[SUBMITTED ELECTRONICALLY VIA EMAIL TO A-and-R-Docket@epa.gov]

December 1, 2014

The Honorable Gina McCarthy, Administrator
Environmental Protection Agency (EPA)
U.S. EPA Headquarters—William J. Clinton Building
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Re: Comments of Center for Resource Solutions (CRS) on Clean Power Plan, Docket ID: EPA-HQ-OAR-2013-0602

Dear Administrator McCarthy:

CRS appreciates this opportunity to comment on the June 2014 Proposed Rule Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, a.k.a. the Clean Power Plan ("Proposed Rule"), and generally provide information to EPA as it considers regulations for existing power plants under Section 111(d) of the Clean Air Act (CAA).

Overall, these comments will focus on integrating renewable energy (RE) and existing RE markets, instruments, and tracking systems into 111(d) compliance and state plans; accounting and potential double counting of emissions and reductions; interstate tracking of electricity and challenges for state compliance; tracking RE and avoided emissions; and verification, monitoring, enforcement and recordkeeping for RE. These comments are organized as follows.

Index

1012 torney avenue
2nd floor
san francisco, ca 94129

tel 415.561.2100
fax 415.561.2105
web www.resource-solutions.org

Summary of CRS Recommendations

In this first section, for your convenience, we have provided a summary of our recommendations in list form (numbered 1-38 below). Further explanation of each recommendation is provided in the following sections of these comments. In addition, CRS is happy to discuss and provide detailed explanations for any of the recommendations below beyond what is provided in these comments.

Recommendations 1-26 are requirements or measures that we feel EPA *must* adopt or undertake for the reason that precedes each group: 1-11, 12-14, 15-23, and 24-26. Recommendations 27-36 are requirements or measures that we feel EPA *should* adopt or undertake for the reason that precedes each group: 27-29, 30-34, and 35-36. Recommendations 27-36 are requirements or measures that we feel EPA *could* adopt or undertake for the reason that precedes recommendation 37 and 38.

In order to avoid double counting of RE and avoided emissions from RE in 111(d) compliance, EPA *must*:

1. Cross reference state plans to check for double counting and duplicative standards where there is known trading of electricity across state boundaries;
2. Require that renewable energy certificate (REC) ownership determines a claim on avoided emissions from RE for 111(d) for all states;
3. Require that a single REC cannot be counted for multiple states' 111(d) compliance (e.g. in multiple state Renewable Portfolio Standards (RPSs)), under multiple state programs within a state plan, or by multiple compliance entities within a state;
4. Require that RECs be used for verification of all RE produced for 111(d) compliance;
5. Require REC retirement for verification of all RE and avoided emissions from RE counted for 111(d) compliance;
6. Require that no adjustments be made to rates for RE without RECs;
7. Require upward adjustments to masses for RE without RECs (both power that is imported without the RECs and in-state RE generation where RECs are sold out of state); mass-based multi-state regions must make similar adjustments;
8. Not allow mass-based states or multi-state regions to make adjustments to lower masses for RE;
9. Require that the same MWh are not used for both statewide adjustments for RE and adjustments made by individual electric generating units (EGUs);

10. Require that states not create separate compliance instruments for the purpose of allocating reductions from RE and RECs to individual EGUs reporting 111(d) compliance; and
11. Require that states not have flexibility to choose which EGUs are included in state goals, or between a "generation-based" and a "consumption-based" target.[1]

In order to avoid double counting of RE with other markets, EPA ***must***:

12. Require that RECs used for 111(d) compliance are fully aggregated and include avoided emissions attributes;
13. Not allow variations in state REC or attribute definitions to be used as grounds to disaggregate the REC or allow double counting of avoided emissions attributes under 111(d); and
14. Not create or allow states to create or use a compliance instrument for RE other than RECs.

In order to meet the intent of regulation (i.e. to reduce emissions from power plants in accordance with BSER), EPA ***must***:

15. Require that states demonstrate avoided emissions from RE with REC retirement in state for a measure that is included the state plan;
16. Require that adjustments to rates for RE must be limited to RE generation that has avoided emissions at regulated units, affected EGUs, (as a result of which there has been an actual reduction of emissions at an affected EGU), that has not been double counted, and that was included in the state plan;
17. Require that RECs used for adjustments to the denominator of a rate be limited to RECs that avoid emissions at affected EGUs;
18. Require that avoided emissions from RE that are used for adjustments to the numerator of a rate be limited to those that occur at affected EGUs only;
19. Require that a consistent methodology for calculating avoiding emissions be used by all states;
20. Require upward adjustments to masses that are lower due to RE without RECs and RE that is not included in state plan;
21. Require that states be consistent within the state in terms of which adjustment method (numerator or denominator) is used and not use both methods at different times or for different RE policies;
22. Require that voluntary green power and REC purchasing mechanisms and programs not be included in state plans; and
23. Consider baseline qualifications for RE used in a state plan, including banking, age of facility, resource types, sourcing, and use of unbundled RECs.

In order to avoid damage to existing renewable energy markets, EPA ***must***:

24. Require that emissions reductions from voluntary renewable energy (VRE) are not counted as a part of other state policies included in 111(d) plans;
25. Require that there be no adjustment to rates for VRE, and require upward adjustments to masses for VRE; and
26. Require VRE set-asides for mass-based emission limits with allowance trading (cap-and-trade).

In order to provide clarity to states, EPA ***should:***

[1] The terms "generation-based" and "consumption-based" are explained in the sections below under the headings "Potential for Double Counting of Avoided Emissions from RE under the Proposed Rule" and "Alternative State Goals: Consumption-based Targets and All-generation Certificate Tracking," respectively.

27. Make explicitly clear that state goals are for and a state plan must address affected EGUs within its borders;
28. Provide guidance on calculations of avoided emissions from RE, in cooperation with transmission operators; and
29. Provide additional guidance on RE eligibility such that states may determine the extent to which existing RPS eligibility standards align with 111(d) eligibility standards and therefore prospective and historical eligible reductions from RPSs.

