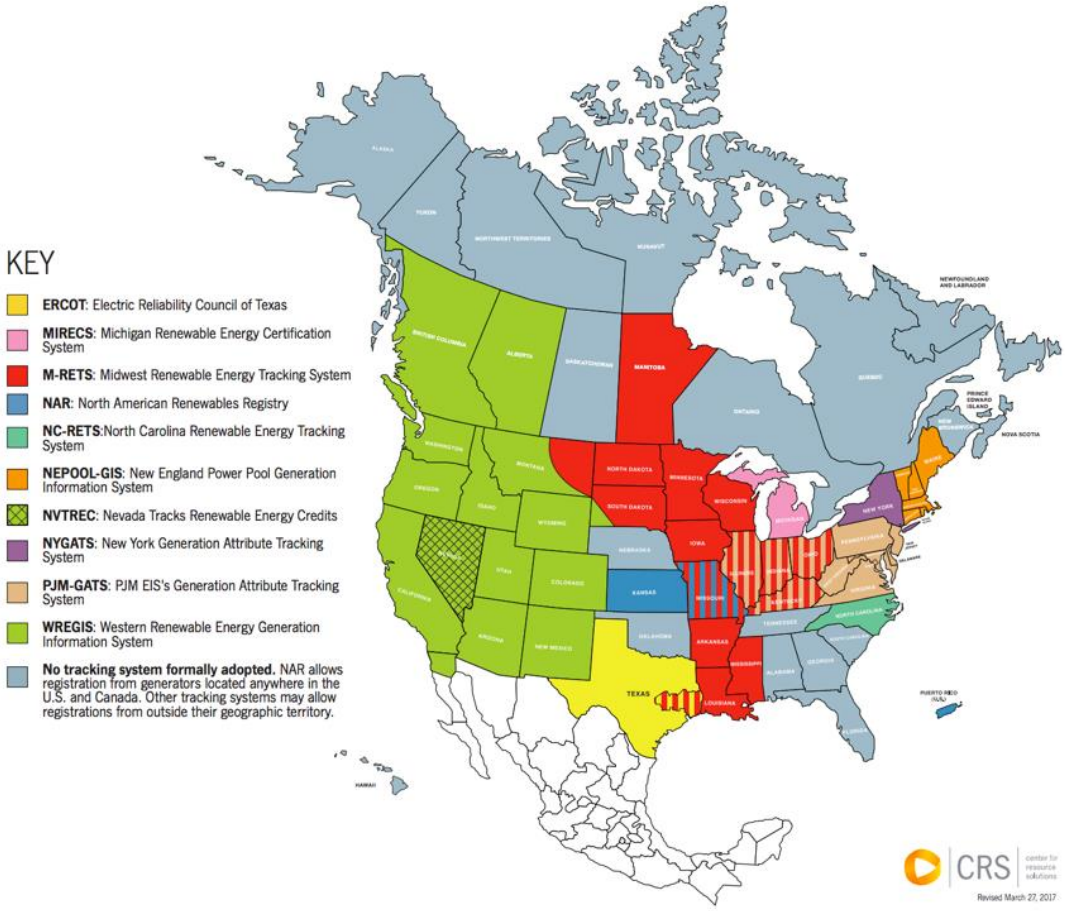
Also see US Federal Trade Commission. (2015). *Letter from James A. Kohm, Associate Director, Division of Enforcement, Bureau of Consumer Protection, to R. Jeffrey Behm, Esq., Sheehey, Furlong & Behm, P.C*. February 5, 2015. Available at: https://www.ftc.gov/system/files/documents/public_statements/624571/150205gmpletter.pdf.

generators and no RECs from registered generators are transferred outside of the tracking system. Transactions outside of REC tracking systems with facilities that are not registered are limited to special cases (e.g. where participation in the tracking system is too costly for very small generation units).

Although REC tracking systems were sometimes initially built to serve either RPSs or the voluntary market, they, like the RECs themselves, are used or have been adapted to serve both markets. Tracking systems can help standardize and synchronize accounting rules and monitoring, reporting, and verification (MRV) practices between markets.

Figure 1 shows the regional REC tracking systems in the U.S. and Canada. All but two of them are quasi-governmental functional support entities. The Midwest Renewable Energy Tracking System (M-RETs) is an independent non-profit, though it is referenced in state legislation. The North American Renewables Registry (NAR) is a private tracking system run by the private firm APX[9] to cover generation in states and provinces that are not covered by other tracking systems, mainly non-RPS states.

Figure 1. Map of Renewable Energy Tracking Systems in the U.S.



