



THE EPA CLEAN POWER PLAN AND STATE RPS PROGRAMS

Prepared for the

The RPS Collaborative

by

Edward A. Holt

Ed Holt & Associates, Inc.

May 2016

About This Report

This report was produced for The RPS Collaborative, a project of the Clean Energy States Alliance (CESA). It was developed based, in part, upon funding from the Alliance for Sustainable Energy, LLC, Managing and Operating Contractor for the National Renewable Energy Laboratory for the U.S. Department of Energy. The RPS Collaborative is generously supported by the U.S. Department of Energy and the Energy Foundation. The views and opinions stated in this document are the author's alone.

Acknowledgements

The author would like to thank the following for their thoughtful and careful review of previous drafts of this document: Galen Barbose, Lawrence Berkeley National Laboratory; Caitlin Callaghan, U.S. Department of Energy; Dave Coup, New York State Energy Research and Development Authority; David Farnsworth, Regulatory Assistance Project; Jenny Heeter, National Renewable Energy Laboratory; Todd Jones, Center for Resource Solutions; Warren Leon, Clean Energy States Alliance; and Kevin Porter, Exeter Associates. Any remaining errors or omissions are those of the author alone.

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1. INTRODUCTION

A renewable portfolio standard (RPS) is a policy that requires specified amounts of eligible energy to be supplied to retail electricity customers, typically by obligating electric utilities or other retail electricity providers to procure a growing percentage of their supply from renewable energy sources. Currently, 29 states and the District of Columbia have an RPS. RPSs have contributed to the development of approximately 56 GW of new renewable energy, according to Lawrence Berkeley National Laboratory, which also projects up to another 50 GW by 2030.¹

States' ability to meet their RPS goals is affected not only by their choices regarding RPS design, but also by federal policies. For example, the federal production tax credit and investment tax credit have been critical to the development of new renewable energy sources, and have lowered RPS compliance costs by reducing the cost of energy for projects benefiting from these tax credits. By encouraging wholesale market competition, the Federal Energy Regulatory Commission (FERC) has reduced barriers to the development of renewable energy projects through standardized interconnection policies, open access transmission tariffs, reform of energy imbalance penalties, requirements for transmission planning (including planning for more renewable energy to meet state requirements), and short term markets that make it less risky for variable resources to bid.²

Another recent example of federal policy affecting state RPSs is the U.S. Environmental Protection Agency's (EPA) plan to reduce carbon emissions from existing power plants. On August 3, 2015, the U.S. Environmental Protection Agency (EPA) released the final rules for the Clean Power Plan (CPP), which establishes national emission standards for carbon dioxide (CO₂) emissions from existing fossil-fired power plants.³ Under the CPP, carbon emissions from the power sector will be reduced 32% below 2005 levels by 2030. To achieve this target, the CPP establishes emissions performance standards for most states and describes various ways that states could satisfy compliance with the CPP.

The Final Rule requires states to submit a final plan, or an initial submittal with a request for a two-year extension, by September 6, 2016. However, on February 9, 2016, the U.S. Supreme Court stayed implementation of the Clean Power Plan pending judicial review.⁴

¹ Barbose, Galen. U.S. Renewables Portfolio Standards: 2016 Annual Status Report. Lawrence Berkeley National Laboratory, April 2016.

² FERC Order 2003, Standardization of Generator Interconnection Agreements and Procedures, 18 CFR Part 35 (Issued July 24, 2003); FERC Order 890, Preventing Undue Discrimination and Preference in Transmission Service, 18 CFR Parts 35 and 37 (Issued February 16, 2007); FERC Order 1000, Transmission Planning and Cost Allocation by Transmission Owning and Operating Public Utilities, 18 CFR Part 35 (Issued July 21, 2011); FERC Order 764, Integration of Variable Energy Resources, 18 CFR Part 35 (Issued June 22, 2012).

³ "Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units," Final Rule, 80 Federal Register 205 (October 23, 2015) pages 64661–65120 (to be codified at 40 CFR pt. 60). Hereafter cited as Federal Register followed by page number(s).

⁴ The stay may affect the implementation dates or indeed may negate the Clean Power Plan itself. Many states nevertheless continue to consider their plans to achieve the emission reduction goals, and some states are

This paper is intended to help inform states as they think through how state RPS policies might interact with the CPP, including consideration of state RPSs in state CPP plans. Section 2 presents an overview of the CPP and the key options states have when they develop their plans. Section 3 discusses the role of RPS programs in helping states achieve their emission targets, and how CPP discussions might inform state decisions regarding renewable energy.

Section 4 summarizes EPA requirements for demonstrating state performance in meeting the CPP emission standards, and considers whether renewable energy certificates (RECs) used for RPS compliance or voluntary claims are counting the same thing that is being used to measure CPP performance. States have adopted tracking systems to support verification of RPS compliance, so Section 5 explores how this existing infrastructure could help market participants track ownership of CPP compliance instruments and ultimately help states verify their CPP performance.

Section 6 discusses whether state RPSs would still motivate incremental emission reduction benefits after implementation of the CPP. The issue of incremental benefits is also a concern for voluntary renewable energy markets, so Section 6 also considers the interaction of the CPP with these markets. This section also touches on how the CPP may affect pre-existing clean energy contracts and state motivations for RPS harmonization. Section 7 concludes with a brief summary and observations.

considering changes to their RPS. This paper does not speculate on how state RPSs may or may not be affected by the legal challenge to the Clean Power Plan.

2. OVERVIEW OF THE CPP AND STATE PLAN OPTIONS

Under Section 111(d) of the Clean Air Act, EPA's Clean Power Plan (CPP) establishes CO₂ emission performance rates for two subcategories of existing fossil-fuel fired electric generating units ("affected EGUs"): steam generating units (coal, oil and gas) and natural gas combined cycle units. The CPP also provides states with two alternative forms of emission goals: a statewide maximum emissions rate, taking into account the specific affected EGUs within each state, and an equivalent total allowable tons of emissions per year for each state.⁵

State plans may rely solely on actions by the affected EGUs, or they may supplement EGU actions with other clean energy options, including renewable electricity generation and energy efficiency. States have considerable flexibility in developing their plans, but state plans must be reviewed and approved by EPA. If a state does not make a proposal or fails to gain approval for its plan, EPA will administer a federal plan for the state as a default option.⁶

The emission limits do not come into full effect all at once. EPA's CPP provides interim goals in three steps, 2022-2024, 2025-2027, and 2028-2029, each a little more stringent, and leading to the final 2030 emission performance rates. States can determine their own emission reduction trajectories over the interim period 2022-2029 as long as they meet the interim targets on average for that eight-year period.⁷

The CPP provides guidance for states to follow in developing plans to achieve CO₂ emission reductions from affected EGUs.⁸ The remainder of this section provides a high-level overview of key approaches.⁹

Rate-based vs. Mass-based Plans

States can choose between two types of emission standards plans: a rate-based plan or a mass-based plan. Both options offer what EPA calls an emission standards approach, while the state measures approach is only available to states that chose a mass-based plan. See Table 1.

⁵ Federal Register pp. 64961-64963.

⁶ The proposed federal plan was published in the Federal Register on the same date the final rule was published.

⁷ U.S. EPA. The Clean Power Plan: Key Topics and Issues (no date). Accessed January 2016 at <http://www.epa.gov/sites/production/files/2015-11/documents/cpp-key-topics.pdf>.

⁸ Guidance for state plans can be found in Section VIII of the Preamble to the Final Rule, beginning at Federal Register p. 64826, and in an EPA Technical Support Document, "Incorporating RE and Demand-Side EE Impacts into State Plan Demonstrations," July 31, 2015.

⁹ State officials looking for guidance on how to construct their state plan and choose among the different options may want to refer to Miles Keogh, *Constructing State Plans for the Clean Power Plan: The First Questions to Ask*. National Association of Regulatory Utility Commissioners, February 2016.

Table 1 – State Options for Plan Design

	Rate-based	Mass-based
Emission standards approach	Obligation on affected EGUs	Obligation on affected EGUs
State measures approach	Not applicable	State-enforceable measures* with federally enforceable emission standards backstop

* State measures may be combined with mass emission standards.

A rate-based plan is one in which the state chooses to meet an emission rate target in pounds per MWh. EPA established a rate of 1305 lbs/MWh in 2030 for fossil-burning steam plants (primarily coal), and a rate of 771 lbs/MWh for stationary combustion turbines (natural gas).¹⁰ For each state, EPA also established interim and final statewide rate-based CO₂ emission goals for all affected EGUs in the state.¹¹ A state may choose either of the EPA-established approaches, or it may apply its own emission rate standards to individual affected EGUs, or to categories of affected EGUs, that differ from those established by EPA. If a state chooses its own standards, it has to demonstrate that its plan would achieve equal results to the EPA-established options.¹²

States have wide latitude in how they reduce their emission rates. Among the many actions available to them and the affected EGUs are operational improvements that lower emissions at the affected EGUs, shifting generation from coal units to lower-emitting natural gas units, displacing emitting generation with zero-emission generation, and energy efficiency.¹³ These actions can be issued emission rate credits (ERCs) for each MWh generated or saved and can be used by affected EGUs to adjust (lower) their effective emissions, as explained below in Section 4.