In order to lower the costs of compliance and increase transparency, EPA *should:*

30. Require that RECs for 111(d) compliance be tracked, identified, and retired in an existing renewable energy tracking system;
31. Recommend that states use the same methods for making adjustments to rates for RE that were used by EPA in calculations of final state goals, and for states that use alternative methods, require an explanation of how that meets the intent of regulation;
32. Recommend that states determine a method for allocating RPS reductions and RECs retired for the RPS to individual EGUs reporting 111(d) compliance;
33. Require the same parameters for demonstrating emissions performance for compliance as for projections, and vice versa; and
34. Not adjust exporting and importing states' goals anticipating that states with generation-based goals will cooperate with respect to 111(d) compliance.

In order to make informed policy decisions, EPA *should:*

35. EPA should make its determination about RECs as the tracking mechanism for avoided emissions from RE under 111(d) irrespective of current REC prices, since REC prices vary tremendously across the country based on regional market dynamics; and
36. Develop a methodology for calculating avoided emissions from RE in cooperation with transmission operators.

In order to increase transparency, EPA *could:*

37. Require that 111(d) avoided emissions values be tracked with RECs in tracking systems, provided that precise enough information is available.

In order to meet the intent of regulation, EPA *could:*

38. Adopt consumption-based state goals and require use of all-generation certificate tracking systems for 111(d) compliance.

Introduction to CRS

CRS is a 501(c)(3) nonprofit organization that creates policy and market solutions to advance sustainable energy. Since 1997, CRS has been instrumental in the development of landmark state, regional and national renewable energy and climate policies. CRS has also provided regular technical assistance and guidance to attribute tracking systems and other functional support entities around the country.

CRS also administers the Green-e® programs. Green-e Energy is North America's leading independent consumer protection program providing certification and verification for renewable electricity and RECs in the U.S. voluntary market. In 2013, that program certified the majority of the U.S. voluntary renewable energy market and 89% of retail REC sales. Green-e Climate is a global retail standard for

carbon offsets sold in the voluntary carbon market. Green-e Marketplace recognizes and verifies the claims of companies that use certified renewable energy and carbon offsets to reduce their impact. Stakeholder-driven standards supported by rigorous verification audits are a cornerstone of Green-e and enable CRS to provide independent third-party certification of environmental commodity transactions in voluntary markets. The Green-e environmental and consumer standards are overseen by an independent governance board of industry experts, including representatives from environmental nonprofits, consumer advocates, and purchasers. Our standards have been developed and are periodically revised through an open stakeholder process. Green-e program documents, including the standards, contract templates, and the annual verification report, are available at www.green-e.org.

Integrating Renewable Energy into 111(d) Compliance and State Plans and Avoiding Double Counting

In this section, we identify the ways in which double counting of avoided emissions from RE can occur under the Proposed Rule. We then describe how the use of RECs as the tracking mechanism for RE and avoided emissions from RE can prevent double counting, both within the Clean Power Plan (i.e. between and within state plans and state emissions performance reports) and between the Clean Power Plan and other state programs and voluntary markets. We describe other advantages to using RECs for this purpose, including a "fair" allocation of avoided emissions from RE, facilitation of verification and recording of RE under the Clean Power Plan, and prevention of damage to other markets that might occur if RECs were to be disaggregated or an alternative instrument were used.

We then describe how RECs will work in this function. We describe the role of RE tracking systems and the management of RECs for compliance under the Clean Power Plan. We describe requirements for adjustments to rates and masses based on REC ownership to avoid gaming and double counting of RE. We describe what is required for making adjustments to rates for RE (including adjustments to the numerator vs. denominator of a rate, and adjustments to the statewide rate vs. the rates of individual EGUs) in order to meet the intent of regulation and prevent double counting of emissions reductions. We provide information and recommendations about the calculation of avoided emissions from RE and eligibility requirements for RE under the Clean Power Plan with respect to compatibility with state RPS programs. We also discuss RE under multi-state plans, to the extent that requirements should differ or extra requirements are necessary in this case to avoid double counting.

Finally, we describe what will be necessary to prevent damage to the voluntary renewable energy (VRE) market as a result of the Clean Power Plan.

Potential for Double Counting of Avoided Emissions from RE under the Proposed Rule

Double counting undermines the intent of regulation, in as far as the CAA calls on EPA, "to develop emission guidelines, which reflect EPA's determination of the BSER, for states to follow in formulating compliance plans to implement standards of performance to achieve emission reductions consistent with the BSER" (Proposed Rule, Sec. I.A.2.a, pg. 34835). Emissions reductions that have been counted, recorded, or claimed more than once towards a state target or by more than one state are artifacts of flawed accounting and do not represent real emissions reductions.

Since it will be much more difficult, if not administratively impossible for EPA to address instances of double counting after they have occurred and once state plans have been approved, we suggest that

EPA create and enforce requirements that will prevent double counting of emissions reductions from RE before they occur by following our recommendations. In order to avoid double counting, EPA must also cross reference state plans to check for double counting and duplicative standards where there is trading of electricity across state boundaries.

Due to the format of state emission rates under the Proposed Rule, the potential for states to use different compliance and reporting options (rates vs. masses), interstate trading of RE, and the ability for states to claim and count out-of-state emissions reductions from RE under certain circumstances, double counting of emissions reductions can occur under the Proposed Rule without additional requirements for the tracking and accounting of avoided emissions from RE using a nationally uniform instrument.

State rates and masses under the Proposed Rule are "generation-based," meaning they include only in-state generation from affected EGUs.[2,3,4] The result of this generation-based format is that whereas emissions reductions from Building Blocks 1 and 2 are automatically reflected in a state's rate, RE and energy efficiency (EE) measures (Building Blocks 3 and 4) avoid generation and mass emissions but may not affect or improve the average rate of affected EGUs, and so RE and EE must be incorporated by manually making adjustments to the rate.[5]

First, since states using rate-based goals and performance are making manual adjustments for RE under the Proposed Rule, the potential exists for double counting to occur between different RE mechanisms and policies *within* a rate-based state, unless EPA requires tracking of RE megawatt-hours (MWh). Without this tracking, avoided emissions from a single RE MWh may be applied under multiple state mechanisms/programs or by multiple compliance entities (e.g. EGUs and load-serving entities (LSEs)) within the state. For example, double counting would occur if a state adjusted its rate for emissions reductions achieved through its RPS program and the same MWh counted toward the RPS were also used to adjust the rates of individual EGUs or to make adjustments for a state incentive program for RE. Though EE and RE measures that are included in a mass-based plan must also be enforceable, there may

[2] Though it does not appear that the CAA explicitly defines affected sources as being located in-state, EPA has proposed that state emission performance levels be "based on the application of the BSER to a state's affected EGUs" (Proposed Rule, Sec. IV.B, pg.34853). EPA calculated "2012 state fossil emission rate for covered sources" for states such that they "reflect total emissions divided by total net energy output (e.g. net electricity generation + useful thermal output)" of covered sources (Goal Computation TSD, pg.8-9).