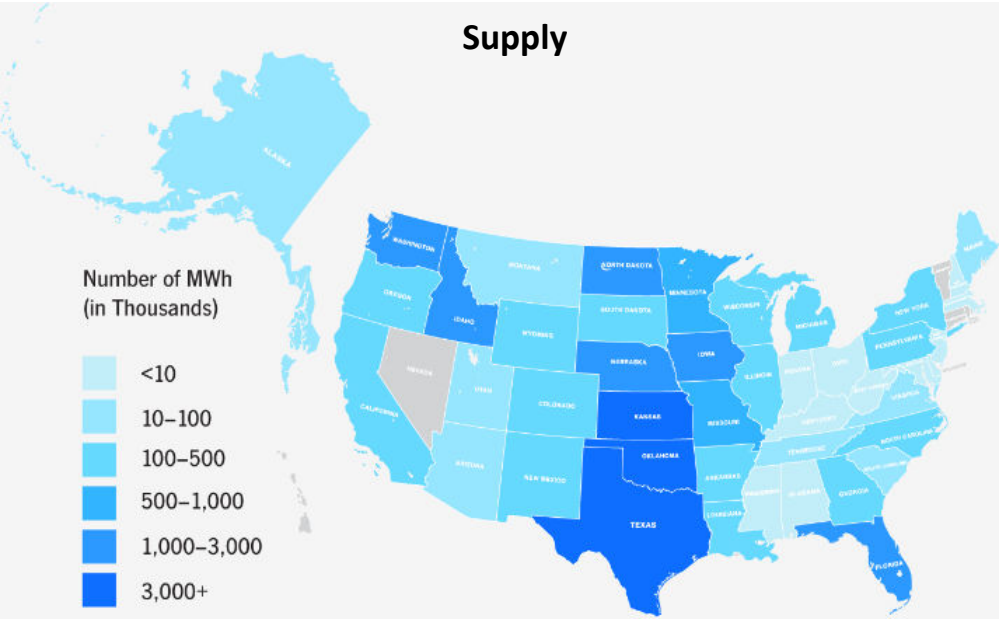
[9] http://www.apx.com/.

Geographic Scope

RPS markets are subnational, as they are intended to produce "local" (which can be in-state or regional) renewable energy development and benefits. The voluntary renewable energy market, on the other hand, is national in scope,[10] so that voluntary purchasers can access renewable energy from across the country at the lowest cost. While the voluntary market uses regional REC tracking systems, each with slightly different issuance rules, this does not produce separate voluntary markets. RECs issued in any state or tracking system can be sold to and claimed by voluntary customers anywhere across the country. Voluntary buyers who want to purchase renewable energy from nearby generators can do so and there are "sub-markets" within the overall voluntary market based on consumer preferences for certain resource types, locations, product types, age of facilities or specific benefits, but these are considered part of the overall voluntary market and buyers may be located across the U.S.

This means that while individual projects serving voluntary customers are located in individual states and produce local benefits, the voluntary market aggregates demand from across the country to drive renewable energy development at a national level. This development is not evenly distributed across the country. This is illustrated in Figure 2 and Figure 3 below, which show that the majority of voluntary supply comes from the middle of the country, while the majority of voluntary sales are made on the coasts.

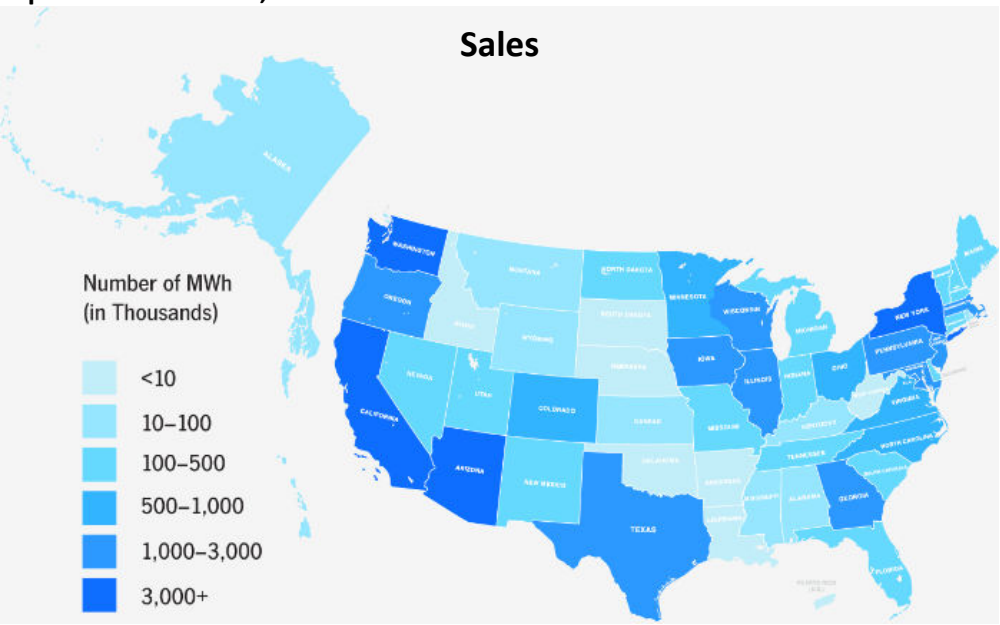
Figure 2. Maps of Green-e Supply, 2015



[10] See O'Shaughnessy, E. *et al.* (2016). *Status and Trends in the U.S. Voluntary Green Power Market (2015 Data)*. National Renewable Energy Laboratory (NREL). Technical Report NREL/TP-6A20-67147. October 2016. Available online: http://www.nrel.gov/docs/fy17osti/67147.pdf.

Also see Center for Resource Solutions (CRS). (October 16, 2016). *2015 Green-e Verification Report*. Available at: https://www.green-e.org/docs/2015%20Green-e%20Verification%20Report.pdf.