In a rate-based plan, the issuance of ERCs must be based on generation and savings that are measured and verified. Therefore, a rate-based state plan must include evaluation, measurement and verification (EM&V) protocols that are approved by EPA, and the generation or savings must be verified using those protocols.¹⁴

¹⁰ Federal Register p. 64961.

¹¹ Federal Register pp. 64961-64962.

¹² Federal Register pp. 64833-64834.

¹³ Much of the discussion of requirements for rate-based state plans occurs in section VIII.K. of the preamble to the final rule, beginning at Federal Register p. 64894. These actions are reminiscent of what EPA calls the Best System of Emission Reductions (BSER) but states are not confined to the BSER; they have much more flexibility. See Federal Register beginning at p. 64717 for more on BSER.

¹⁴ To ensure that energy efficiency savings in rate-based plans are properly quantified and verified, the EPA has released [draft EM&V guidance](https://www.epa.gov/cleanpowerplanttoolbox/draft-evaluation-measurement-and-verification-guidance-demand-side-energy) that provides supplemental information to help states and energy efficiency providers successfully implement the EM&V provisions. See <https://www.epa.gov/cleanpowerplanttoolbox/draft-evaluation-measurement-and-verification-guidance-demand-side-energy>.

A mass-based plan means that a state agrees to a total emissions cap in short tons of CO₂ per year, and to EPA-established statewide mass-based CO₂ emission goals.¹⁵ The interim and final emission goals are based on each state's fleet of emitting generators in 2012, and are equivalent to the statewide rate-based CO₂ emission goals.¹⁶ At the end of each compliance period, each affected EGU must hold (or have retired) allowances equal in number to the tons of emissions from that EGU. States can reduce mass emissions by encouraging the same or similar actions that might be employed in rate-based states, but with a key difference: measurement and verification of fulfillment of a mass emissions plan is relatively simple, only requiring measurement of emissions at the stacks of the affected EGUs.

State Measures

Within a mass-based plan, a state can choose to take **a state measures approach**. In that case, the state can lower emissions by relying on measures implemented under state law (such as an RPS or energy efficiency programs) that are not included as federally enforceable emission standards. A state can rely on state measures to meet some of its emission reduction goal in combination with emission standards on affected EGUs; or it could rely entirely on the state measures to meet its goal. As a result, state measures are not necessarily a stand-alone choice; they can be undertaken in conjunction with a mass-based emission standard. It is important to recognize that state measures may apply to entities other than affected EGUs—for example, utilities or other load-serving entities. The state measures option provides the state with added flexibility.¹⁷

The main point of this approach is that state measures, to the extent they can be shown to reduce emissions and are enforceable under state law, can be used to reduce mass emissions, and can thereby reduce the obligation falling directly on the affected EGUs. Used in combination with emissions reduction requirements, the mass reductions required of affected EGUs may be less significant because the state measures will pick up some of the burden.

A state proposing state measures must demonstrate to EPA that its proposed measures will achieve the emission reductions and meet milestones, and the state must describe how the emission reductions will be verified.¹⁸ As a result, the state measures approach requires additional measurement and verification compared to a plan that relies solely on a mass-based approach. Finally, the state must also agree that if the state measures do not do the job, on schedule, the federally enforceable emission standards will be imposed on affected EGUs as a backstop.¹⁹

¹⁵ Federal Register pp. 64962-64963.

¹⁶ Federal Register p. 64707.

¹⁷ U.S. EPA. Fact Sheet: Overview of the Clean Power Plan (no date). Accessed January 2016 at <http://www.epa.gov/sites/production/files/2015-08/documents/fs-cpp-overview.pdf>.

¹⁸ Federal Register p. 64836 and pp. 64851-64853.

¹⁹ Federal Register pp. 64836-64837.

3. INTERACTIONS BETWEEN AN RPS AND THE CPP

Given the various options available to the states, what is the relationship between RPS policies and these different approaches to state CPP plans? Most states will probably view the RPS as a way to help achieve state emission goals, but some states may view their RPS as completely independent of the CPP and want their RPS to provide incremental environmental benefits relative to the emission reductions called for by the CPP. This section considers the potential interdependence of the RPS and achieving state emission goals. Section 6 considers the independent and more incremental interactions between the RPS and the CPP. When states consider the role of their RPS in satisfying CPP goals, they will find that an RPS can help them and their affected EGUs satisfy CPP goals indirectly, in rate-based or mass-based state plans, or directly, through a state measures approach. Each of these options is considered below.

RPS and Rate-based Plans

For rate-based plans, EPA has created a new tradable instrument, the emission rate credit (ERC), whose role is described below in Section 4.²⁰ ERCs are used to lower the emission rate of affected EGUs. They may be issued for a variety of emission-reducing actions, including renewable energy generation. The provider of that renewable energy can sell its ERCs to an affected EGU. An RPS can help a state satisfy its CPP goals by producing more renewable energy that is eligible for ERCs. To the extent that state RPS rules coincide with EPA resource eligibility rules, RPS resources can therefore contribute to affected EGUs meeting their CPP goals.²¹ It is not the RPS itself that counts, it's the MWh generated by the eligible or approved resources.

There are two important qualifications for eligibility. First, EPA's final rule only allows "incremental" renewable energy (or other clean energy sources) to count towards achieving a rate-based goal. This means that the generating source began construction (or began operation in the case of demand-side energy efficiency) on or after January 1, 2013.

Second, in most cases, only energy produced in compliance years 2022-2030 counts towards a rate-based standard. The Clean Energy Incentive Program (CEIP) provides an exception to this vintage requirement for solar and wind energy, and for energy saved in low-income communities, that produce results in 2020-2021.²²

²⁰ Federal Register pp. 64904-64908 provides more detail.

²¹ A state may propose additional clean energy sources not specified by EPA, but EPA will have to review and approve. See Final Rule § 60.5800 (4) (vii) "A category identified in a State plan and approved by the EPA to generate ERCs." Federal Register p. 64950.

²² "The CEIP is intended to incentivize investment in certain RE and demand-side EE projects that commence construction in the case of RE, or commence operation in the case of EE, after the submission of a final state plan to the EPA, or after September 6, 2018, for states that choose not to submit a final state plan by that date, and that generate MWh (RE) or reduce end-use energy demand (EE) during 2020 and/or 2021. State participation in the program is optional; the EPA is establishing this program as an additional flexibility to facilitate achievement of

Hence, only new resources (post-2012) are eligible, and then it's only the generation occurring in 2022 and later (with the exception noted) that can be used to adjust an affected EGU's emission rate. As a result, in a rate-based plan, an RPS policy does not need to be evaluated and quantified in its entirety as a goal-achievement measure; it is just the CPP-eligible resources that are being used to satisfy an RPS that count.

RPS and Mass-based Plans

In states with mass-based plans, RPS policies can help the state reduce emissions indirectly by displacing emitting generation. The total amount of emissions from all affected EGUs is lower because the RPS helps bring more emission-free generation online.

However, not all renewable energy generation used to satisfy an RPS (regardless of whether the renewable generator is located in-state or out-of-state) will necessarily displace in-state affected EGUs. On the other hand, the state may share in the benefits from another state's renewable generation. Which EGUs are displaced depends on a number of factors, including the size of the regional grid, the types of generators available to call upon, and the order in which the control area operator dispatches available resources.

Nevertheless, in a mass-based plan, renewable energy (including renewable energy generated out of state) automatically counts towards meeting a state's goals to the extent it displaces in-state fossil generation at affected EGUs.²³ It is not necessary to attribute displacement to a specific renewable generator or to an RPS in general, and no ERCs are required. The state doesn't have to quantify the effect, or establish a direct link between the RPS and affected EGUs in the state. Emissions are simply measured at the stacks of affected EGUs, and it is enough that the RPS is producing emission-free energy onto the grid to help reduce emissions.

RPS in a State Measures Plan

A state that chooses to take a state measures approach in a mass-based plan can have an RPS count directly towards CPP compliance as long as the state proposes the RPS as one of the state measures in its plan.²⁴ In this approach, a state would submit a plan that relies in whole or in part on an RPS to reduce emissions. The RPS must be adopted under state law and be enforceable by the public utilities

the CO₂ emission reductions required by this final rule, regardless of the type of state plan a state chooses to implement." Federal Register p. 64829.

²³ U.S. EPA. Fact Sheet: Renewable Energy in the Clean Power Plan (no date). Accessed January 2016 at <http://www.epa.gov/sites/production/files/2015-11/documents/fs-cpp-renewable-energy.pdf>.