[3] We suggest alternative state goals below, under the heading: "Alternative State Goals: Consumption-based Targets and All-generation Certificate Tracking."

[4] If this format for state goals is adopted in the Final Rule, EPA should provide additional clarity that state goals are for and a state plan must address affected EGUs within its borders.

[5] "The proposed goals are expressed as adjusted output-weighted-average emission rates for all affected EGUs in a state. As discussed earlier in this section, a goal expressed as an unadjusted output-weighted-average emission rate would fail to account for mass emission reductions from reductions in the total quantity of fossil fuel-fired generation associated with state plan measures that increase low- or zero carbon generating capacity or demand-side energy efficiency. Accordingly, under the proposed goals, the emission rate computation includes an adjustment designed to reflect those mass emission reductions. […] (As discussed below in Section VIII on state plans, we are proposing that a state could make analogous adjustments to compliance measurement approaches under its state plan, thereby enabling the state to adopt an emission rate-based form of emission performance level while still being able to rely on low- or zero-carbon capacity deployment programs and demand-side energy efficiency as components of its plan)" (Proposed Rule, Sec. VII.C, pg. 34895).

not be a need for evaluation, monitoring and verification (EM&V) and tracking of every MWh of RE or EE savings to prevent double counting within the state.

Second, double counting can occur *between* states under the Proposed Rule due to interstate trading of RE and the potential for states to use different compliance and reporting options (rates vs. masses)—avoided emissions from RE can be counted in more than one state in the same power pool (or more broadly if trading of RECs is done outside of regional power pools) where states are trading renewable electricity or RECs.

Since state rates and masses under the Proposed Rule include only in-state generation from affected EGUs (generation-based compliance), imported and exported generation as well as renewable energy generation are not reflected in state rates and rate-based states will make manual adjustments for reductions from RE, while state masses automatically reflect the emissions impact of imported generation and renewable energy generation (both in-state and imported).[6] This means that, without some nationally uniform mechanism to track avoided emissions from RE (e.g. RECs), or in other words, if only the location of RE and displaced generation determines claims on RE for 111(d) compliance, then there may be double counting or under reporting where states that trade RE use different reporting methods (rate vs. mass) (see Figure 1). For example, a state using rate-based reporting may use in-state RE to adjust its rate while a neighboring state using mass-based reporting in the same power pool also reflects avoided emissions associated with that same RE in its mass total.
This may describe an actual outcome for Nevada and California. Assuming that California chooses a mass-based approach to align with its existing emissions cap-and-trade program, Nevada may very well choose to use a rate-based approach, in which case there are dozens of renewable energy facilities located in Nevada that are currently exporting power into California and being counted in the California RPS program.[7]

Though trading of RE between states using the same reporting method (i.e. rate-to-rate or mass-to-mass trading of RE or RECs) would not result in double counting in this case, it may result in an allocation of emissions reductions that is "unfair," in that the state that took action (i.e. is paying for the RE) would not get to claim the RE (see Figure 1).

This scenario may also result in double counting of avoided emissions between the Clean Power Plan and state compliance markets for RE (RPS programs) and/or the voluntary RE market wherever RECs (which convey avoided emissions as the compliance mechanism used in state RPSs and also as the currency for the voluntary market) and displaced generation (that is counted as avoided emissions under 111(d)) are not in the same state. The role and treatment of RECs in these existing RE markets is discussed further below.

Third, double counting can occur *between* states under the Proposed Rule due to states claiming out-of-state reductions from RPS programs. According to the Proposed Rule, states are allowed to claim out-of-

[6] These comments address the interstate effects of RE generation only, but all generation can have interstate effects and mass-based states will reflect these effects, which may be double counted in nearby rate-based states if adjustments for reductions are permitted (e.g. nuclear).
[7] See the list of CA RPS Eligible Facilities located here: http://www.energy.ca.gov/portfolio/documents/rps_certification.html.

state reductions that occur as a result of the state's RPS program.[8] As a result, it is possible for a state using the rate-based approach to account for out-of-state emissions reductions associated with its RPS and in-state RE generation, while a neighboring mass-based state also reflects the same avoided emissions in its mass.

In order to avoid double counting that can occur in these three ways under the Proposed Rule, avoided emissions from RE must be tracked using some nationally uniform instrument.

Use of RECs for Tracking RE and Avoided Emissions from RE

RECs are the most effective instrument to track RE for the purposes of 111(d) and prevent the double counting that would otherwise occur under the Proposed Rule. RECs are the only instrument and the established mechanism for conveying renewable electricity attributes and the use of renewable electricity to individual grid users in the United States.[9] They also convey the avoided grid emissions associated with RE generation in the voluntary market and for many state RPS programs.[10] Use of RECs as the nationally uniform instrument for tracking and counting avoided emissions from RE for 111(d) compliance will:

1. *Prevent double counting of RE and avoided emissions from RE.*

If only RECs determine claims on RE for 111(d) compliance, then there is no double counting within 111(d) and no double counting with state RPS programs and the voluntary market, provided that adjustments are made to rates and masses based on REC ownership (see Figure 2 and the subsection below on "Requirements for RECs under 111(d) and Adjustments to Rates and Masses to Avoid Gaming and Double Counting of RE").

EPA must *require* that REC ownership determines the claim on avoided emissions from RE for 111(d) for all states in order for RECs to function properly in this role. If states are permitted to choose whether or

[8] "The EPA is proposing that, for renewable energy measures, consistent with existing state RPS policies, a state could take into account all of the CO2 emission reductions from renewable energy measures implemented by the state, whether they occur in the state or in other states. This proposed approach for RE acknowledges the existence of renewable energy certificates (REC) that allow for interstate trading of RE attributes and the fact that a given state's RPS requirements often allow for the use of qualifying RE located in another state to be used to comply with that state's RPS. The EPA is also seeking comment on how to avoid double counting emission reductions using this proposed approach" (Proposed Rule, Sec. VIII.F.6, pg. 34922).