Figure 3. Maps of Green-e Sales, 2015



Source: Center for Resource Solutions

Eligibility and Oversight

In the case of RPS programs, eligibility requirements are set by the states. Oversight and verification is provided by designated state agencies. RPS programs define the renewable resources or technologies that are eligible for compliance, and they can include "carve outs" or sub-quotas for certain technologies. Alternatively, some RPS programs use credit "multipliers" or incentive credits to incentivize certain technologies or generation to meet different policy goals. RPS programs can also specify or include buckets for different types of eligible procure-ment (for example, "bundled" vs. "unbundled" renewable energy). And RPS programs set rules for REC vintage and for whether RECs created in one year can be banked for use in a future year.

The voluntary market is, for the most part, not regulated by governmental agencies. Rather, private, third-party standards and certifications are used to verify delivery and ownership. Green-e® is the leading third-party certification for voluntary renewable energy in the U.S. and Canada. Like state RPS programs, third-party standards for the voluntary market limit eligibility and set rules in terms of technology, date of facility construction/operation, and vintage of eligible sales. For example, Green-e limits eligibility based on date of construction, technology (limited biomass and hydropower), and REC vintage (certified sales made in a particular calendar year must be supplied with renewable energy generated in that year, the last six months of the prior year, or the first three months of the following year).

Green-e also includes requirements that limit the location and type of supply that may be used for certain renewable energy products. For example, supply used for certified competitive electricity products and utility green pricing programs is limited to the North American Electric Reliability Corporation (NERC) region, Independent System Operator (ISO), Regional

Transmission Organization (RTO) or Balancing Authority Area of the customers being served. Other rules at Green-e seek to ensure that the voluntary renewable energy and its benefits are surplus to those that are already delivered through state and federal programs and policies.[11]

The voluntary market includes a wide variety of product types—from onsite self-generation to direct purchasing from specific generators to retail purchasing from a utility, competitive supplier, or REC marketer. These transactions may be bundled or unbundled.

Overlapping Goals

The RPS and voluntary markets are both aimed at creating more renewable energy, and despite being separate and incremental markets, they each benefit the other. Voluntary demand that drives private investment in the state reduces local environmental and health impacts of electricity generation beyond what is achieved through existing regulatory policy alone. This helps meet state energy, climate, and economic policy goals. Voluntary supply can also lower the costs of RPS implementation by creating additional demand and private investment for renewable capacity, thereby building local project development capability, creating inventory for the future, and helping prepare the market for either a new RPS program or an RPS increase.

In 2015, RPS demand was about 214 million MWh. Of that, demand for "new" renewables built since the commencement of each state's RPS (in roughly the last 20 years) was about 126.5 million MWh.[12] In comparison, U.S. electricity customers voluntarily purchased about 78 million MWh of green power in 2015,[13] equivalent to 36 percent of combined RPS demand. About 56 percent of that, or 44 million MWh, was certified by Green-e® Energy, the leading third-party certification for voluntary renewable energy in North America.[14]

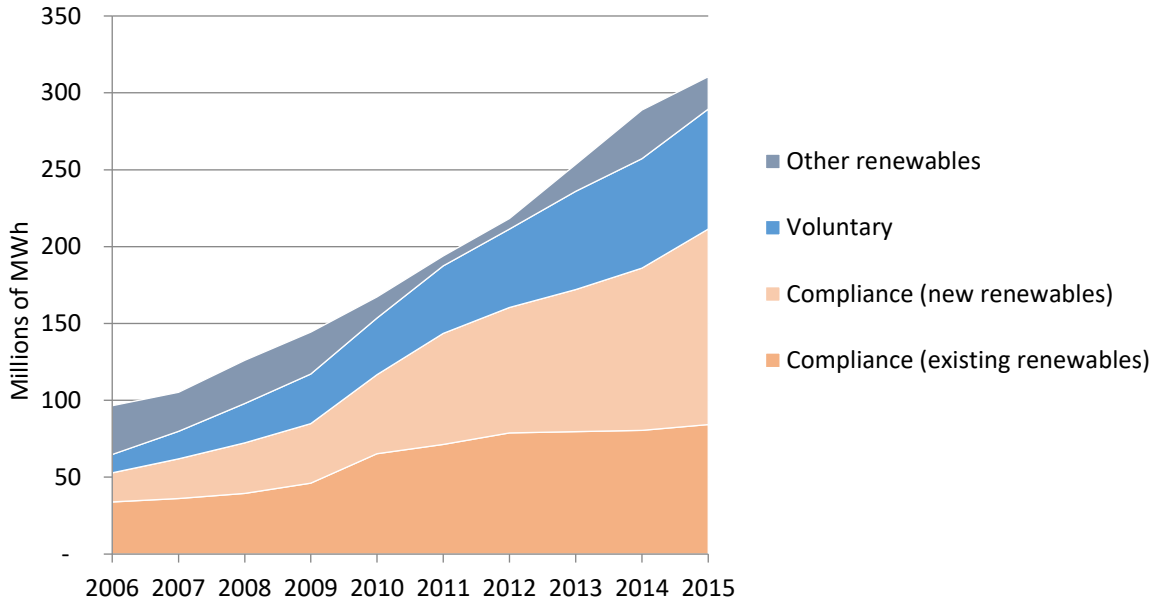
The voluntary market has grown at an average of 16 percent per year over the last five years.[15] Leading corporate buyers invested in nearly six gigawatts (GW) of new renewable energy capacity in the past three years alone.[16] In 2015 and 2016, the majority of renewable capacity additions have been made outside of state-mandated renewable energy requirements, 60 percent