²⁴ "The EPA believes the state measures plan type will provide states with additional latitude in accommodating existing or planned programs that involve measures implemented by the state, or by entities other than affected EGUs, that result in avoided generation and CO₂ emission reductions at affected EGUs. This includes market-based emission budget trading programs that apply, in part, to affected EGUs, such as the programs implemented by California and the RGGI participating states in the Northeast and Mid-Atlantic, as well as RE and demand-side EE requirements and programs, such as renewable portfolio standards (RPS), EERS, and utility- and state-administered incentive programs for the deployment of RE and demand-side EE technologies and practices. The EPA believes this second state plan type will afford states with appropriate flexibility while meeting the statutory requirements of CAA section 111(d)." Federal Register pp. 64835-64836.

commission or other state agency. In most states, enforcement would be on the RPS-obligated utilities or load-serving entities. The RPS may be satisfied by out-of-state generation, but the state proposing the RPS as a state measure must demonstrate that the renewable energy attributes won't be double-counted by affected EGUs in other states.²⁵

States pursuing a state measures approach may wonder if generation from pre-existing renewable energy generators (built before 2013) or out-of-state generation would count towards CPP goals. These specific situations are not spelled out in the EPA final rule, but the rule does provide some guidance. Fundamentally, “a state must demonstrate that its state-enforceable measures, along with any federally enforceable CO₂ emission standards for affected EGUs included in a state plan, will achieve the state mass-based CO₂ goal.”²⁶ So, if a state can show that its more encompassing RPS will reduce total emissions at affected EGUs, the RPS could be approved as a state measure.

What does that demonstration entail? EPA requires that states proposing state measures include a projection of CO₂ emissions by the affected EGUs with the application of the proposed measures.²⁷ EPA provides guidance for this projection.²⁸ Whether existing generation would contribute to achieving emission performance might depend on the baseline used for the projection of impacts.

In any event, if a state proposes its RPS as a state measure, the submittal must meet a number of documentary and analytical requirements, which are detailed in the final rule at § 60.5745(a)(6).²⁹ The submittal must “demonstrate that the state measures meet the same integrity elements that would apply to federally enforceable emission standards. Specifically, the state plan submittal must demonstrate that the state measures are quantifiable, verifiable, enforceable, non-duplicative, and permanent.”³⁰

²⁵ “Specifically, the state plan submittal must demonstrate that the state measures are quantifiable, verifiable, enforceable, non-duplicative and permanent.” Federal Register p. 64836. To meet the “non-duplicative” requirement, a state would need to demonstrate that the out-of-state renewable energy used for RPS compliance and for a state measure won't be counted in another state plan by being issued ERCs and transferring them to a different party.

²⁶ Federal Register p. 64846.

²⁷ Federal Register p. 64845.

²⁸ “The EPA is not requiring a specific type of method or model, as long as the one chosen uses technically sound methods and tools that establish a clear relationship between electricity grid interactions and the range of factors that impact future EGU economic behavior, generation, and CO₂ emissions. The EPA will assess whether a method or tool is technically sound based on its capability to represent changes in the electric system commensurate to the set of emission standards and state measures in a state plan while accounting for the key parameters specified in section VIII.D.2.a.(3)(c) below. Including a base case CO₂ emission projection in the state plan submittal (i.e., one that does not include any federally enforceable CO₂ emission standards included in a plan or state-enforceable measures referenced in a plan submittal), will help facilitate the EPA's assessment of the CO₂ emission performance projection. Methods and tools could range from applying future growth rates to historical generation and emissions data, using statistical analysis, or electric sector energy modeling.” Federal Register p. 64845.

²⁹ See Federal Register p. 64945-64946 for a full description.

³⁰ Federal Register p. 64836. Explanations of these terms are provided in § 60.5780 of the final rule, Federal Register p. 64948.

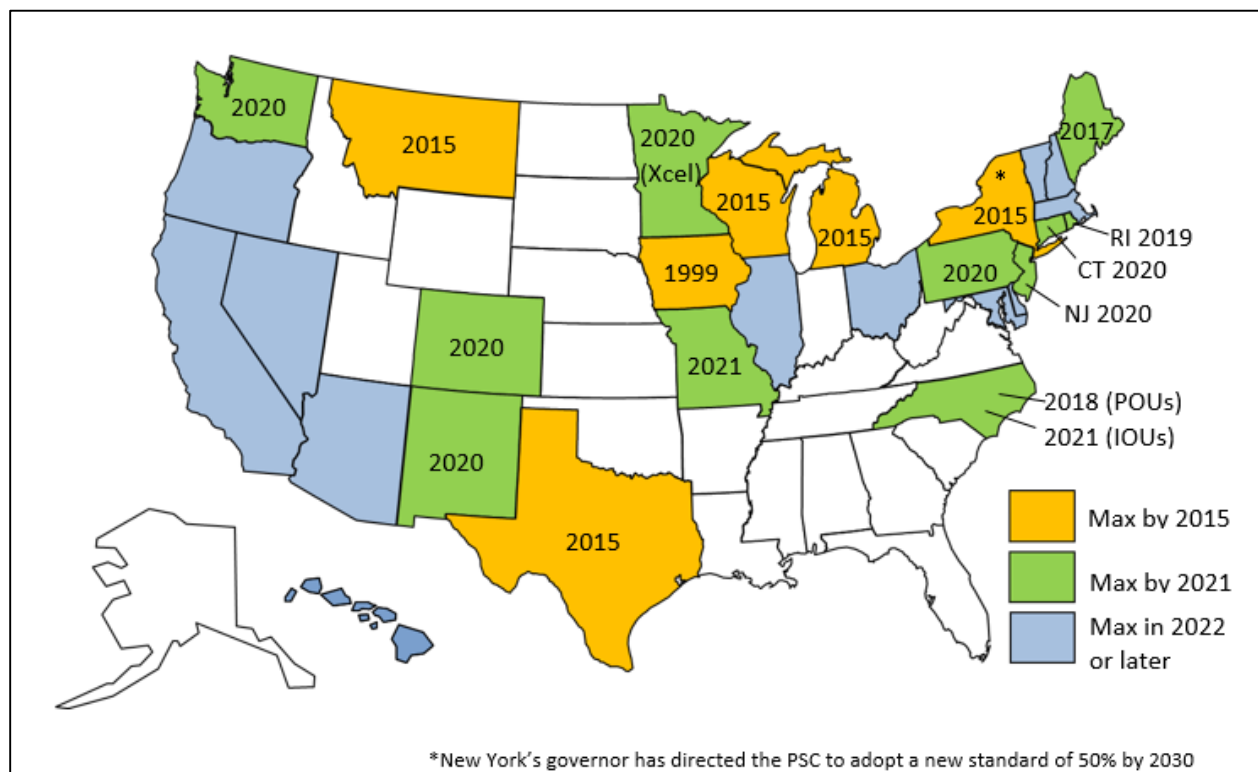
Timing of RPS and CPP

The CPP compliance period extends from 2022 to 2030, so states whose RPS targets reach their peak before then may want to consider whether their RPS will be effective in helping to meet CPP goals.

The map in Figure 1 is one way to think about the extent to which states might rely on RPSs to help achieve their CPP goals. Seventeen state RPSs reach their zenith before 2022, the first year of CPP compliance, and almost all of them do so before 2030 when states must meet their final CPP emission goals.³¹ States whose RPS targets max out before 2030 might want to examine how they will meet their emission reduction goals. They could consider whether to let the RPS maintain its maximum level indefinitely (or sunset, if the RPS law ends abruptly); or to increase the targets in their RPS to make it easier to meet the CPP's increasingly stringent emission goals.

States without an RPS that want to stimulate the development of more renewable energy could assess whether to adopt a new RPS.

Figure 1 - When RPSs Max Out



³¹ States must also meet interim goals during the period 2022-2029, but they have flexibility in setting the trajectory or glide path to the final 2030 goals. Federal Register p. 64849.

Fundamentally, under either mass-based or rate-based state plans, state RPSs can continue to operate as they have done previously. States may choose to increase their RPS targets or harmonize their eligibility rules to help displace affected EGUs and thereby indirectly reduce overall emissions. States could also look to their RPSs to produce more energy eligible for ERCs that can be used by affected EGUs to lower their emission rates. However, states do not have to attribute the reduced emissions to a particular policy unless they want to rely explicitly on an RPS as a state measure to reduce the need for affected EGUs to acquire allowances in a mass-based plan.

4. ERCS AND ALLOWANCES: HOW THEY ARE USED AND HOW THEY COMPARE TO RECS

Because ERCs and allowances are tradable instruments used for CPP compliance, they have characteristics similar to renewable energy certificates (RECs) used for RPS compliance. Both CPP and RPS compliance instruments are intangible, tradable, and, especially in the case of ERCs and RECs, are created based on the generation of a MWh of renewable energy. But how do the CPP's emission credits and emission allowances work, and are they the same as RECs used in renewable energy markets?