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

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

[10] *Ibid.*

Also see Bird, L. and J. Sumner (2011). *Using Renewable Energy Purchases to Achieve Institutional Carbon Goals: A Review of Current Practices and Considerations*. National Renewable Energy Laboratory. NREL/TP-6A20-49938: 35. Available online at: http://www.nrel.gov/docs/fy11osti/49938.pdf.

Also see Environmental Tracking Network of North America (ETNNA). (2010) *The Intersection between Carbon, RECs, and Tracking: Accounting and Tracking the Carbon Attributes of Renewable Energy*. Available online at: http://etnna.org/images/PDFs/Intersection%20btwn%20Carbon%20RECs%20and%20Tracking.pdf.

Also see Hamrin, J. (2014) *REC Definitions and Tracking Mechanisms used by State RPS Programs*. Clean Energy States Alliance (CESA). Prepared for the State-federal RPS Collaborative. Available online at: http://www.cesa.org/assets/2014-Files/RECs-Attribute-Definitions-Hamrin-June-2014.pdf.

not to use RECs for this purpose, and different states use different ways to track and assign RE and avoided emissions claims, then there may be double counting between states wherever RECs and electricity are not in the same place.

A single REC must not be counted for multiple states' 111(d) compliance (e.g. in multiple state RPSs), under multiple state programs within a state plan, or by multiple compliance entities within a state. RE can be supported by multiple policies and by multiple states, but each supporting policy or state cannot count (i.e. adjust their rate or reflect in their mass) the same generation or benefits (reductions) for 111(d) compliance. Responsibility for the generation must be allocated such that there is no double counting, and RECs are the best way to track this. This means that the states and policies will need to negotiate who gets the REC and with it the claim on RE and avoided emissions for 111(d) compliance. This is unavoidable and would have to be negotiated even if RECs were not used to track RE. RECs merely make it possible to track and account properly.

For state RE policies that do not currently involve the transfer of RECs (e.g. performance tax incentives, net metering, research and development support, etc.), states will need to "add" accounting using REC ownership in order for the RE to be assigned to these different policies and counted under 111(d). These policies have not historically involved the transfer of RECs (or attribute claims of any kind necessarily) because the benefiting RE or attributes/benefits were not being claimed or counted toward a target, but 111(d) creates the need for a nationally uniform instrument across policies. States need not change these programs to require the transfer of RECs, provided that the RECs are retired in state, are not also counted toward another mechanism or policy being used for 111(d) compliance and have been claimed in the voluntary market.[11]

EPA has specifically called for comment on, "whether an emission reduction becomes duplicative (and therefore cannot be used for demonstrating performance in a plan) if it is used as part of another state's demonstration of emission performance under its CAA section 111(d) plan" (Proposed Rule, Sec. VIII.D.8, pg. 34913). We are interpreting this as describing a scenario in which, for example, State A includes emissions reductions associated with a particular wind farm in its state plan, and then neighboring State B that imports a portion of the power from that wind farm reports reductions associated with that wind farm during demonstration of emission performance for 111(d). If both states include the same generation (individual MWh) and resulting reductions in their state plans, then that is duplicative, and if both states report the same reductions in their emissions performance, then that is double counting. If only one state includes the reductions in its plan and only one state includes the reduction in its emissions performance, then there is neither duplicative standards nor double counting. However, if State A includes the generation and reductions in its state plan and State B does not, then State B should not be allowed to report reductions associated with that generation as a part of emissions performance since it was not included their plan.[12]

EPA has also requested comment on "whether a state should be able to take credit for emission reductions out of state due to renewable energy measures if the state can demonstrate that the reductions will not be double-counted when the relevant states report on their achieved plan

[11] The voluntary renewable energy (VRE) market and the need to require that emissions reductions from VRE are not counted as a part of 111(d) compliance is discussed further below.

[12] We explain the importance of limiting adjustments for RE to those associated with mechanisms and policies included in the state plan below, under the heading: "Requirements for RECs under 111(d) and Adjustments to Rates and Masses to Avoid Gaming and Double Counting of RE."

performance, and on what such a demonstration should entail" (Proposed Rule, Sec. VIII.F.6, pg. 34922). We deem that a state should be able to take credit for such reductions provided that RECs are the required tracking mechanism for avoided emissions from RE and RECs are not counted for multiple states' 111(d) compliance (e.g. in multiple state RPSs), under multiple state programs within a state plan, or by multiple compliance entities within a state.

Finally, it is not necessary to require that RECs be bundled with electricity for the purposes of 111(d) compliance. If only electricity bundled with RECs determine claims on RE for 111(d) compliance (i.e. both electricity and the REC are required), then there is no double counting within 111(d) or with RPSs and the voluntary market (see Figure 3). However, this would severely limit use of RPS for 111(d) where state RPS programs allow unbundled RECs to be used[13]—states could not in this case count all of their RPS toward 111(d) compliance. This would also limit interstate trade of RE for 111(d) compared with a scenario in which only RECs determine claims on RE for 111(d) (see reason number 3 below for more information). In fact, it is the REC that makes bundled electricity a compliance option that avoids double counting. Under the Proposed Rule, all that matters with respect to RE is whether the RE creates emissions reductions either in state or out of state and whether these reductions have been allocated without double counting. Beyond this, for 111(d), it does not matter whether the state with the REC (and therefore the avoided emissions) also uses the electricity generated at the renewable plant.

2. *Prevent double counting with RPSs, other state programs, and the voluntary market in which RECs are defined as including avoided emissions.*

In the voluntary renewable energy (VRE) market and in many state RPS programs across the country, RECs are already defined as including avoided emissions benefits such that the voluntary purchaser or RPS program (and therefore utility customers) can claim that their generation avoids emissions on the grid. This is industry standard practice and included in many renewable energy contracts, operating rules of many tracking systems (e.g. the Western Renewable Energy Generation Information System (WREGIS)) and state law and regulation.[14] This is an important benefit in the voluntary market and one which eight states participating in the Regional Greenhouse Gas Initiative (RGGI) and California have recognized in incorporating emission allowance set-asides or reserve retirement accounts for VRE to ensure that this avoided emissions benefit is retained for the voluntary market in those regions.