[11] *Green-e Renewable Energy Standard for Canada and the United States v3.1*. Updated June 9, 2017
[12] Barbose, G. (2016). *U.S. Renewables Portfolio Standards: 2016 Annual Status Report.* Presentation April 2016. Lawrence Berkeley National Laboratory. Available at: https://emp.lbl.gov/sites/all/files/lbnl-1005057.pdf
[13] O'Shaughnessy, E. *et al.* (2016). *Status and Trends in the U.S. Voluntary Green Power Market (2015 Data)*. National Renewable Energy Laboratory (NREL). Technical Report NREL/TP-6A20-67147. October 2016. Pg. 3. Available online: http://www.nrel.gov/docs/fy17osti/67147.pdf.
[14] Center for Resource Solutions (CRS). (October 16, 2016). *2015 Green-e Verification Report*. Available at: https://www.green-e.org/docs/2015%20Green-e%20Verification%20Report.pdf.
[15] Email from Jenny Heeter, National Renewable Energy Laboratory (NREL), received May 12, 2017.
[16] See Business Renewables Center. (May 2017). *Corporate Renewable Deals 2012-2017*. Rocky Mountain Institute. Available at: http://businessrenewables.org/corporate-transactions/.

and 55 percent respectively,[17] and a significant portion of this has been built to serve voluntary customers.

But importantly, RPS markets and the voluntary market grow together. This has been true both nationally (see Figure 4 below from the National Renewable Energy Laboratory comparing voluntary and RPS markets in terms of total volumes transacted) as well as regionally. Figures 5 and 6 show regional growth of RPS and voluntary renewable energy, respectively, which have both trended upward.

Figure 4. NREL Comparison of Voluntary and Compliance Markets, 2006-2015[18]



[17] See Barbose, G. (2017). *U.S. Renewables Portfolio Standards: Status Update and Review of Costs, Benefits, Impacts*. Presentation to Michigan State IPU Grid School, March 28, 2017. Lawrence Berkeley National Laboratory. Slides 8-9.

Also see Barbose, G. (2016). *U.S. Renewables Portfolio Standards: 2016 Annual Status Report.* Presentation April 2016. Lawrence Berkeley National Laboratory. Available at: https://emp.lbl.gov/sites/all/files/lbnl-1005057.pdf

[18] Email from Jenny Heeter, National Renewable Energy Laboratory (NREL), received May 12, 2017.

Figure 5. Historical Regional Growth of RPS Renewable Energy, 2005-2015[19]

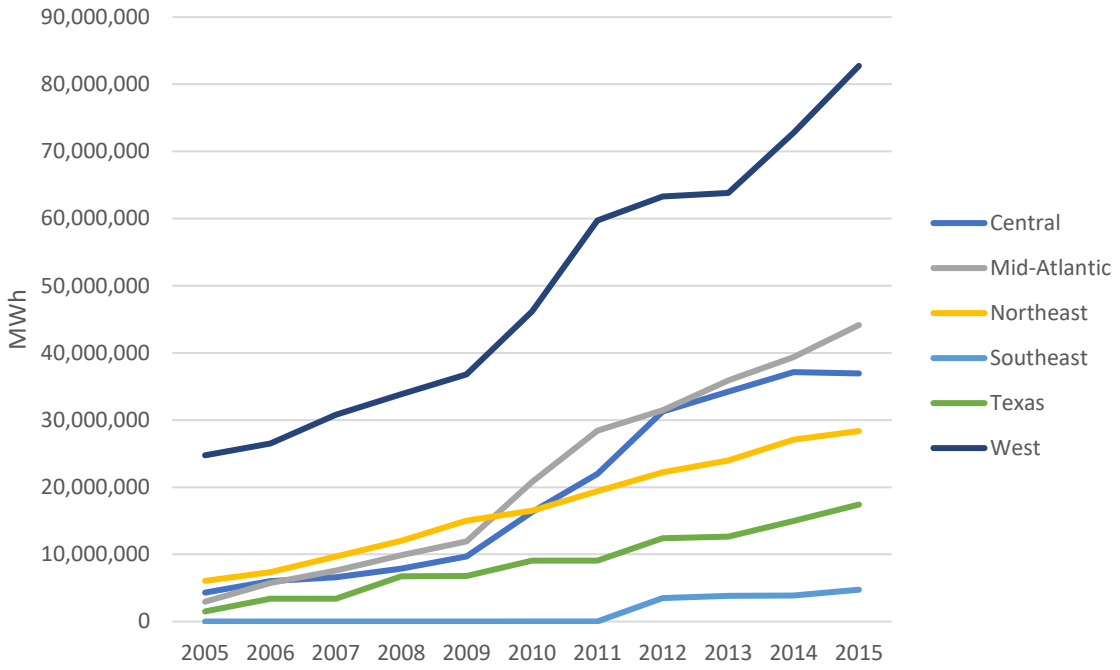
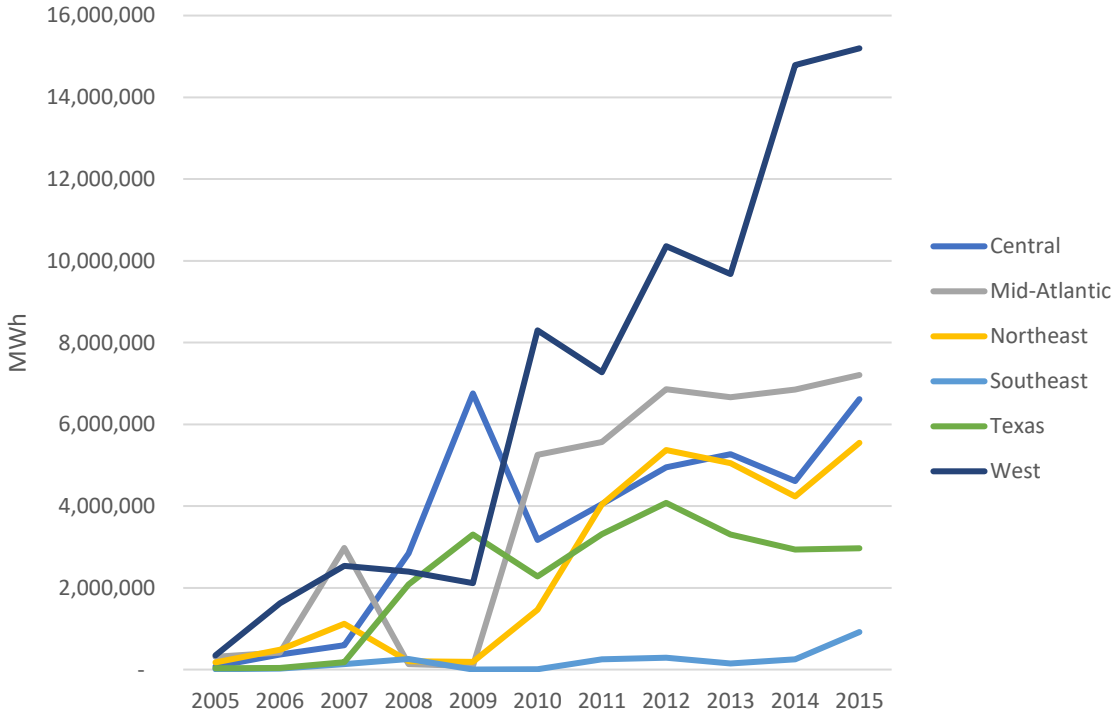