For compliance with a rate-based plan, EPA's new tradable instrument, the emission rate credit (ERC), represents a zero-emission MWh. It may be created for qualifying renewable energy, energy efficiency, combined heat and power (including waste heat power) not affected by the emission standards, and incremental nuclear generation. ERCs may also be issued to affected EGUs that emit at a CO₂ emission rate below their assigned rate limit, and to incremental natural gas generation that substitutes for affected coal-fired generation.³²

In comparison, a renewable energy certificate (REC) represents the property rights to the environmental, social, and other non-power qualities of renewable electricity generation.³³ One REC is created for each MWh of renewable electricity placed on the grid. RECs serve the role of laying claim to and accounting for the associated attributes of renewable-based generation, and are the basis for demonstrating compliance with most state RPSs.

Double Counting

When the market for RECs was first developing in the late 1990s and early 2000s, tracking systems and other protections were put in place to avoid double-counting of the same REC. Double-counting takes place when a generator issues more than one REC for the same MWh or sells the same REC (or some of its attributes) to more than one party, or when a party uses the REC in more than one application.

Because EPA created a new instrument—an ERC—from the same MWh that is used to create a REC, there has been some confusion about whether ERCs and RECs create a double-counting problem.

EPA tried to anticipate this issue by stating clearly that ERCs and RECs are separate instruments:

An ERC is issued separately from any other instruments that may be issued for a MWh of energy generation or energy savings from a qualifying measure. Such other instruments may be issued for use in meeting other regulatory requirements (e.g., such as state RPS and EERS [energy efficiency resource standards] requirements) or for use in voluntary

³² Qualifying measures that are eligible for ERCs and that can be used to adjust the CO₂ emission rate of an affected EGU are discussed in section VIII.K.1. of the preamble. See Federal Register beginning at p. 64894.

³³ U.S. EPA, Green Power Partnership. Renewable Energy Certificates. Accessed February 2016 at <http://www3.epa.gov/greenpower/gpmarket/rec.htm>.

markets. An ERC may be issued based on the same data and verification requirements used by existing REC and EEC tracking systems for issuance of RECs and EECs.³⁴

Elsewhere in the CPP rule, EPA “notes that non-ERC certificates may be issued by states and other bodies for MWh of energy generation and energy savings that are used to meet other state regulatory requirements, such as state RPS and EERS, or by individuals to make environmental or other claims in voluntary markets.”³⁵

EPA staff don’t consider ERCs as double-counting RECs.³⁶ In the final rule, EPA prohibits double counting of ERCs by more than one state, and adds, “This does not mean that measures used to comply with an emission standard cannot also be used for other purposes. For example, a MWh of electric generation from a wind turbine could be used by an electric distribution utility to comply with state RPS requirements and also be used by an affected EGU to comply with emission standard requirements under a state plan.”³⁷

Although both derive from the same MWh, ERCs and RECs are used in different ways and represent different things, as summarized in Table 2.

Table 2 - ERCs and RECs Usage and What They Represent

	ERCs	RECs
Usage	An affected EGU uses ERCs to demonstrate compliance with a rate-based emission standard by adjusting its emission rate and claiming lower emissions from generation	A utility or electricity supplier uses RECs to verify compliance with RPS and to substantiate marketing claims; a consumer uses RECs to substantiate voluntary environmental claims (e.g. support for a particular kind of energy, or a lower carbon footprint)
What they represent	Single attribute: avoided emissions at an affected EGU	Multiple generation and environmental attributes (resource type, vintage, direct emissions, location, etc.) at renewable generators

ERCs are used only to demonstrate compliance with the CPP, and cannot be used to demonstrate compliance with an RPS.³⁸ Conversely, RECs are used to verify RPS compliance or a voluntary environmental claim, but they cannot be used to demonstrate compliance with the CPP.³⁹

³⁴ Federal Register p. 64908.

³⁵ Federal Register p. 64908.

³⁶ Sherry, Christopher and Matt Clouse (EPA), The Clean Power Plan, presentation at 2015 National Summit on RPS, November 5, 2015.

³⁷ Federal Register p. 64850.

³⁸ “The sole purpose of an ERC is for use by an affected EGU in demonstrating compliance with a rate-based emission standard in such an approved state plan.” Federal Register p. 64908. State RPS statutes and regulations specify how RPS compliance must be demonstrated, and in nearly all cases, RECs are required. The exceptions are Iowa and Hawaii, where RPS compliance is met by reporting renewable capacity or generation, and tradable instruments are not used. Also, Hawaii is not covered by the CPP at this time.

³⁹ Clouse, Matt (EPA). Webinar Presentation on Renewable Energy and the Clean Power Plan. January 28, 2016.

How Much Generation Qualifies for Both RECs and ERCs?

It is important to keep in mind that there's a big world of renewable energy generation that is eligible for REC issuance, but only a subset is eligible for ERCs.

First, only certain resources are eligible for ERCs. Eligible renewables include: wind, solar, geothermal, hydro, wave, tidal, qualified biomass, and the biogenic portion of waste-to-energy.⁴⁰ Second, only generation from eligible renewable EGUs that commenced construction after 2012 are eligible to be issued ERCs.⁴¹ That reduces a great deal of the overlap. Third, ERCs will be issued only for generation that occurs in 2022-2030⁴² (and possibly for generation that occurs in 2020-2021 if it qualifies for early credit under the Clean Energy Incentive Program).⁴³ As a result, only a portion of the renewable energy that would be eligible for state RPSs will be eligible for ERCs under the CPP.

How ERCs Are Used

The difference between RECs and ERCs is illustrated in the application of the ERC. ERCs are used to adjust the emission rate calculation of an affected EGU under a rate-based state plan. An affected EGU would first calculate its actual emission rate by dividing its total emissions by its total generation, as shown in Equation 1:

Equation 1

$$\frac{\text{Emissions (lbs)}}{\text{Generation (MWh)}} = \text{Actual rate (lbs/MWh)}$$

⁴⁰ Final Rule § 60.580, Federal Register p. 64950. "The resource falls into one of the following categories of resources: (i) Renewable electric generating technologies using one of the following renewable energy resources: Wind, solar, geothermal, hydro, wave, tidal; (ii) Qualified biomass; (iii) Waste-to-energy (biogenic portion only); (iv) Nuclear power; (v) A non-affected combined heat and power (CHP) unit, including waste heat power; (vi) A demand-side EE or demand-side management measure that saves electricity and is calculated on the basis of quantified ex post savings, not "projected" or "claimed" savings; or (vii) A category identified in a State plan and approved by the EPA to generate ERCs." In addition, heat rate improvements and fuel switching from coal to natural gas may also be issued ERCs, but they wouldn't likely overlap with RPS eligibility.

⁴¹ Final Rule § 60.580, Federal Register p. 64950. "Resources qualifying for eligibility only include resources that increased installed electrical generation nameplate capacity, or implemented new electrical savings measures, on or after January 1, 2013."

⁴² Final Rule § 60.580, Federal Register p. 64950. "ERCs may only be issued for generation or savings produced on or after January 1, 2022, to a resource that qualifies as an eligible resource..."

⁴³ To encourage early action, the Clean Energy Incentive Program provides credit for new wind and solar generators that commence construction, or for energy efficiency in low-income communities that commence operation, after a state's final plan is adopted. Even then, early credit may be in the form of emission allowances rather than ERCs, further reducing the potential overlap of RECs and ERCs.

If the actual rate is higher than the emission rate standard for that affected EGU, the EGU must acquire ERCs, either by efficiency in its own operation or by purchasing ERCs from other sources. These ERCs are added to the denominator as zero emission MWh to lower the rate, as shown in Equation 2:⁴⁴

Equation 2

$$\frac{\text{Emissions (lbs)}}{\text{Generation (MWh) + ERC (MWh)}} = \text{Adjusted rate (lbs/MWh)}$$

A recalculation of the rate with the addition of ERCs will show whether the affected EGU meets the emission rate standard (see text box for example). The ERCs used to make the adjustment must be submitted to the state regulatory body and retired or “cancelled.”⁴⁵

It is worth noting that, if the actual rate is lower than the emission rate standard, the affected EGU may be issued ERCs for the difference and could sell those ERCs to other parties.

How Renewable Energy Can Help Lower an EGU's Emission Rate

A coal plant (EGU) generates 3 million MWh in a year while emitting 2.25 million short tons (4500 million lbs) of CO₂. It has an emission rate of 1500 lbs/MWh.

Following Equation 1: 4500 million lbs ÷ 3 million MWh = 1500 lbs/MWh.

The EGU needs to meet an emission rate standard of 1305 lbs/MWh. To meet this target, the EGU calculates how many ERCs it needs to acquire by subtracting the target emission rate from its actual stack emission rate, and dividing by the target emission rate (1500 - 1305 lbs/MWh = 195 lbs/MWh, divided by 1305 lbs/MWh = 0.1494252 ERCs for each MWh of generation. This factor is multiplied by the EGU's generation (MWh) to indicate the number of ERCs necessary to lower the emission rate to the target (0.1494252 x 3 million MWh), or 448,275.6 ERCs.

