



# POTENTIAL RPS MARKETS FOR RENEWABLE ENERGY GENERATORS

Prepared for the  
State-Federal RPS Collaborative

by

**Ed Holt**

Ed Holt & Associates, Inc.

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# Potential RPS Markets for Renewable Energy Generators

## **Abstract**

This paper provides information regarding where a renewable energy generator in a particular state or Canadian province can potentially sell its renewable energy certificates in order to meet the demand created by a renewable portfolio standard (RPS).

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## Introduction

A Renewable Portfolio Standard (RPS) is an important policy tool supporting the development of renewable electricity generation. Adopted by [29 states and the District of Columbia](#), RPS policies require the inclusion of minimum amounts of renewable generation in the electricity mix of retail electricity providers, and these amounts increase gradually over time until the ultimate goal has been achieved.

An RPS can have multiple classes of eligible renewables, each with its own target. One class, often called the main tier or Class I, allows any eligible renewable resource to compete on cost to achieve the goal. Because of the competitiveness of the various eligible technologies and economies of scale, the successful resources in the main tier have generally been wind and to a lesser extent biomass.<sup>1</sup> To provide greater diversification of renewable resources, many RPS states have also established separate targets or [set-asides for solar and distributed generation](#).<sup>2</sup>

In almost every RPS example, states verify compliance using renewable energy certificates (RECs). A REC is an electronic record showing that one unit of eligible renewable electricity (usually one MWh but in some states one kWh) has been generated. It represents the generation and environmental attributes of the generating facility and its operation. Retail electricity providers that must comply with the RPS must acquire sufficient RECs to meet the requirement and retire them from further use as proof of compliance. RECs are issued, tracked, and retired by [state or regional certificate tracking systems](#).

In adopting RPS policies, most states hope to encourage state economic development, as well as environmental improvement, resource diversification, improved reliability, and other objectives. To encourage local development, they might prefer to limit eligible energy generating facilities to those located in-state, but they are deterred from doing so by the U.S. Constitution's "dormant" commerce clause, which restricts states from "unjustifiably... discriminat[ing] against or burden[ing] the interstate flow of commerce."<sup>3</sup> As a result, to achieve their policy

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<sup>1</sup> During the period 1998-2012, wind has accounted for the vast majority (88%) of the additional capacity motivated by state RPSs, while solar (8%), biomass (3%) and geothermal (1%) have accounted for the remainder. Galen Barbose 2013. "State RPS Policies and Solar Energy Impacts, Experiences, Challenges, and Lessons Learned," p. 6. Presentation for SEIA Webinar, November 21, 2013 at <http://emp.lbl.gov/sites/all/files/seia-webinar-nov-2013.pdf>.

<sup>2</sup> Wisner, Ryan, Galen Barbose, and Edward Holt. 2010. *Supporting Solar Power in Renewables Portfolio Standards: Experience from the United States*. LBNL-3984E. Berkeley, CA: Lawrence Berkeley National Laboratory. <http://emp.lbl.gov/sites/all/files/REPORT%20lbl-3984e.pdf>.

<sup>3</sup> Elefant, Carolyn and Edward Holt. 2011. *The Commerce Clause and Implications for State Renewable Portfolio Standard Programs*. Montpelier, VT: Clean Energy States Alliance. <http://www.cleanenergystates.org/assets/Uploads/CEG-Commerce-Clause-paper-031111-Final.pdf>.

goals, many RPS states require that electricity be delivered to the regional power pool, the state, or a distribution utility along with the RECs needed for compliance.

This type of functional eligibility requirement may be considered neutral with respect to the commerce clause because “any company, whether in or out of a state, can meet these requirements. While an out-of-state developer may face added costs to connect to an in-state distribution facility, the costs are a product of a project’s distance to distribution facilities rather than geographic boundaries.”<sup>4</sup>

## Geographic Eligibility and RPS Compliance

A report by the Lawrence Berkeley National Laboratory summarized the [geographic eligibility rules for each state](#), at least to 2007.<sup>5</sup> This tells us what each state will accept for RPS compliance. But if a generator is located in a given state, there has been no guide to which RPS states it might sell to. This paper attempts to meet that need.

The table below shows potential RPS markets where a renewable energy generator might be able to sell its RECs. The owner of a generating facility can find in the table the state or province where the facility is located and then see the most likely RPS markets, by state, for its RECs. As mentioned above, in some cases the generator must also deliver electricity into specified jurisdictions or regions in order for its RECs to qualify. (See Table 1.)

The information summarized in the table applies to each state’s RPS main tier only. States with specific solar or distributed generation targets may require such resources to be interconnected to a utility within the state, and are therefore excluded from consideration in this table.