Figure 6. Historical Regional Growth of Green-e Certified Voluntary Renewable Energy, 2005-2015



[19] Prepared using RPS Demand data (RPS compliance data for 2005-2014 and RPS demand projection data for 2015) received from Lawrence Berkeley National Laboratory (LBNL).

Strong RPS and voluntary markets mutually support regulatory and tracking infrastructure, data aggregation and quality, and functional support tools that can serve multiple markets. Each respective market can foster innovation and build technical expertise that can bring other solutions to scale and lower transaction costs across markets. They can help standardize and synchronize accounting rules and measurement, reporting, and verification (MRV) practices that can mitigate leakage of environmental benefits. Mutually supportive voluntary and compliance markets can also create liquidity for environmental benefits, increasing the number of transactions and creating a common currency and common market rules.

Intersections between RPS and Voluntary Markets

There are many examples of facilities that were initially built to supply one market or the other and have since gone on to supply the other. This is good for both markets. For example, 360 wind facilities located in 29 states covering all regions of the country supplied both Green-e voluntary sales and state RPS programs in 2015.[20]

The voluntary and RPS markets also intersect in certain 100 percent renewable energy purchases—that is, they can work together to deliver 100 percent renewable energy. Certain voluntary programs, including Green-e, allow RPS renewable energy that also meets voluntary standard requirements to be included in 100 percent renewable electricity products that are sold by utilities subject to an RPS, so that voluntary purchasers do not have to purchase more than 100 percent renewable energy. For example, if the RPS is 25 percent and the utility is offering a 100 percent renewable energy voluntary product, the utility could potentially include the 25 percent RPS and provide an additional 75 percent renewables. If the 25 percent RPS meets the Green-e standard, the whole product, including the RPS portion, can be Green-e certified and the product content label would simply indicate 25 percent RPS and 75 percent voluntary. Other voluntary recognition programs do not allow this and will only recognize voluntary action.

Another increasingly important intersection of voluntary and RPS markets is in corporate purchases or procurement that involves "REC arbitrage." The existence of a national voluntary market can make it financially feasible for businesses and institutions to finance renewable energy projects that help a state meet its RPS compliance goals while allowing the financing organization to claim use of renewable energy. In regions where REC prices are high, due to strong RPS programs or limited local supply, a business or institution can dramatically lower its net cost of building renewable energy by selling the RECs into the local compliance market. But the business would still need RECs to substantiate its own usage and make credible usage and carbon footprint claims. The company can arbitrage RECs using the national voluntary market—the RECs from the owned generation can be sold off in the local compliance market to lower

[20] Based on Green-e verification data and wind facility data obtained from Lawrence Berkeley National Laboratory (LBNL).

the net cost of the project and then cheaper RECs from the national voluntary market can be purchased, resulting in a cost savings. In this case, the specified renewable energy purchase is defined by the REC ultimately owned, and the customer cannot claim use of electricity from the local project, which was sold off. But this is an important example of how private investment and voluntary demand can support compliance markets without double counting or damaging voluntary claims.

Principles for Supporting Compliance and Voluntary Market Growth

There are three general conditions for credible voluntary renewable energy claims in the U.S.[21]

No double counting. To ensure consumer confidence and delivery of real benefits to voluntary buyers, the same renewable energy (or any single attribute) cannot be counted or claimed more than once or by more than one party.