[13] See Holt, E. (2014) *Potential RPS Markets for Renewable Energy Generators*. Clean Energy States Alliance (CESA). Prepared for the State-Federal RPS Collaborative. Available online at: http://www.cesa.org/assets/2014-Files/Potential-RPS-Markets-Report-Holt-January-2014.pdf. See as an interactive map at: http://www.cesa.org/projects/state-federal-rps-collaborative/potential-rps-markets-for-renewable-energy-generators/.

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

Also see Hamrin, J. (2014) *REC Definitions and Tracking Mechanisms used by State RPS Programs*. Clean Energy States Alliance (CESA). Prepared for the State-federal RPS Collaborative. Available online at: http://www.cesa.org/assets/2014-Files/RECs-Attribute-Definitions-Hamrin-June-2014.pdf.

Also see Holt, E. and R. Wiser (2007). *The Treatment of Renewable Energy Certificates, Emissions Allowances, and Green Power Programs in State Renewables Portfolio Standards*. Berkeley, CA, Lawrence Berkeley National Laboratory. LBNL-62574. Available online at: http://emp.lbl.gov/sites/all/files/REPORT%20lbnl%20-%2062574.pdf.

For the Green-e Energy program, which certified the majority of the U.S. VRE market and over 89% of retail REC transactions in 2013[15]: "Green-e Energy certified MWh (electricity or REC) must contain all the greenhouse gas (GHG) emission reduction benefits, *including carbon dioxide (CO2) reduction benefits*, associated with the MWh of renewable electricity when it was generated" (emphasis added) (Green-e Energy National Standard, pg. 8).

Most state and tracking system definitions of RECs and green attributes support the use of RECs for tracking avoided emissions from RE under 111(d) in that avoided emissions and other derived attributes are either already explicitly included in definitions of RECs or attributes or they are implicitly included in "all environmental benefits," "whole certificate," or similar inclusive language.[16] But, variations in state REC or attribute definitions should not be used as grounds to disaggregate the REC or allow double counting of avoided emissions attributes under 111(d).[17] We are aware of only one state, North Carolina, that allows the avoided emissions attribute to be traded separately from the REC for RPS compliance.[18] In this case, EPA can require the attribute to be attached to the REC for the purposes of 111(d) compliance.

Avoided emissions must not be disaggregated from RECs for 111(d) compliance for the following reasons.

- Disaggregating this benefit would not simplify 111(d) compliance since a tracking mechanism for avoided emissions would still be required. Where only states with generation that is displaced by RE could claim avoided emissions from RE under 111(d), rate-based states would still need to prove that emissions were avoided/displaced due to RE and not counted in other states, just without using RECs, which is the existing and most effective instrument.
- Disaggregation would disrupt state RPS programs, many of which are intended to help reduce emissions from electricity. If emissions are displaced out of state due to the RPS program and those avoided emissions remained out of state, the RPS program and customers in the RPS state could not claim the full emissions benefit of their generation.
- Disaggregation would limit the use of RPS programs for 111(d) where RPS programs allow for use of unbundled RECs.

[15] According to preliminary data from NREL. Final data will be posted here, when available: http://www.nrel.gov/analysis/market_green_power.html.

[16] Hamrin, J. (2014) *REC Definitions and Tracking Mechanisms used by State RPS Programs*. Clean Energy States Alliance (CESA). Prepared for the State-federal RPS Collaborative. Pg. 2, 4-8. Available online at: http://www.cesa.org/assets/2014-Files/RECs-Attribute-Definitions-Hamrin-June-2014.pdf.

[17] For example, many states have adopted language excluding "emissions reduction credits" from the attributes included in a REC, including the California Public Utility Commission's (CPUC's) definition of "green attributes," which excludes "emission reduction credits encumbered or used by the Project for compliance with local, state, or federal operating and/or air quality permits." This, however, is intended to prevent disruption of existing air regulations in California and is not related to general grid GHG reduction claims or the potential use of RECs for 111(d). The CPUC in particular has stated in decisions 08-08-028 and 04-06-014 that avoided fossil fuel emissions and avoided emissions of GHGs are included in the REC.

[18] Though DE and PA do not appear to require avoided emissions with RECs for compliance, the GATS tracking system used for compliance in these states includes avoided emissions attributes as a part of a "whole certificate."

- Disaggregation would disrupt the voluntary market by removing a critical benefit to voluntary consumers, "regulatory surplus," without any way to restore it using the REC, since RECs are the currency of RE in the voluntary market.[19]
- Disaggregation may produce an "unfair" outcome if the state where the emissions are displaced is not paying for the attributes/reductions.
- Disaggregation, whether this involves creating a new instrument or not, but especially if it involves creating a new instrument, will increase the costs of compliance for states, since they will have to buy the new instrument on top of the RPS or otherwise obtain avoided emissions which have been separated from the REC.

For the same reasons, it is inadvisable to create or allow the use of a separate, alternative compliance instrument to track avoided emissions from RE, which would have the same effect as disaggregating the REC.

Some states may oppose the use of RECs for 111(d) compliance and/or favor the disaggregation of avoided emissions benefit on the basis that RECs could be difficult or costly to obtain for some distributed generation (DG) solar facilities, especially where third-party solar installer companies currently retain the RECs for generation from leased equipment. But this should also not be used as grounds to disaggregate RECs or allow for 111(d) compliance without RECs. States could require REC purchase or create DG solar policies that include the option to acquire RECs from DG owners who take advantage of state incentive and other programs supporting the development of DG solar in order to mitigate this issue.

3. *Allow generation-based (in-state only) accounting/reporting to reflect the reality of trading.*

In the West, for example, there are large amounts of electricity flowing from EGUs in the intermountain states to the coastal states. Use of unbundled RECs for 111(d) compliance would allow for RECs to flow from west to east to balance out the carbon emissions in the east that result from EGU power flows from east to west.

4. *Produce a "fair" allocation of RE in that the state paying for RE attributes is getting to count it toward compliance.*

The REC purchaser reflects who is paying specifically for the attributes of generation (including emissions and avoided emissions), and we believe that it meets the intent of regulation for this purchaser to take credit.