To meet the target, the EGU purchases 448,276 ERCs from a new wind generator. These ERCs are added to the denominator as MWh and the rate is recalculated to be 1305 lbs/MWh.

Following Equation 2: 4500 million lbs ÷ (3 million MWh + 448,276 MWh) = 4500 million lbs ÷ 3,448,276 MWh = 1305 lbs/MWh.

⁴⁴ See Final Rule § 60.5790, Federal Register p. 64949 for a more detailed explanation of the equation and how affected EGUs satisfy their plan obligations.

⁴⁵ Federal Register p. 64904. The Proposed Federal Plan also includes a formula for determining the number of ERCs generated by an affected EGU or needed for compliance. See Proposed Federal Plan, Federal Register (Vol. 80 No. 205) p. 64991, October 23, 2015.

States with mass-based plans do not use ERCs, so how do they measure performance? In a mass-based plan with trading, they use emission allowances.⁴⁶ An allowance is a tradable instrument that represents authorization to emit a ton of CO₂ from an affected EGU. At the end of a compliance period, an affected EGU must hold allowances equal in number to the tons of CO₂ emissions it has released.⁴⁷

The creation of allowances is based on the mass-based emissions goals established by EPA. If a state adopts a mass-based plan, it will have a mass emissions budget or cap, expressed in short tons of CO₂, and an equal number of emission allowances.⁴⁸ The state can determine how it will initially distribute the allowances to affected EGUs.⁴⁹ Any allowances not needed by the affected EGUs may be traded among EGUs in any mass-based state.⁵⁰ Because the number of allowances issued is based on a budget (tons), not on generation (MWh), there is little similarity between RECs and allowances.

It's up to each mass-based state to decide whether, and how, to support interstate trading of allowances. States can submit a "ready-for-interstate-trading" plan in which trading can occur with any other similar state, or states can submit plans that specify linkages with trading partner states.⁵¹

⁴⁶ "This includes the requirement for an affected EGU to surrender emission allowances equal to reported CO₂ emissions, ... among other requirements." Federal Register p. 64887. "These requirements would include: CO₂ emission monitoring, reporting, and recordkeeping requirements for affected EGUs; provisions for state allocation of allowances; provisions for tracking of allowances, from issuance through submission for compliance; and the process for affected EGUs to demonstrate compliance (allowance "true-up" with reported CO₂ emissions)." Federal Register p. 64887.

⁴⁷ "The emission standard applied to individual emission sources is a requirement to surrender emission allowances equal to reported emissions, with each allowance representing one ton of CO₂." Federal Register p. 64835.

⁴⁸ "Emission allowances are issued in an amount up to the established emission budget." Federal Register p. 64835. A state can choose to issue all of the allowances or set some aside for specific purposes. However, it is unlikely that a state would withhold issuing allowances it is legally entitled to issue, because that would raise the cost of compliance by its affected EGUs.

⁴⁹ "Allowances may be distributed to affected emission sources (as well as to other parties) through a number of different methods, including direct allocation to affected sources or auction." Federal Register p. 64835. "A key example is state discretion in the CO₂ allowance allocation methods included in the program." Federal Register p. 64892.

⁵⁰ "An individual state may provide for the use of CO₂ allowances issued by another state(s) for compliance with the mass-based emission standards in its plan. This type of state plan would include requirements that enable affected EGUs to use allowances issued in other states for compliance under the state's emission budget trading program." Federal Register p. 64892.

⁵¹ Further description of requirements for mass-based states may be found in the final plan preamble at Section VIII.J. in the Federal Register beginning at p. 64887.

5. THE POTENTIAL ROLE OF CERTIFICATE TRACKING SYSTEMS IN TRACKING ERCs AND ALLOWANCES

The Clean Power Plan requires states to make a proactive designation of a tracking system in the state plan proposal.⁵² Tracking systems will be essential for facilitating and verifying progress towards meeting CPP emission goals. The fundamental choice is between an EPA-administered and an EPA-approved tracking system.⁵³

This choice is relevant to state RPS programs because states already rely on REC tracking systems to verify progress towards RPS targets. REC tracking systems have become integral to verification of RPS compliance by issuing, tracking and retiring certificates. Consequently, states may be asking whether their existing tracking system can be approved by EPA, and what issues should they consider in making this choice?

Here is how the choice between the EPA-administered system and an EPA-approved system could play out for states with an RPS.

EPA-administered tracking system. EPA will administer a tracking system for ERCs and emission allowances. Access to the EPA-administered ERC tracking system is not limited to states that rely on the federal plan. EPA staff have clarified that a state with its own rate-based plan may designate the EPA-administered ERC tracking system as its state tracking system.⁵⁴

A state may be inclined to use the EPA-administered tracking system because of the certainty that it is approved, and because the state would not need to propose and oversee its own tracking system, although the state would still be responsible for requesting and authorizing ERC issuance.⁵⁵

However, the EPA-administered tracking system will only track ERCs and allowances, so states with an RPS will still need REC tracking—a potential duplication of effort. To be issued RECs, eligible generators would have to continue reporting their generation to the REC tracking system, and to be issued ERCs, they would have to report their generation to the EPA-administered ERC tracking system,⁵⁶ with attendant duplicate measurement and verification.

⁵² “Such plans must indicate how ERCs or emission allowances will be tracked from issuance through use by affected EGUs for compliance...” Federal Register p. 64839.

⁵³ “For a state plan incorporating the use of ERCs or allowances to be approvable by the EPA, such a plan must use an EPA-approved or EPA-administered tracking system for ERCs or allowances.” Federal Register p. 64832.

⁵⁴ Conference calls between multiple EPA staff and renewable energy stakeholders, September 25 and October 23, 2015.

⁵⁵ “The administering state regulator (or its agent) then reviews the M&V report, and determines the number of ERCs (if any) that should be issued, based on the report. Finally, the state regulatory body (or its agent) issues ERCs to the provider of the approved program or project. These ERCs are issued to the tracking system account held by the program or project provider.” Federal Register p. 64907.

⁵⁶ “In the second step of the process, following implementation of the RE/EE program or project...that was approved in step one, the RE/EE provider periodically submits a M&V report to the state regulatory body

Although ERC or allowance tracking in the EPA-administered tracking system might be convenient for states, maintaining and managing accounts in two systems will impose a financial and management cost on generators and market participants such as utilities and other load-serving entities that want both ERCs (or allowances) and RECs.

Existing tracking systems. The CPP Final Rule sets the following requirements for EPA approval of state-designated tracking systems:⁵⁷

1. It electronically records the issuance of ERCs, transfers of ERCs among accounts, surrender of ERCs by affected EGUs as part of a compliance demonstration, and retirement or cancellation of ERCs; and
2. It documents and provides electronic, internet-based public access to all information that supports the eligibility of eligible resources and issuance of ERCs and functionality to generate reports based on such information, which must include, for each ERC, an eligibility application, EM&V plan, M&V reports, and independent verifier verification reports.

With a few exceptions, such as ex-ante eligibility applications and ex-post verification reports, most of the functionality required of an EPA-approved tracking system is similar to existing REC tracking systems.

EPA anticipates that states may want to designate existing certificate tracking systems for tracking CPP compliance instruments, especially ERCs, and makes several supportive statements to this end. “For energy generating resources, including [renewable energy] resources, states may leverage the programs and infrastructure they have in place for achievement of their RPS and take advantage of registries in place for the issuance and tracking of RECs.”⁵⁸

EPA also notes that ERCs must be issued and tracked separately from RECs, but “may be issued based on the same data and verification requirements used by existing REC and [energy efficiency certificate--EEC] tracking systems for issuance of RECs and EECs.”⁵⁹ EPA recognizes that for issuing ERCs, “many existing REC registries include provisions for the monitoring of MWh of generation that would be appropriate to meet state plan requirements pursuant to the final rule, such as requirements to use a revenue quality meter.”⁶⁰ Thus, both RECs and ERCs can be issued based on the same reported generation as long as the quality control or verification is documented in state plans and meets with EPA approval.⁶¹ For this reason, states (and the generators who will be issued ERCs) may find it easier to designate an existing REC tracking system because the generation data is already being reported there, and duplicate generation reporting arrangements for the issuance of ERCs could be avoided. Also,

documenting the results of the program or project in MWh of electric generation or energy savings.” Federal Register p. 64906-64907.

⁵⁷ Final Rule §60.5810 Federal Register p. 64951.

⁵⁸ Federal Register p. 64909.

⁵⁹ Federal Register p. 64908.

⁶⁰ Federal Register p. 64909.

⁶¹ “(1) For RE resources, your plan must include requirements discussing how the generation data will be physically measured on a continuous basis using, for example, a revenue-quality meter.” Final Rule § 60.5830 Federal Register p. 64952.

maintaining and managing accounts in two different tracking systems would impose extra costs on generators and other market participants that want both ERCs and RECs.