Full attribute aggregation. Voluntary renewable energy usage claims require that customers own all of the associated environmental and social attributes of generation. None of the attributes that help define that generation can have been sold off, transferred, or claimed elsewhere. Most tracking systems and voluntary programs in the U.S. require that RECs include "all renewable energy attributes" or that they be "whole certificates."

Regulatory surplus. Voluntary means surplus or in addition to what is required by regulation. Voluntary buyers expect their investments to make an incremental difference. Voluntary renewable energy should be in excess of what is required by law and not simply reduce the costs of compliance for regulated entities.

In all RPS states except Texas and Iowa, avoiding double counting will produce regulatory surplus for voluntary renewable energy.[22] This is because the RPS requires delivery of renewable energy to grid consumers and renewable energy can only be delivered once to a single party. In this case, ensuring that the REC is not double counted in the voluntary market and toward an RPS will also ensure that it is surplus to the RPS if sold in the voluntary market.

[21] These conditions are specific to voluntary renewable energy claims in the U.S. These are different but related to the international criteria for making credible renewable energy usage claims included in a RE100 white paper entitled *Making Credible Renewable Electricity Usage Claims* (April 2016), which include: 1. Credible generation data, 2. Attribute aggregation, 3. Exclusive ownership, 4. Exclusive claims, 5. Geographic limitations, and 6. Vintage limitations. These conditions are also slightly different from international conditions for effective voluntary markets included in a 21st Century Power Partnership report entitled *Policies for Enabling Corporate Sourcing of Renewable Energy Internationally* (May 2017), which include 1. Legally enforceable property rights, 2. No double counting, and 3. Regulatory surplus.

[22] In Iowa and Texas (capacity-based RPSs), there is no risk of double counting since the RPS does not deliver renewable energy to customers. Rather, these RPS programs produce renewable capacity and do not specify to whom it is delivered. It may be purchased voluntarily as specified generation or it may be delivered by local utilities to serve default retail load. But the voluntary market still requires regulatory surplus. Voluntary buyers cannot claim that generation from capacity counted toward the RPS is surplus to regulation. In these states, different facilities can supply the voluntary and RPS markets.

In these states, a single renewable facility may supply both the voluntary and compliance markets, but a single unit of renewable generation (MWh) must be used for one or the other.

With these general conditions and interactions in mind, the following are steps that RPS programs can take if they want to facilitate and support voluntary renewable energy.

1. *Leave room for the voluntary market to go above and beyond what is required by the RPS.*

States that automatically count all in-state renewable generation toward the RPS may not get the benefits of voluntary supply. Voluntary purchasers in the state will be supporting economic investments in other states. Furthermore, to the extent that some voluntary purchasers may only be motivated to purchase local or in-state renewable energy or else nothing at all, this policy may reduce overall voluntary demand.

Also consider leaving room for the voluntary market among projects that receive state funding or incentives by allowing customers to retain the RECs associated with these projects or choose whether to retain or sell the RECs in exchange for a different incentive. If a state incentive program—for example, for distributed solar projects—includes a condition of the incentive that the environmental attributes are retained by the state or utility and used for the RPS, onsite customers seeking to claim use of renewable energy or reduce their carbon footprints using these projects cannot use the program, and may elect not to build or host new projects.

2. *Use RECs.*

Transaction costs in the voluntary market may be significantly higher in states that use a different instrument to account for delivery of renewable energy for the RPS, such as power contracts or scheduling of physical electricity, as it will be more difficult to verify exclusive ownership, full aggregation, and regulatory surplus. Though all states with existing consumption-based RPS programs currently use RECs for compliance,[23] to the extent that new programs may consider other instruments or states may reconsider use of RECs (as Arizona is considering[24]), this is an important principle.

3. *Align the state's REC definition with other states and the voluntary market to the extent possible.*

Variations in state REC definitions with respect to which attributes are included effectively create different eligibility requirements for different states' programs. It is preferable for states to have consistent REC definitions. That does not mean that all state RPS programs need to have the same eligibility requirements. They can determine eligibility for different renewable energy based on their unique state objectives and in order to, for example, achieve in-state

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

[24] See Arizona Corporation Commission (ACC) Docket No. E-00000Q-16-0289 (September 14, 2016), An Examination into the Modernization of the Expansion of the Arizona Renewable Energy Standard and Tariff. http://edocket.azcc.gov/Docket/DocketDetailSearch?docketId=19621#docket-detail-container1.

economic benefits. But standardization and consistency between markets and states with respect to what a tradable REC is and attributes are included has benefits with respect to overall liquidity and participation. It also helps reinforce voluntary claims, in that delivery of the same benefits to customers using the same instrument has basis in state law, and can help prevent conflicts between programs.

4. Use REC tracking systems.

Using the same accounting system and tracking system functionality for both an RPS and the voluntary market can reduce the costs of verification for both markets. Having two different systems forces system operators to engage in complicated communication with each other to prevent double counting. For example, prior to the introduction of the New York Generation Attribute Tracking System (NYGATS) in 2016, the state of New York tracked and recorded RECs for its RPS without an electronic tracking system, instead using internal spreadsheets, contracts, and attestations. As a result, Green-e required additional audit procedures for New York sales and supply in order to verify that generation was not being double counted. Such additional requirements can limit participation and increase audit costs.