To the extent that there may be those that make arguments about current REC pricing compared to the often relatively large size of other investments in RE in an effort to persuade EPA to assign avoided emissions from RE to the largest investor, regardless of whether or not they also own the RECs, it is worth noting that REC prices vary tremendously across the country based on regional market dynamics. Therefore, EPA should make its determination about RECs as the tracking mechanism for avoided emissions from RE under 111(d) irrespective of current REC prices.

[19] See the subsection below with the heading "Voluntary Renewable Energy" for more information and a description of regulatory surplus.

5. Enable verification and recording of RE under 111(d).

Our recommendations allow states to confidently use RECs as a cost effective method for 111(d) compliance and provide assurance to EPA and the public of the delivery and ownership of avoided emissions from RE. RECs are a well-established way to track RE and can be easily verified and recorded, as recognized by EPA in the Proposed Rule: "Reporting and recordkeeping requirements will consist of the data necessary for each affected entity to demonstrate compliance with its obligations. […] These requirements might also include comparable reporting by an electric distribution utility of renewable energy certificates (RECs) held, or renewable energy purchased or generated, under a renewable energy portfolio standard, and compliance with the standard" (Proposed Rule, Sec. VIII.D.9, pg. 34914).

To the extent that EPA intends to, "establish guidance for acceptable quantification, monitoring, and verification of RE and demand-side EE measures for an approvable EM&V plan," and is, "seeking comment on critical features of such guidance, including scope, applicability, and minimum criteria" (Proposed Rule, Sec. VIII.F.4, pg. 34921), EPA must standardize verification of RE by requiring that RECs must be retired for verification of all RE produced for 111(d) compliance. This retirement can occur in one of several REC tracking systems, which also issue, serialize, and track ownership of RECs.

Role of RE Tracking Systems and Management of RECs

Tracking RECs for 111(d) compliance will be necessary to establish unique ownership and to ensure that they are not counted by multiple states, under multiple state programs, or by multiple compliance entities. RECs for 111(d) compliance can be identified, tracked and retired in existing, electronic REC tracking systems that in combination cover the whole of the U.S. and which are already used to serve state compliance and VRE markets.[20] Several of these tracking systems track non-renewable generation certificates as well (all-generation tracking systems). These include:

- Electric Reliability Council of Texas (ERCOT)[21];
- Midwest Renewable Energy Tracking System (M-RETS)[22];
- Michigan Renewable Energy Certification System (MIRECS)[23];
- North American Renewables Registry (NAR)[24];
- New England Power Pool/Generation Information System (NEPOOL-GIS)[25] (all-generation);
- North Carolina Renewable Energy Tracking System (NC-RETS)[26];
- New York Generation Attribute Tracking System (NYGATS)[27] (in development)(all-generation);

[20] Quarrier, R. and Farnsworth, D. (2014) *Tracking Renewable Energy for the U.S. EPA's Clean Power Plan: Guidelines for States to Use Existing REC Tracking Systems to Comply with 111(d)*. Center for Resource Solutions and Regulatory Assistance Project. Available online at: http://www.resource-solutions.org/pub_pdfs/Tracking%20Renewable%20Energy.pdf.

Environmental Tracking Network of North America (ETNNA). (2010) *The Intersection between Carbon, RECs, and Tracking: Accounting and Tracking the Carbon Attributes of Renewable Energy*. Pg. 3. Available online at: http://etnna.org/images/PDFs/Intersection%20btwn%20Carbon%20RECs%20and%20Tracking.pdf

[21] http://www.ercot.com/

[22] http://www.mrets.org/

[23] http://www.mirecs.org/

[24] http://www.narecs.com/

[25] http://www.nepoolgis.com/

[26] http://www.ncrets.org/

[27] http://www.nyserda.ny.gov/Energy-and-the-Environment/New-York-Generation-Attribute-Tracking-System.aspx

- PJM Generation Attribute Tracking System (PJM-GATS)[28] (all-generation); and
- Western Renewable Energy Generation Information System (WREGIS)[29].

EPA should require that RECs for 111(d) compliance be identified in a tracking system and retired on behalf of a state for 111(d) compliance or a state mechanism that has been included in the state plan. We support requiring documentation of retirement according to tracking system procedures when RECs in tracking systems are used to comply with 111(d). EPA can limit RE that is eligible for 111(d) compliance to facilities that are participating in tracking systems, or, where RE generation facilities are not participating in a tracking system, which is sometimes the case for smaller and distributed generation facilities, RECs can be created, transferred and retired contractually, in which case verification of unique ownership and complete retirement of RECs for 111(d) compliance must be performed manually.

RECs for 111(d) compliance should not be tracked separately from voluntary and other RECs that are not used for 111(d) compliance as this could increase the risk of double counting, specifically double issuance, and decrease transparency. Furthermore, RECs may not need to be managed any differently for 111(d) than they are currently for a state RPS program, depending on how the RPS is set up. The state must demonstrate to EPA that RECs have been retired in-state for the RPS or another measure included the state plan. This does not require that the retiring party (e.g. LSEs or individual EGU owners/users complying with the RPS) have a 111(d) compliance obligation.

Tracking systems can easily add a 111(d) compliance retirement reason/category, functionality that allows a states to select both state RPS and 111(d) compliance as retirement reasons where RPS programs are included in state plans, new identifications or "tags" for RECs that have been included in state plans, additional memo fields, and other features to facilitate their use by states for 111(d) compliance. In addition, 111(d) avoided emissions values can be tracked with individual RECs in tracking systems, provided that precise enough information is available.[30]

All-generation tracking systems, though not needed to track use and emissions of imported and exported generation from affected EGUs since the Proposed Rule sets generation-based (statewide) targets and compliance for states, where they exist, can also be used by states to calculate in-state emissions from affected EGUs and to allocate emissions to LSEs/electric distribution utilities (EDUs), where these are regulated under state plans.

Requirements for RECs under 111(d) and Adjustments to Rates and Masses to Avoid Gaming and Double Counting of RE

In order for the Clean Power Plan to achieve emission reductions from affected EGUs using RE, RE generation used for 111(d) compliance must meet at least the following three criteria:

1. RE generation must not be double counted;
2. RE generation must result in actual reductions of emissions at affected EGUs; and
3. RE generation must be the result of mechanisms and policies that are included in a state plan.