Nevertheless, RECs and ERCs must be tracked separately because they are different instruments. Generators, and load-serving entities that must comply with an RPS, would probably need to maintain two separate accounts in the tracking system, one for RECs and one for ERCs. Affected EGUs that have no use for RECs would have only ERC accounts.

Regardless of how the tracking is done, the tracking of two separate instruments in parallel will require modification to the software for existing tracking systems.⁶²

In addition to tracking ERCs separate from RECs, the administrators of existing tracking systems may need to make modifications to support tracking of eligibility applications, EM&V plans, M&V reports, and independent verifier verification reports, although the EM&V plans and reports might be very similar if not identical to the rules currently in use for reporting and verifying generation data.⁶³

Once EPA accepts a state's tracking system choice, it becomes an EPA-approved tracking system. EPA has also said that it will be able to designate a tracking system as eligible prior to a state including it in its plan. "The EPA would designate tracking systems that it has determined adequately address the integrity elements necessary for the issuance and tracking of ERCs, as described in section VIII.K.2. Under this approach, a state could include in its plan such a designated tracking system, which has already been reviewed by the EPA."⁶⁴

Existing REC tracking systems may need to provide additional support for a different level of inter-registry ERC imports and exports than they do presently for RECs. For RPS compliance, states often limit REC eligibility to RECs generated within the regional grid served by the tracking system, or to generators from outside that region that can export energy into the electric grid serving the state. Trading linkages with other states may be different for the CPP, however. To the extent that states establish CPP trading linkages with other states outside their regional grid, or choose to trade ERCs with any other rate-based states that use the same emission standards, their need for inter-registry ERC transfers will increase.⁶⁵ This could require more inter-registry transfers among the existing REC tracking systems than they currently provide.

States that want to stick with their existing REC tracking system for issuing ERCs for renewable energy will need to decide whether to ask tracking system administrators to increase the capabilities of the tracking systems to issue ERCs for the broad range of ERC-eligible activities beyond renewable energy generation that can contribute to CPP goal achievement, including demand-side energy efficiency,

⁶² Discussion of requirements for rate-based emission trading approaches begins at Federal Register p. 64904.

⁶³ This discussion of the need for modifications to existing tracking systems is based on the author's comparison between known EPA requirements in the final rule and the operation of existing tracking systems. EPA states what the tracking systems must be able to do to gain approval, but the assessment of existing tracking system capabilities is the author's.

⁶⁴ Federal Register p. 64910.

⁶⁵ "If approved in a State plan, an ERC tracking system may provide for transfers of ERCs to or from another ERC tracking system approved in a State plan, or provide for transfers of ERCs to or from an EPA-administered ERC tracking system used to administer a Federal plan." Final Rule §60.5810 Federal Register p. 64951.

combined heat and power and waste-heat power, incremental nuclear, shifting from coal to gas, efficiencies undertaken by affected EGUs, and electricity transmission and distribution (T&D) measures that improve the efficiency of the T&D system or reduce electricity use. If states don't expand their REC tracking system capability to issue ERCs for more than just renewable energy, those states will need to consider other options for issuing and tracking the broader range of ERCs.⁶⁶ In that case, they would designate multiple tracking systems, which might be administratively challenging. Further, market participants (especially affected EGUs) would have to pay attention to ERC availability in multiple tracking systems serving a given state, and the transaction fees could be duplicative.

REC-only tracking systems and the states served by them may therefore wish to consider whether it might be simpler just to track all generation so as to include other eligible sources of ERCs.

Another task for tracking system administrators to consider relates to issuing and tracking ERCs for shifting from steam generating units (coal) to natural gas combined cycle units. Such ERCs will have to be flagged or otherwise uniquely identified because these "gas-shift" ERCs can be used only by steam generating units to adjust their emission rate.⁶⁷

Existing REC tracking systems might require other modifications. For example, EPA suggests that the approved tracking system be able to calculate whether affected EGUs have met their emission standard (e.g., calculate an affected EGU's emission rate, recalculate the emission rate based on the number of ERCs acquired and retired, and compare to the emission rate goal). "The state regulator could facilitate its evaluation of the affected EGU's compliance (as well as evaluation by the affected EGU, the EPA, and others) by providing functionality in its tracking system to run such compliance calculations."⁶⁸ To do so, the REC tracking system would have to obtain emissions data from the state regulator or directly from the affected EGUs themselves—something that many REC tracking systems do not do currently.

A state and its agent. In states with rate-based plans, the state or its "designated agent" will be responsible for issuing ERCs.⁶⁹ According to the preamble to the final rule, "An agent is a party acting on behalf of the state, based on authority vested in it by the state, pursuant to the legal authority of the state. A state could designate an agent to provide certain limited administrative services, or could choose to vest an agent with greater authority. Where an agent issues an ERC on behalf of the state, such issuance would have the same legal effect as issuance of an ERC by the state."⁷⁰

⁶⁶ For example, The Climate Registry and other partners are developing a national energy efficiency registry that will allow states to track energy efficiency initiatives within their own programs as well as demonstrate compliance with the Clean Power Plan. See <http://www.theclimateresistry.org/thoughtleadership/energy-efficiency/>.

⁶⁷ "A state plan that provides for the use of ERCs issued based on incremental affected NGCC generation must provide a required calculation method that allows for issuance of ERCs based on the ability of incremental generation from affected stationary combustion turbines [gas] to substitute for generation from affected steam generating units [coal] (as represented in building block 2), while also respecting the fact that affected stationary combustion turbines must also meet an assigned CO₂ emission rate limit for the entirety of its MWh energy output." Federal Register p. 64905.

⁶⁸ Federal Register p. 64904.

⁶⁹ Federal Register p. 64904. The option for a designated agent is useful in a rate-based plan where ERCs are issued based on generation, and require evaluation, measurement and verification. There is no need for designated agents in mass-based plans because allowances are issued simply based on state allowance allocation policies.

⁷⁰ Federal Register p. 64906, footnote 986.

EPA staff clarified in discussion that the entity that administers a tracking system could be designated by the state as its agent, but the tracking system itself is viewed as merely a software program incapable of taking on the responsibility of an agent.⁷¹ Therefore, states and tracking system operators may want to consider whether they would agree to the tracking system operator acting as the state's designated agent in reviewing the necessary project applications and measurement and verification prior to the issuance of ERCs on behalf of the state.

Allowance tracking. Allowances are created according to the mass emission goals (allowance budget) for each state that submits a mass-based plan, and such states can distribute their allowances as they see fit.⁷² The creation of allowances is not based on generation from eligible resources, so there is no natural affinity for allowances to be tracked by existing REC tracking systems except that states may prefer to deal with a regional issuer with whom they have an established relationship. The existing REC tracking system would have to be modified to track allowances. Without the need to rely on generation data for allowance distribution, states may find it easier to choose either the EPA-administered tracking system or an existing allowance tracking system that would need to be approved by EPA.⁷³

To summarize tracking considerations, it seems likely that a state's choice of tracking system will be informed by whether a state proposes a rate-based plan or a mass-based plan. If a state proposes a rate-based plan, it will be dependent on reported MWh for the creation of ERCs. In this case, it could be advantageous to go with an existing REC tracking system because the same generation data could be used to create both ERCs and RECs. The generation data would have to be submitted to the administrator of the tracking system, and verified, only once.

By comparison, mass-based states will rely on allowances, which are not dependent on MWh for their creation—they're created based on the mass emissions budget. Allowance tracking could be done by any tracking system, but the EPA-administered system might have the advantage because it is pre-approved, or an existing allowance tracking system might be preferred over a REC tracking system that would have to undergo more significant modifications.

⁷¹ Conference call between multiple EPA staff and renewable energy stakeholders, September 25 and October 23, 2015.

⁷² Considerations and requirements for mass-based state plans are discussed in section VIII.J. of the preamble to the final rule, beginning at Federal Register p. 64887. Allowance tracking is discussed at Federal Register p. 64892.

⁷³ States participating in the Regional Greenhouse Gas Initiative use the RGGI CO₂ Allowance Tracking System (RGGI COATS) as the platform that records and tracks allowances. The California Air Resources Board uses the Compliance Instrument Tracking System Service (CITSS) to track allowances for the California cap-and-trade program.

6. ADDITIONAL CONSIDERATIONS FOR STATE RPS POLICY

Previous sections of this paper have discussed some of the CPP plan options available to states, how state RPS policies could help states achieve their CPP emission performance goals, and the potential role of ERCs and allowances in state plans and how they might interact with RECs. The introduction of the CPP into the state policy landscape may also stimulate states to consider some potential indirect effects of the CPP on RPS policy implementation. This section discusses whether and how state RPS programs and the voluntary green power markets that interact with them create incremental benefits beyond the CPP; the effect of the CPP on existing RPS contracts that don't anticipate and address ownership of new ERCs; and whether and how the CPP might affect harmonization of state RPS rules.