5. Take steps to avoid double counting.

States should not suggest that voluntary generation was used to the meet the RPS or delivered to, consumed by, produced for, or can otherwise be claimed by any customers other than the REC owner. The state should also not factor generation from these projects into emissions factors that are used to characterize the power consumed by an entity other than the REC owner. Generation from these projects should be removed from emissions factors used by customers other than the REC owner to calculate the emissions associated with their purchased electricity or to characterize the power they consume (e.g. statements like, “my power is 25 percent renewable”).

6. Protect regulatory surplus for the voluntary market.

Even where the renewable energy and RECs are delivered to a single voluntary purchaser, the purchase should not be counted toward a mandate effectively required by law. This can occur with a RPS that counts the voluntary market and renewable energy delivered to voluntary purchasers in the state toward the mandate. Clarity with respect to RPS accounting—clear RPS targets and a clear understanding of how compliance will be verified and which RECs will be counted—is extremely important for the voluntary market.

For example, the state of New York has a 50 percent renewable energy by 2030 Clean Energy Standard (CES), which, like the state’s previous Renewable Portfolio Standard (RPS), includes a “voluntary portion” that is to be met with voluntary renewable energy—i.e., MWh consumed by specific customers in the state. However, as of the date of publication, it remains unclear whether the state is simply pointing to the voluntary market to meet this portion of a statewide “goal” that is on top of and separate from compliance procurement for consumption by collective consumers in the state—the state’s Renewable Energy Standard (RES)—or whether the voluntary portion is effectively required and accounted for the same as other generation used for compliance. This question about whether generation that is counted toward a voluntary

portion is surplus to regulation asks whether such generation is truly "voluntary" and making a difference beyond what is required by law and regulation.

7. Avoid disaggregating attributes or splitting RECs.

Where an RPS disaggregates attributes or splits RECs for generation that qualifies for the RPS, this effectively "uses" or "claims" the entire REC from the perspective of the voluntary market. The remaining disaggregated attributes are not equivalent to a whole REC that can be used for a renewable energy usage claim. Identifying RECs that have been disaggregated but not retired increases the costs of verification in the voluntary market and may lead to confusion that ultimately results in customers being either intentionally or unintentionally misled.

Disaggregation can occur where states or voluntary programs create a separate instrument to convey delivery of certain attributes or benefits in the power sector (e.g. carbon), making it possible for two different buyers to claim receipt of (or characterize their electricity generation with respect to) some but not all generation attributes. In this case, there is no double counting of individual attributes, but the full suite of attributes that characterize the generation as renewable has been disaggregated and neither buyer is able to claim general "use" of renewable energy.

8. Consider the implications of creating multipliers that complicate accounting.

Different policy mechanisms can be used to incentivize different technologies or types of renewable energy in RPSs, including technology "carve outs" (or sub-quotas) and compliance multipliers. An example of a multiplier is where an RPS chooses to award two MWh of compliance credit for one MWh of solar. Although there can be situations where RPS programs find multipliers appealing, from the standpoint of the voluntary market, it is preferable that all RECs represent one MWh of renewable generation. If a multiplier is assessed by the RPS administrator (meaning the tracking system issues one REC per MWh and the RPS administrator records more than one MWh of compliance credit for that REC), this requires "out-of-system accounting," in which case the tracking system shows fewer certificates retired for compliance than are recorded for the RPS. This can make it difficult for voluntary purchasers who seek to purchase renewable energy for the remaining portion of their electricity consumption, up to 100 percent, to determine much renewable energy they need to purchase.

Alternatively, if the tracking system itself assesses the multiplier (i.e. issues more than one REC for one MWh of generation), this can create confusion and actual or perceived double counting for other users of the tracking system. For this reason, Green-e requires participating sellers of voluntary renewable energy sourcing from states with multipliers to purchase all the certificates and instruments issued for one MWh of generation to match with one MWh of sales, whereas simply procuring RECs on a one-REC-to-one MWh-sold basis, as they would in a state without multipliers, may result in fewer RECs than are needed to match their sales in a state with multipliers. This makes voluntary participation more complex and difficult.

State Government Support of the Voluntary Market

In addition to the ways in which state governments structure and administer RPSs, there are other things that they can do to support voluntary markets for renewable energy. First, the government itself (different state agencies) can voluntarily purchase renewable energy above and beyond the RPS. For example, the states of Pennsylvania, Delaware, Connecticut, and Wisconsin are all listed in the top 100 voluntary purchasers by the EPA's Green Power Partnership.[25] States can set purchase targets or obligations, for example that state agencies use 100 percent renewable energy by a certain year, regardless of the RPS target in the state. They can set purchasing rules and restrictions for state agencies, including that the renewable energy come from facilities built recently, in-state facilities, certain technology types, and that the renewable energy by certified by a third party (e.g. Green-e). The voluntary market can develop products to meet this demand.

States (particularly those with regulated utilities) can also require that electric suppliers offer a voluntary green power option to their customers. The availability of such a program can help increase customers' access to voluntary options. Several states[26] have requirements that electric suppliers offer some form of voluntary renewable energy option to customers. States can also help promote and market the programs.[27] In addition, states can adopt a goal in terms of program participation or voluntary MWh sold.

States can set a state goal for voluntary renewable energy. This would not represent a mandate, and neither would it make any delivery or consumption claims on the renewable generation. Rather, it would merely represent a public statement in support of voluntary green power as an additional driver of investment and renewable energy in the state. The voluntary portion of the CES in New York may in fact be an example of this.