[28] http://www.pjm-eis.com/
[29] http://www.wregis.org
[30] See the subsection below, under the heading: "Calculating Avoided Emissions from RE," for more information about calculations of avoided emissions from RE.

In other words, reductions from RE must be real, occur at affected EGUs and as a result of 111(d). Here, and in the following subsections, we describe what must be required of states that use RE for 111(d) compliance using either a rate- or mass-based approach in order to satisfy these criteria.

First, we have established in the preceding subsections that RE must be tracked in order to avoid double counting and that RECs are the preferred tracking instrument for RE and avoided emissions from RE under 111(d). For states using a rate-based approach, an EPA requirement that REC ownership and retirement determines a claim on avoided emissions from RE for 111(d) compliance means that the state may not make adjustments for RE to its emission rate (for the purpose of either state plan development or emission performance compliance reporting) without RECs and unique REC retirement.

Second, the Proposed Rule acknowledges that "some of the CO2 emissions avoided through RE and demand-side EE measures may be from non-affected EGUs," and the EPA is "seeking comment on how this might be addressed in a state plan" (Proposed Rule, Sec. VIII.F.3, pg. 34920). For states using a rate-based approach, EPA must require that adjustments for RE may only be made for RE generation that has avoided emissions at affected EGUs. This will effectively limit the eligibility of RE and RECs under 111(d) to only those that have reduced emissions at affected EGUs. We describe how this affects adjustments that are made to either the numerator or the denominator of the rate and how it informs calculations of avoided emissions in the following subsections.

Third, in order to accurately account for the impact of the Clean Power Plan and achieve proper attribution of reductions under state plans, and in order to further reduce the risk of double counting of RE between states, for states using a rate-based approach, EPA must require that no adjustments be made to an emissions rate for RE that is not identified and included in the state plan. This produces an incentive for states to implement RE policies and prevents states from claiming reductions from RE that may have been caused and claimed by another state.

These requirements for states using a rate-based approach can be summarized as follows: adjustments to rates for RE must be limited to RE generation for which the RECs have been retired in state, that has avoided emissions at affected EGUs, and that was included in the state plan.

For states using a mass-based approach, similar requirements for adjustments to reported masses are required to satisfy the three criteria above. But since mass-based reporting will automatically only reflect reductions from RE that occur at affected EGUs (criteria no. 2 above), EPA need only require adjustments to masses to avoid double counting and to reflect the mass CO2 emissions achieved by the state plan.

In the Proposed Rule, EPA recognizes, "that even under a mass-based approach, adjustments may be appropriate in some circumstances to address interstate effects, such as when measures undertaken pursuant to one state's plan are expected to be associated with decreases in fossil fuel-fired generation and CO2 emissions in another state" (Proposed Rule, Footnote 254, Sec. VII.B, pg. 34894). Due once more to the fact that a mass-based approach will automatically reflect reductions from RE, to satisfy the first criterion, EPA must require upward adjustments to masses for avoided emissions from RE without RECs (both power that is imported without the RECs and in-state RE generation where RECs are sold out

of state).[31] To satisfy the third criterion, EPA must also require upward adjustments to masses for avoided emissions from RE that was not included in the state plan. In other words, unless RE is included in a measure in its plan and the RECs for that generation have been retired in state, a mass-based state must demonstrate to EPA that RE is not affecting its mass in order to avoid an upward adjustment of the mass.

Adjustments to Rates for RE using Avoided Emissions (Numerator Adjustment) vs. MWh Crediting (Denominator Adjustment)

The Proposed Rule presents two methods for states using a rate-based approach to use in making adjustments to the rate for RE: "Credits or adjustment might represent avoided MWh of electric generation or avoided tons of CO2 emissions. […] If adjustment or credits represent avoided MWh, they would be added to the denominator when determining an adjusted lb CO2/MWh emission rate. If adjustment or credits represent avoided CO2 emissions, they would be subtracted from the numerator when determining an adjusted lb CO2/MWh emission rate," and accepts that, "the [method] chosen could have significant implications for the amount of adjustment or credit provided for RE and demand-side EE measures" (Proposed Rule, Sec. VIII.F.3, pg. 34919).

Though an adjustment that represents avoided tons (to the numerator) is more accurate, provided that calculations are done correctly and with sufficient precision,[32] the alternative method of MWh crediting to the denominator is certainly easier to perform as it does not involve calculating avoided emissions based on an estimation of which affected EGUs, if any, were backed down for a given MWh. This may have been part of EPA's reasoning as it in fact used the MWh crediting method for its calculations of proposed state goals.[33] Assuming that EPA will once again choose this method for its calculations of the final state goals in the Final Rule, depending on the individual MWh and the specific avoided emissions calculation methodology used, it may be to a state's advantage or disadvantage to choose use the avoided emissions numerator adjustment method.

To reduce the potential for significant differences between a state's goal /emission performance calculations and the EPA's, states should be encouraged to use the MWh crediting method (or whichever method is used by the EPA in calculations of final state goals), and acceptable avoided emissions calculation methodologies should be sufficiently precise so that any differences (whether positive or negative) are due to increased precision.[34] Also, in order to reduce the potential for gaming, EPA should require that states be consistent within the state plan and over time in terms of which method is used, and not be permitted to use either method at different times or for different RE policies.

Finally, in keeping with the second criterion for RE in the previous subsection, in order to ensure that adjustments for RE are only made for RE generation that has avoided emissions at affected EGUs:

[31] EPA must also not allow states to make an adjustment to lower masses for RE and EE since avoided CO2 mass emissions from RE and EE are automatically reflected in the mass and this would result in double counting.
[32] "In practice, the average or marginal CO2 emission rate in the power pool or identified region—representing the avoided CO2 emissions from the generating sources being displaced by a MWh of energy savings or a MWh of renewable energy generation—could differ significantly from the calculated avoided CO2 emissions derived by adjusting the MWh output of an affected EGU" (Proposed Rule, Sec. VIII.F.3, pg. 34920).
[33] Goal Computation TSD, pg.15-16.
[34] For more discussion of avoided emissions calculations, see the subsection below, under the heading: "Calculations of Avoided Emissions from RE."