Creating Incremental Benefits: Voluntary and RPS Markets

The issue: States and participants in the voluntary market may want to consider strategies to ensure voluntary and RPS REC purchases are incremental to CPP needs.

For the purchase of a renewable MWh or a REC to create incremental environmental benefits, it must lead to emission reductions or other environmental improvements beyond what is already required by government regulations and mandates. Many organizations, businesses, and individual consumers are motivated to participate in the voluntary green power market by a desire to achieve benefits greater than what the government requires. To ensure that voluntary demand for renewable energy leads to benefits incremental to RPS requirements, Green-e, the primary certification program for the voluntary green power market, only certifies voluntary sales or purchases that are surplus to regulation.⁷⁴

With CPP implementation, purchasers in the voluntary market may choose to take steps to guarantee that their purchases are indeed surplus to regulation. Even though ERCs and RECs are separate and distinct, and don't claim the same attributes, they still are issued for the same MWh.⁷⁵ The voluntary purchase of a REC will not lead to an incremental emissions reduction if an ERC is also created and is used by an affected EGU for the CPP, because the number of zero-emission MWhs would not have been increased beyond what the CPP is already requiring.

If voluntary REC buyers feel that the impact of their purchase is at risk because another party is using the ERCs from the same MWh to satisfy CPP requirements, they can purchase and retire not only RECs, but also an equal number of ERCs.⁷⁶ That would ensure that their REC purchase is incremental to the renewable energy used to satisfy both an RPS and the CPP.⁷⁷

⁷⁴ "Green-e Energy certified products must be comprised of eligible renewable generation over and above anything required by state or federal RPS requirements, legislation, or settlement agreements." Green-e Energy National Standard Version 2.7 July 14, 2015, p. 11.

⁷⁵ See Section 4 above for discussion of EPA's position on the relationship between ERCs and RECs.

⁷⁶ The ERCs could but don't need to come from the same generating unit because ERCs are interchangeable instruments and, once issued, they don't represent specific generators (or even generators—an ERC could be from energy efficiency).

⁷⁷ Because the renewable energy is then surplus to regulatory requirements, this is sometimes referred to as "regulatory surplus."

Voluntary buyers should keep in mind that only certain RECs could possibly be affected because only certain generation can be issued ERCs: that is, RECs representing renewable energy generation from eligible resource types,⁷⁸ renewable generation from post-2012 vintage generating units, and renewable energy generation from 2022-2030 generation. Voluntary buyers could specify renewable energy outside these ERC eligibility limitations.

That means that participants in the voluntary market could pursue any of several possible strategies:

- Buy renewable energy or unbundled RECs from generation that is not eligible for ERCs.⁷⁹
- Buy renewable energy from generators with an accompanying attestation that no ERCs were produced with the purchased energy, including onsite distributed generation.
- Buy ERCs to match renewable energy purchases.

The same question about incremental benefits arises in mass-based states since all renewable energy automatically contributes to meeting mass-based emissions goals. If buyers purchase renewable energy from generators located in mass-based states where ERCs are not issued, they would have no effect on emissions because fossil generators will still emit to the level of the emissions cap (the mass budget). To avoid this problem, voluntary buyers in mass-based states could also buy equivalent allowances, effectively lowering the cap by retiring the allowances. States with existing cap-and-trade programs (i.e., the Regional Greenhouse Gas Initiative and the California cap-and-trade program) address this issue with an allowance set-aside for voluntary purchases. In most of those, a demonstration of purchased renewable energy results in the retirement of allowances on behalf of the purchaser. Other mass-based states could follow this model and allocate some of their allowances for this purpose.

The interest in creating incremental environmental benefits may also apply in a state regulatory context. Section 3 above pointed out that RPSs can help states and their affected EGUs achieve CPP emission goals. But what if a state wants its RPS to provide benefits that are partially or fully incremental to those offered by the CPP? Some states' RPS statutes articulate policy objectives that include reducing the impacts of climate change, reducing CO₂ emissions, general emission reductions, or more general environmental and health benefits.⁸⁰ A state could decide that these objectives are intended to be independent of other environmental programs, such as the CPP.

In many cases, states may be content to have their RPS contribute toward meeting the CPP emission performance goals. Other states, considering their statutory policy objectives, may want their RPS to reduce emissions even further.

⁷⁸ EPA's final rule defines renewable resources as wind, solar, geothermal, hydro, wave and tidal, but qualified biomass is also eligible for ERCs, as is the biogenic portion of waste-to-energy (final rule §60.5800 Federal Register p. 64950). Other providers may be issued ERCs, but RECs or energy certificates from these resources are less likely to be of interest to the voluntary market.

⁷⁹ For example, from generators that commenced operation before 2013; or generation occurring up to 2022 (except for generation in 2020-2021 that has been issued early credit ERCs).

⁸⁰ See Hamrin, Jan. *REC Definitions and Tracking Mechanisms Used by State RPS Programs*. Clean Energy States Alliance, June 2014, pp. 7-8; and Holt, Edward, and Ryan H. Wiser. *The Treatment of Renewable Energy Certificates, Emissions Allowances, and Green Power Programs in State Renewables Portfolio Standards*. Berkeley: LBNL, 2007, pp. 12-14.

In that case, states could adopt strategies similar to those suggested above for the voluntary market. For example, rate-based states could require that an ERC be acquired and retired for each REC issued for 2022-2030 generation that is also eligible for ERCs. Or they could require an attestation by the RPS-eligible generator that no ERCs were requested or received for the same MWh for which a REC was issued.⁸¹ Mass-based states could set aside allowances and retire them automatically to match RPS compliance.

Pre-existing Contracts

The issue: States may want to consider whether they have a role in determining the ownership of ERCs in pre-existing contracts.

Many existing renewable energy generators already have long-term contracts with buyers to purchase the energy and/or RECs produced (pre-existing contracts). If they began construction after 2012, they may be issued ERCs beginning in 2022. Parties that entered into pre-existing contracts before the CPP final rule was adopted would not know about ERCs, although they might have written language that tried to anticipate unspecified environmental attributes.

Pre-existing contracts with renewable generating facilities may therefore not specify clearly which party (the seller or the buyer) owns the ERCs that may be issued to that facility, leading to uncertainty and contention between the parties.

With the introduction of ERCs into the marketplace, parties transacting renewable energy will have to address which party owns the ERCs in situations where the renewable energy is eligible to be issued ERCs. Pre-existing contracts that extend into 2022 and beyond may be challenging to interpret, depending on how they are worded, and may need to be renegotiated. New contracts that extend into 2022 and beyond should be explicit about which party owns the ERCs.

Many power purchase agreements use broad, inclusive language in anticipation of the creation of unknown tradable instruments, but some may only refer narrowly to renewable energy certificates or credits or attributes, leaving ownership of ERCs in legal limbo.

As an example, consider a hypothetical wind project that began operation in 2013. It agreed to sell its renewable attributes to the power purchaser for 20 years. Because the project commenced construction after 2012, it is eligible for ERCs beginning in 2022. The wind project owner believes that since the contract does not name ERCs as part of the transaction (because the concept of ERCs had not yet been invented by EPA), it retains ownership of the ERCs and can sell them to a third party. The power purchaser, however, feels that the ERCs should be conveyed to it, notwithstanding the fact that ERCs are not explicitly named in the contract.

EPA acknowledges this potential issue and says,

⁸¹ “As a result, states may want to assess, when developing their state plan, how such existing instruments [RECs] may interact with ERCs. For example, a state may want to assess how issuance of ERCs pursuant to a state plan may interact with compliance with a state RPS by entities affected under relevant state RPS regulations or PUC orders.” Federal Register p. 64908.

The interaction of other instruments and ERCs may also impact existing or future arrangements in the private marketplace. Actions taken by states, separate from the design of their state plan, could address a number of these potential interactions. For example, state RPS regulations that specify a REC for a MWh of RE [renewable energy] generation, and the attributes related to that MWh, may or may not explicitly or implicitly recognize that the holder of the REC is also entitled to the issuance of an ERC for a MWh of electricity generation from the eligible RE resource. This could impact existing and future RE power purchase agreements or REC purchase agreements. Such interactions among existing instruments and ERCs could also impact how marketing claims are made in the voluntary RE market. How a state might choose to address these potential interactions will depend on a number of factors, including the utility regulatory structure in the state, existing statutory and regulatory requirements for state RPS, and existing RE power purchase agreements and REC contracts.⁸²

In a previous parallel situation with PURPA Qualifying Facility (QF) contracts⁸³ that were silent as to ownership of RECs, some state utility commissions ruled on the ownership of the unmentioned RECs.⁸⁴ Those QF contracts were entered into by a state requirement, however, and the commissions approved the contracts, arguably giving the commissions the right to determine REC ownership. In the current situation, many Power Purchase Agreements (PPAs) are not undertaken at the direction of state law, so the parties to the contracts might have to resolve their differences privately or through litigation, according to contract terms.