The target markets are limited to states with RPS requirements or voluntary goals. A generating facility may also be able to sell its output to non-RPS states, or to sell its RECs to any voluntary market customer, but those opportunities are not reflected in the table.

The potential target markets are based on two primary considerations.

1. State-by-state RPS statutes and rules pertaining to geographic eligibility. Most states publish conditions for generating facilities to be eligible to satisfy RPS requirements. In some cases, for example, they require electricity delivery to the state or region.

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<sup>4</sup> *Ibid.*

<sup>5</sup> Wisner, Ryan H., and Galen L. Barbose. 2008. *Renewable Portfolio Standards in the United States: A Status Report with Data Through 2007*, page 10. LBNL-154E. Berkeley, CA: Lawrence Berkeley National Laboratory.

2. The capability to move bulk power from one state to another, or from region to region. The analysis required judgment about the existence of transmission lines between states and regions, although transmission capacity constraints were not taken into account.<sup>6</sup>

## RPS Rules Can Change

Readers of this report should not presume that this guide provides any certainty about RPS markets—that’s why the RPS states are called *potential* markets. Readers should also bear in mind that states often place other conditions on generating facility eligibility besides geographic eligibility. For example, many state RPSs include eligibility requirements pertaining to the energy resource, the vintage, and the capacity of the generating facility. Therefore, the most important caveat is to read the RPS rules of each state being considered as a target market. These state rules can be conveniently accessed at [www.dsireusa.org](http://www.dsireusa.org).

Even if a generating facility believes it can meet a state’s eligibility requirements, it should be aware that a state may already be generating adequate renewable energy resources in-state. For example, the Western Electricity Coordinating Council estimated that several states are expected to achieve over 75% RPS compliance with in-state resources and, across the entire Western Interconnection, over 75% of RPS requirements sources could be met by in-state resources.<sup>7</sup>

The notes at the end of the table should also be viewed for further explanation. However, even the notes simplify state rules, and readers should read the state rules for full details.

## Conclusion

Limited program experience exists on which to base conclusions regarding the success of RPS programs in supporting and promoting the deployment of critical infrastructure energy resiliency technologies. Nevertheless, there is precedent for the use of RPSs for this purpose, and states have shown an interest in achieving energy resiliency outcomes. RPSs represent an existing structure that could be used to support such programs. It is likely that the type and size of incentives will need to be carefully tailored to the type and size of the technologies to be supported, in order to be successful; and for smaller projects especially, efforts should be made to keep transactional barriers low.

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<sup>6</sup> Generating unit owners should become familiar with the [North American Electric Reliability Corporation’s regions](#), and the [balancing authorities](#) within those regions, for high-level insight into the geographic reach of power sales to potential RPS markets.

<sup>7</sup> Western Electricity Coordinating Council, 10-Year Regional Transmission Plan, Plan Summary, September 2011. [https://www.wecc.biz/Reliability/2011\\_Plan\\_Summary.pdf](https://www.wecc.biz/Reliability/2011_Plan_Summary.pdf).

Readers from RPS states (particularly state regulators) are encouraged to review the accuracy of the table from their state’s point of view. They should find their state in the sales opportunity column, not the generator location column, and ask themselves if it is likely that they could or would accept energy or RECs from the originating state for RPS compliance. If you think any information in the table should be modified, please contact Samantha Donalds at [Samantha@cleanegroup.org](mailto:Samantha@cleanegroup.org).

**Table 1: Renewable Energy Potential Sales Targets for Generators Located in Named States and Canadian Provinces.** (See glossary at end of table for notes and definitions.)

<b>GENERATOR LOCATION</b>	<b>SALES OPPORTUNITY (RPS STATES ACCEPTING FROM THE GENERATOR LOCATION)</b>
<b>Alabama</b>	NC (if energy delivered to in-state utility)
<b>Alaska</b>	See Notes 1 & 6
<b>Alberta</b>	See Notes 1 & 6
<b>Arizona</b>	AZ, CA***; NM (if energy is contracted for delivery); OR
<b>Arkansas</b>	KS (if energy is delivered)
<b>British Columbia</b>	OR; MT and WA (if energy is delivered)
<b>California</b>	AZ (if energy is delivered), CA, OR
<b>Colorado</b>	CO; AZ and KS (if energy is delivered); NM (if energy is contracted for delivery); OR
<b>Connecticut</b>	CT, MA, ME, NH, RI, VT; NY (if energy is delivered)
<b>District of Columbia</b>	DC, DE; IN (up to 50% of compliance); MD, NJ, PA, VA
<b>Delaware</b>	DC, DE; IN (up to 50% of compliance); MD, NJ, PA, VA
<b>Florida</b>	NC (if energy delivered to in-state utility)
<b>Georgia</b>	NC (if energy delivered to in-state utility)
<b>Hawaii</b>	HI
<b>Idaho</b>	CA***, OR and WA; MT (if energy is delivered)
<b>Illinois</b>	IL, IN; DC, DE, MD and NJ (if delivered to PJM); PA*; WI (if energy is delivered); MN (if registered in M-RETS)
<b>Indiana</b>	IN, IL; MI (if owned by a MI utility); MN (if registered in M-RETS); OH; PA*, DC, DE, MD, NJ (if energy is delivered to PJM); VA**; WI (if energy is delivered)
<b>Iowa</b>	MN, IL, IN, ND, SD; DC, DE, MD and NJ (if energy is delivered to PJM)
<b>Kansas</b>	KS
<b>Kentucky</b>	IL; OH; DC, DE, MD, NJ (if energy is delivered to PJM); IN; VA**
<b>Labrador</b>	CT, MA, ME, NH, RI (with energy delivery to NEPOOL); NB