The state can do various things to support such a goal and to recognize and support voluntary purchasers, including provide market analysis, information and education, as well as develop or support existing purchaser recognition programs and/or awards for voluntary buyers, suppliers, project developers, etc., such as the annual Green Power Leadership Awards presented by Center for Resource Solutions and the U.S. Environmental Protection Agency (EPA).[28]

State agencies, including RPS program administrators, can work together to synchronize accounting rules for deliveries of renewable energy across different programs. Carbon

[25] Nos. 36, 64, 76, and 98, respectively, on the National Top 100 list released July 24, 2017. See https://www.epa.gov/greenpower/green-power-partnership-national-top-100.

[26] These states include Connecticut, Colorado, Iowa, Minnesota, Montana, New Jersey, New Mexico, Oregon, Vermont, Virginia, and Washington,

[27] O'Shaughnessy, E. *et al.* (2015). *Status and Trends in the U.S. Voluntary Green Power Market (2014 Data)*. National Renewable Energy Laboratory (NREL). Technical Report NREL/TP-6A20-65252 October 2015. Available online: http://www.nrel.gov/docs/fy16osti/65252.pdf. Pg. 9: "The survey results suggest that higher marketing expenditures are associated with higher participation rates."

[28] For more information, visit https://resource-solutions.org/programs/gpla/.

regulations, power source disclosure requirements, and potentially other programs that (at least in part) account for delivered power on the grid interact with RPS and the voluntary market. This may cause problems if these programs do not treat RECs and delivered power in the same way.

For example, where states require disclosure by electricity suppliers of the fuel mix or emissions of the electricity that is delivered to retail customers, RECs should be retired for specified renewable energy being reported to substantiate a retail product claim and in order to prevent double counting. To avoid double counting and violation of federal rules on environmental marketing claims[29], renewable energy must not be included in a supplier's fuel mix disclosure label and therefore reported as delivered to retail customers unless and until the RECs associated with that renewable energy have been retired on behalf of those retail customers.

Accordingly, suppliers should be required to report renewable energy only for the RECs which have been retired for their retail customers receiving that electricity offering in that annual reporting period. Otherwise, double counting could occur where retail suppliers are permitted to report renewable energy delivered to retail customers through the power source disclosure program without demonstrating retirement of the RECs from the same generation, which may be sold off and used for other state RPS programs or for other retail product claims. These alignment challenges may be avoided in states that use all-generation certificate tracking systems to do power source disclosure based on certificate ownership (like NEPOOL-GIS, PJM-GATS, and NYGATS).

Implications of Increasing RPS Targets for Voluntary Markets

As shown above, RPS markets and the voluntary market grow together. Historically, we have seen voluntary activity continue to grow in places where there is a strong RPS and state-level clean energy policy. But the actual effect of increasing RPS targets on specific voluntary market dynamics depends on RPS eligibility requirements and market boundaries because this determines the available supply relative to RPS demand and the local REC price. Though voluntary demand can remain unaffected or actually increase with an increase to the RPS, the supply used to meet that demand may shift to locations outside of the RPS market boundary due to increased prices. Voluntary purchasers without a preference for "local" renewable energy may use the national voluntary market to procure the cheapest renewable energy. A stronger RPS can therefore create benefits for other regions in terms of voluntary renewable energy. It can grow voluntary supply in other regions, expand the voluntary market, and lead to more interstate trading of voluntary renewable energy.

[29] See 16 C.F.R. § 260.15(a) and (d). And US Federal Trade Commission (FTC). (2012). *Guides for the Use of Environmental Marketing Claims; Final Rule*. 260.15(a) and (d). Available at: https://www.ftc.gov/sites/default/files/documents/federal_register_notices/guides-use-environmental-marketing-claims-green-guides/greenguidesfrn.pdf.

For example, the NEPOOL and PJM regions include some of the strongest RPS programs in the country. They are also historically supply-limited regions. Table 2 shows Green-e certified voluntary purchases (sales)[30] along with generation in these regions supplying Green-e sales (supply). The dramatic difference between sales and supply (sales far in excess of local supply) indicates that voluntary purchasers in these regions are getting most of their renewable energy from outside the region.

Table 2. Green-e Certified Voluntary Renewable Energy Sales and Supply, 2015

Region	Retail Sales (MWh)	Supply (MWh)
NEPOOL Region (CT, MA, ME, NH, RI, VT)	2,357,190	82,363
PJM Region (DC, DE, IL, IN, KY, MD, MI, NC, NJ, OH, PA, TN, VA, WV)	12,249,544	1,156,221

Conclusion

RPS and voluntary markets share a common history and overlapping goals. In order for RPS and voluntary markets to remain mutually beneficial, they should remain separate and incremental, and the integrity of common market infrastructure, including RECs and REC tracking systems, should be preserved and protected. RPS administrators can help achieve this by following the general principles laid out above and by working with other state agencies to support the voluntary market. There are important opportunities for growing both markets where they intersect—namely, through facilities that supply both markets, 100 percent renewable energy products, and corporate procurement involving REC arbitrage.

[30] The location of Green-e sales reflects where the customer is located in Green-e participant sales records. This can be the customer's headquarters and the customer may separately allocate their purchases to facilities and operations in other states.

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The Clean Energy States Alliance (CESA) is a national, nonprofit coalition of public agencies and organizations working together to advance clean energy. CESA members—mostly state agencies—include many of the most innovative, successful, and influential public funders of clean energy initiatives in the country.

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