RPS Harmonization with the Clean Power Plan

The issue: If states choose a rate-based plan, or a state measures approach that includes an RPS, they may want to consider adjusting their RPS rules to be more consistent with the CPP.

By now it is nearly axiomatic that no two state RPS designs are the same. Each state responds to its own policy and stakeholder interests, and there is no interest group with an overriding desire for states to all have the same policies. Although states are the laboratories of policy, some observers have commented that the differences in RPSs lead to smaller and less liquid markets balkanized by different renewable energy eligibilities.⁸⁵

The CPP allows states a great deal of flexibility. Each state can propose its own plan and each plan can achieve the state's emissions reduction goals following its own policy preferences, as long as EPA

⁸² Federal Register p. 64908.

⁸³ The Public Utility Regulatory Policies Act (PURPA) of 1978 required regulated utilities to enter into contracts with Qualifying Facilities (certain renewable power production facilities and cogeneration facilities) to purchase the output at avoided cost rates. Pub.L. 95–617, 92 Stat. 3117; 16 U.S.C. ch. 46 § 2601 et seq.

⁸⁴ Holt, Edward, Ryan Wiser and Mark Bolinger. *Who Owns Renewable Energy Certificates? An Exploration of Policy Options and Practice*. LBNL-59965. Lawrence Berkeley National Laboratory, 2006.

⁸⁵ Holt, Edward. *CESA State RPS Policy Report: Increasing Coordination and Uniformity among State Renewable Portfolio Standards*. Montpelier: Clean Energy States Alliance, 2008.

approves the plan. There is no requirement that RPSs must conform to CPP eligibility criteria. One might therefore conclude that the EPA rules will not necessarily lead to RPS harmonization among the states.

Over time, however, as states and stakeholders become more familiar with the EPA's definitions and procedures, it is possible that states might make incremental RPS changes as they begin to realize the effect of the CPP.

For example, EPA's final rule makes clear that off-grid generation is not eligible for ERC issuance because generation eligible for ERCs must substitute for generation from affected EGUs or avoid the need for generation from affected EGUs.⁸⁶ States that currently accept off-grid renewables for RPS compliance might decide that it is not worth continuing to do so.

The CPP requires extensive evaluation, measurement and verification (EM&V) protocols for the issuance of ERCs,⁸⁷ whereas state EM&V can vary, mostly in small ways. Rather than continue two tracks for EM&V (one for issuance of RECs and one for issuance of ERCs), states may find it more efficient if their measurement requirements are the same as for the CPP.

Many state RPSs support new renewable energy, where "new" is defined differently depending on when the RPS was adopted, or whether existing generating projects might need continued support. With the CPP defining project eligibility for ERC issuance as on or after January 1, 2013,⁸⁸ rate-based states may want to consider whether it makes sense to adjust RPS eligibility to this date. On the other hand, states may continue to have their own reasons for wanting to support legacy generation, and they would also have to give careful thought to a transition from eligibility to ineligibility.

Geographic eligibility might also be an area for harmonization. A few states currently allow unlimited geographic sourcing of RECs for RPS compliance, while some states place limits on the percentage of compliance that may be met with out-of-state generation. Other states limit eligible resources to generators located within a specific region; still others do not restrict location but require that energy be delivered to the state or region for RPS eligibility. States will probably continue to see their RPS policy as a tool to ensure local benefits, but could decide to make some adjustments. For example, EPA requires energy delivery as a condition for issuing ERCs to renewable energy generators located in mass-based states.⁸⁹ When it comes to RPS eligibility, states might choose to follow EPA's approach.

This is not a complete list of areas where states might choose to harmonize their RPS with CPP rules. But the value of harmonizing RPS rules to the CPP may be less evident to states with a mass-based plan because in a mass-based plan all renewable energy automatically counts to the extent that it displaces

⁸⁶ "...eligible measures must be able to substitute for generation from affected EGUs as defined under this rule, and thus must be tied to the electrical grid." Federal Register p. 64897.

⁸⁷ See "EM&V Requirements for RE, Demand-Side EE, and Other Measures Used To Adjust a CO₂ Rate," Federal Register beginning at p. 64908.

⁸⁸ Federal Register p. 64896.

⁸⁹ "For RE measures located in a mass-based state to have some or all of its generation counted under a rate-based plan in another state, it must be demonstrated that the generation was delivered to the grid to meet electricity load in a state with a rate-based plan. Some examples of documentation that can serve as a demonstration include a power delivery contract or power purchase agreement." Federal Register p. 64898.

in-state fossil generation at affected EGUs.⁹⁰ But for rate-based plans where ERCs are issued to renewable energy with CPP eligibilities (e.g. resource type, generator vintage) or a state measures plan where RPS is a state measure, the CPP criteria may influence state thinking.

If gradual harmonization of state RPS rules with CPP rules does occur, one interesting side effect could be that some states' RPS rules might end up being more similar to each other, and that might enable larger RPS markets and greater market liquidity for RECs.

⁹⁰ U.S. EPA. Fact Sheet: Renewable Energy in the Clean Power Plan (no date). Accessed January 2016 at <http://www.epa.gov/sites/production/files/2015-11/documents/fs-cpp-renewable-energy.pdf>.

7. SUMMARY

RPSs can help states meet their CPP goals even though the RPS itself, and the results attributable to the RPS, is not something that need be quantified. In this way, an RPS is a complementary measure. In a rate-based state, an RPS stimulates new, eligible renewable energy generation that is eligible for ERC-issuance, and the ERCs may be traded to affected EGUs within the state or in other rate-based states with the same emission standards.

An RPS can be a silent partner in a mass-based state, where the RPS-eligible generation displaces affected EGUs and has an indirect effect on reducing mass emissions. An RPS can also contribute directly to reducing emissions in a mass-based state if the RPS is proposed as an enforceable state measure. As a state measure, the RPS would be accountable for reducing a calculated amount of emissions, which could reduce the need for affected EGUs to acquire allowances. This approach, however, requires more detailed planning and documentation, and the state plan must be backed up by the federally enforceable emission standards in case state goals are not met.

States should first decide which approach they will pursue (rate-based, mass-based, or mass-based with state measures), then decide how they are going to reach their emission performance goals. Among the options they could consider are increasing the stringency of existing RPSs while extending targets into the 2022-2030 period of CPP requirements, or, if they don't have an existing RPS, adopting a new RPS as a known, effective tool to motivate new renewable generation.

The adoption of the CPP final rule raises several issues for states to consider, particularly if they choose a rate-based plan with ERCs as the tracking instrument.

- Although there is general agreement that ERCs and RECs are not double-counted, because they represent different things and are used for different purposes, there is still concern that creating two instruments (ERCs and RECs) for the same MWh will mean that the purchase of RECs will not create incremental benefits above and beyond what is required by the CPP. This could have a deleterious impact, especially on the voluntary market for renewable energy.
- There may be confusion and potentially litigation regarding preexisting contracts that transact RECs into 2020 and beyond, but that are unclear about ownership of ERCs that are used in a rate-based plan.
- States might consider amending their RPS rules (for example, related to vintage, geographic eligibility, etc.) to better leverage the RPS to meet CPP goals. Whether the adoption of CPP will influence states to adjust their RPS definitions and rules to be more consistent with CPP requirements remains to be seen.

Finally, states will need to consider their ERC or allowance tracking options, and whether it makes sense to go with an existing REC tracking system (with modifications) that could be approved by EPA, or to adopt the EPA-administered tracking system, which itself will have to be modified. Likewise, administrators of the tracking systems that ably serve state RPS programs should think about what modifications would be required and whether they are willing to undertake them.

About the Author

Ed Holt is president of Ed Holt & Associates, Inc. and has practiced as an independent consultant on renewable energy policy and markets for over 20 years. He advises government agencies, utilities and non-profits on RPS requirements, the use of RECs and tracking systems, greenhouse gas accounting for renewable energy, and the Clean Power Plan and renewable energy. He was also one of the earliest to recognize the potential of voluntary markets to help achieve environmental goals. In 2009, Ed received the Green Power Pioneer Award from the Center for Resource Solutions.

About The RPS Collaborative

The 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, webinars, reports, an annual National Summit on RPS, and other opportunities for information exchange. Key reports, webinar recordings, and presentations that have been produced for the RPS Collaborative are available on the Clean Energy States Alliance website at <http://www.cesa.org/projects/state-federal-rps-collaborative/>.

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Clean Energy States Alliance

50 State Street, Suite 1

Montpelier, VT 05602

802.223.2554

cesa@cleanegroup.org

www.cesa.org

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.

CESA works with state leaders, federal agencies, industry representatives, and other stakeholders to develop and promote clean energy technologies and markets. It supports effective state and local policies, programs, and innovation in the clean energy sector, with emphasis on renewable energy, power generation, financing strategies, and economic development. CESA facilitates information sharing, provides technical assistance, coordinates multi-state collaborative projects, and communicates the positions and achievements of its members.

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