<b>GENERATOR LOCATION</b>	<b>SALES OPPORTUNITY (RPS STATES ACCEPTING FROM THE GENERATOR LOCATION)</b>
<b>Louisiana</b>	NC (if energy delivered to in-state utility)
<b>Maine</b>	CT, MA, ME, NH, RI, VT (Northern ME must deliver to NEPOOL for other NE states); NY (if energy is delivered)
<b>Manitoba</b>	MN, ND, SD; WI (if energy is delivered)
<b>Maryland</b>	DC, DE, MD, NJ, PA, VA, IN (up to 50% of compliance)
<b>Massachusetts</b>	CT, MA, ME, NH, RI, VT; NY (if energy is delivered)
<b>Michigan</b>	MI, PA*; DE, MD, NJ (if energy delivered to PJM); OH; VA**
<b>Minnesota</b>	MN, IN, PA*; WI (if energy is delivered)
<b>Mississippi</b>	NC (if energy delivered to in-state utility)
<b>Missouri</b>	IL, MO; IN (up to 50% of compliance, and if generator is in MISO); KS (if energy is delivered)
<b>Montana</b>	MT. Eastern part of state: MN (if registered in M-RETS); WI (if energy is delivered); DC, DE, MD and NJ (if energy is delivered to PJM). Western part of state: CA***, OR and WA
<b>Nebraska</b>	SD; MN (if registered in M-RETS); KS and WI (if energy is delivered)
<b>Nevada</b>	CA***, NV, OR
<b>New Brunswick</b>	CT, MA, ME, NH, RI, VT (with energy delivery to NEPOOL)
<b>New Hampshire</b>	CT, MA, ME, NH, RI, VT; NY (if energy is delivered)
<b>New Jersey</b>	DC, DE, MD, NJ, PA, VA; IN (up to 50% of compliance)
<b>New Mexico</b>	NM. Eastern part of state: KS (if energy is delivered). Western part of state: AZ (if energy is delivered); CA***, OR
<b>New York</b>	NY; CT, MA, ME, NH, RI (with energy delivery to NEPOOL); DC, DE, MD and NJ (if energy is delivered to PJM)
<b>Newfoundland</b>	CT, MA, ME, NH, RI, VT (with energy delivery to NEPOOL); NB
<b>North Carolina</b>	NC; DC, DE, MD and NJ (if energy is delivered to PJM); VA**
<b>North Dakota</b>	ND, SD, MN; WI (if energy is delivered); DC, DE, MD, and NJ (if energy is delivered to PJM)
<b>Nova Scotia</b>	CT, MA, ME, NH, RI, VT (with energy delivery to NEPOOL)
<b>Ohio</b>	OH, PA*; DC, DE, MD, NJ, (if energy is delivered to PJM); IN; VA**, NC and NY (if energy delivered); MI (if generator is in the out-of-state service area of a MI utility)
<b>Oklahoma</b>	OK; KS (if energy is delivered); NM (if energy is contracted for delivery)
<b>Ontario</b>	NY (if energy is delivered); MN (if registered in M-RETS); ND, SD
<b>Oregon</b>	CA***, OR, WA; MT (if energy is delivered)
<b>Pennsylvania</b>	PA; IN; DC, DE, MD, NJ (if energy is delivered to PJM); NC and NY (if energy delivered); OH; VA**

<b>GENERATOR LOCATION</b>	<b>SALES OPPORTUNITY (RPS STATES ACCEPTING FROM THE GENERATOR LOCATION)</b>
<b>Prince Edward Island</b>	CT, MA, ME, NH, RI, VT (with energy delivery to NEPOOL)
<b>Puerto Rico</b>	PR
<b>Quebec</b>	CT, MA, ME, NH, RI, VT (with energy delivery to NEPOOL); NY (if energy is delivered); NB
<b>Rhode Island</b>	CT, MA, ME, NH, RI, VT; NY (if energy is delivered)
<b>Saskatchewan</b>	MN (if registered in M-RETS); ND, SD; WI (if energy is delivered)
<b>South Carolina</b>	NC (if energy delivered to in-state utility); VA**
<b>South Dakota</b>	Majority of state in MISO: ND, SD, MN; WI (if energy is delivered); DC, DE, MD and NJ (if energy is delivered to PJM). Southwest part in WECC: MT (if energy is delivered), OR
<b>Tennessee</b>	NC (if energy delivered to in-state utility); VA**
<b>Texas</b>	Panhandle outside ERCOT: TX; KS and NM (if energy is delivered). Within ERCOT: TX
<b>Utah</b>	OR, UT
<b>Vermont</b>	CT, MA, ME, NH, RI, VT; NY (if energy is delivered)
<b>Virginia</b>	VA; IN, PA,; DC, DE, MD, NJ (if energy is delivered to PJM); NC (if energy delivered)
<b>Washington</b>	CA***, OR, WA; MT (if energy is delivered)
<b>West Virginia</b>	IN, PA; DC, DE, MD, NJ, OH; NC (if energy delivered)
<b>Wisconsin</b>	IL, MN, WI; MI (if generator is in the out-of-state service area of a MI utility)
<b>Wyoming</b>	CO, OR; MT and WA (if energy is delivered)

\*Generators located in PJM may sell to any LSE in PA.

\*\*Generators may sell for compliance in VA if (1) they are located in PJM, or (2) a VA public utility owns at least 49% of the facility and it is located in a control area adjacent to PJM, or (3) RECs from the facility are used.

\*\*\*Generators can sell for CA compliance if they are located in WECC and energy is delivered to CA; in 2014-2016, up to 15% of compliance may be met by unbundled RECs without energy delivery if the facility is located in WECC; beginning 2017 unbundled RECs may not exceed 10% of compliance.

### Notes

1. A few RPS states have no or minimal geographic limitations or energy delivery requirements and hence might present sales opportunities for renewable generators anywhere. These states are CO,

IL (if there are insufficient cost-effective resources in-state or in adjoining states), MO (RECs may be required to be transferred to NAR), NC (up to 25% of compliance), ND, and SD. Because they are relatively unconstrained RPS markets, they are not repeated in the sales opportunity column for each generator location.

2. Summary applies to RPS Main Tier only. Excludes solar or DG that may require interconnection only within RPS state.

3. Assessment is based on energy delivery requirements and reasonable transmission availability. Acceptance of unbundled RECs noted separately in comments.

4. In addition to geographic and energy delivery requirements, other requirements may apply, such as resource eligibility, generator vintage and capacity limitations, as well as limits on REC vintage.

5. Note that IN, KS, ND, OK, SC, SD, UT, and VA have voluntary goals; REC prices in such markets may be lower.

6. Sales opportunities to states without mandatory or voluntary renewable energy goals are not mentioned because geographic limitations usually do not apply.

7. To view the data in the table as an interactive map, see [www.cleanenergystates.org/projects/state-federal-rps-collaborative/potential-rps-markets-for-renewable-energy-generators/](http://www.cleanenergystates.org/projects/state-federal-rps-collaborative/potential-rps-markets-for-renewable-energy-generators/).

#### Definitions

**ERCOT = Electricity Reliability Council of Texas (map)**

**MISO = Midcontinent Independent System Operator (map)**

**M-RETS = Midwest Renewable Energy Tracking System**

**NAR = North American Renewables Registry**

**NEPOOL = New England Power Pool (map)**

**NMISA = Northern Maine Independent System Administrator (map)**

**PJM = PJM Interconnection (map)**

**WECC = Western Electricity Coordinating Council (map)**

## **About the Author**

Ed Holt is president of Ed Holt & Associates and serves as an independent consultant on renewable energy policy and programs. He has practiced in this area for over 14 years. He advises government agencies, utilities and non-profits on green power programs, and was one of the earliest to recognize the potential of voluntary markets to help achieve environmental goals. In 2009, Ed was recognized as a Green Power Leadership Winner.

## **About the State-Federal RPS Collaborative**

The State-Federal RPS Collaborative, managed by the Clean Energy States Alliance, serves as a forum for the exchange of experiences and lessons learned regarding the implementation of state Renewable Portfolio Standard (RPS) policies. It was established to advance dialogue and cooperation among a broad network of state and federal government officials, renewable energy certificate tracking system administrators, NGO experts, industry representatives, and other stakeholders. It is supported by the U.S. Department of Energy and the Energy Foundation. The Collaborative offers a free monthly newsletter, regular webinars, reports, an annual National Summit on RPS, and opportunities for information exchange.

For more information see <http://www.cleanenergystates.org/projects/state-federal-rps-collaborative/>.