- If MWh crediting (to the denominator) is used by a state, eligibility must be limited to RECs that avoid emissions at affected EGUs, and EPA must require that states demonstrate this to EPA. EPA could choose to be even more stringent, in order to increase precision and incentivize use of the more precise method, by requiring that states demonstrate that *all* of the avoided emissions from the RE that is used for MWh crediting in fact took place at affected EGUs.
- If avoided emissions are used, they must be calculated appropriately to represent avoided emissions at affected EGUs only.[35]

Adjustments for RE to Emission Rates of Individual EGUs vs. Statewide Rate

Apart from choosing whether to make adjustments to the numerator or the denominator, it appears that states using a rate-based approach also have flexibility under the Proposed Rule regarding whether adjustments for RE are made by affected EGUs to their individual rates or by the state to the statewide rate: "measures that avoid EGU CO2 emissions from affected EGUs, such as quantified and verified end-use energy savings and renewable energy generation, could be credited toward a demonstrated CO2 emission rate for EGU compliance purposes or used by the state to administratively adjust the average CO2 emission rate of affected EGUs when demonstrating achievement of the required rate-based emission performance level in a state plan" (Proposed Rule, Sec. VIII.F.3, pg. 34919).

For its calculations of proposed state goals, EPA chose the latter option and made adjustments for RE on a statewide basis, rather than, for example, applying RE MWh in the state to the emission rate of the coal units.[36] But, we are assuming that the basis for providing states with the flexibility to allow individual EGUs to make adjustments for RE is that assurances can be provided that there is no double counting, meaning each RE MWh is "credited" only once to a single EGU and EGUs cannot reduce rates or reflect reductions from RE MWh that have been credited to another EGU (for example, by implementing our recommendations regarding adjustments based on REC ownership above), and that this could provide flexibility to individual EGUs that may help them keep running where states impose compliance obligations directly on EGUs. Regionally or within the boundaries of eligible RE for the state, the emission rate should be accurate. Nevertheless, if this strategy is employed by states, this may result in a different rate calculation from that which will be used by EPA for the state goal.[37]

Again, to reduce the potential for gaming and significant differences between a state's goal /emission performance calculations and the EPA's, EPA should provide additional guidance, and states should be encouraged to use the same calculation methods for state goal and emission performance calculations as those used by the EPA in calculations of final state goals, regardless of how compliance obligations are allocated within the state and whether different calculations are performed to assess compliance of individual entities.

[35] See the subsection below, under the heading: "Calculations of Avoided Emissions from RE."
[36] Goal Computation TSD, pg.15-16.
[37] Using EPA's example state goal calculations for Ohio in the Goal Computation TSD, where the baseline 2012 historical emissions rate is 1,896.74 lbs/MWh and the adjusted rate for generation of 13,775,594 MWh of RE is 1,682.03 lbs/MWh (excluding other adjustments), if the 13,775,594 MWh of RE were instead applied to the denominator of just the coal emission rate, this results in a new coal emission rate of 1,833.86 lbs/MWh (reduced from the 2012 coal rate of 2,126 lbs/MWh), which when plugged into the statewide rate equation yields an adjusted rate of 1,662.76 lbs/MWh, which is 19.27 lbs/MWh lower than EPA's adjusted rate calculated by doing statewide MWh crediting for the same amount of RE. Please contact us for full calculations.

Guidance to states should also include options for states to avoid situations in which different types of compliance entities at different points in the chain of custody (e.g. EGUs and LSEs) are competing for the same RECs/MWh. For example, where the EGU is the compliance entity and the state RPS is also included in the state plan, the state will need to determine a method for allocating RPS reductions and RECs retired for the RPS to individual EGUs reporting for 111(d) compliance, or in other words, a method for how the EGU gets credit for the reductions that were bought by LSEs for the RPS. Options provided must not include, however, the creation of another instrument for this purpose, since this would increase risk for double counting with RECs.

EPA should also clarify that the same MWh cannot be used to make an adjustment to the rates of individual EGUs and also used for a statewide adjustment as the result of a state policy like an RPS, since this would result in double counting.

Calculating Avoided Emissions from RE

Avoided emissions from RE will need to be calculated for rate-based states that choose to make adjustments that represent avoided tons (to the numerator) rather than MWh crediting (in the denominator), and also for adjustments to masses necessary to avoid double counting, as described in the subsection above on "Requirements for RECs under 111(d) and Adjustments to Rates and Masses to Avoid Gaming and Double Counting of RE."

It is important to note, first, that *calculating* avoided emissions from RE is a separate issue from tracking avoided emissions from RE. Tracking RE and the avoided emissions from RE using a nationally uniform instrument, preferably RECs, is necessary regardless of how and the accuracy with which avoided emissions can be quantified. Challenges associated with the calculation of avoided emissions from RE are associated with the use of RE for 111(d) compliance and not with the use of RECs in particular as the tracking instrument.

EPA should provide additional guidance on calculating avoided emissions from RE. We feel that there are at least four important considerations for this guidance.

1. The point was made earlier that in order to meet the intent of regulation, avoided emissions must equal emissions avoided at regulated units, affected EGUs specifically, which will be different from a system-wide avoided emissions value.
2. There must be a consistent/common methodology used by all states, to achieve an even playing field and avoid gaming, since different calculation methodologies could result in different amounts of avoided emissions.
3. This methodology should be developed in cooperation with transmission operators, since these entities have access to dispatch data.
4. The methodology should result in a calculation of avoided emissions that is sufficiently precise. While requiring the use of hourly transmission data, for example, may result in calculations that are too costly for states, an avoided emissions value should be (and certainly should only be attached to an individual REC if it is) reasonably accurate for that MWh.[38] This will help ensure,

[38] "For both RE and demand-side EE measures included in state plans, additional information and reporting may be necessary to accurately quantify the avoided CO2 emissions associated with these measures, such as information

for instance, that any differences (whether positive or negative) between a state's calculations for the purpose of making adjustments to rates and those performed by EPA for state goal calculation are due to increased precision.

Eligibility of RE and Compatibility with State RPS Programs

EPA has set few requirements related to the eligibility of RE under 111(d). EPA has not specifically defined what qualifies as RE, other than it has "excluded pre-existing hydropower generation from the baseline of this target-setting framework," though states may consider "incremental hydropower generation from existing facilities (or later-built facilities) as an option for compliance" (Proposed Rule, Sec. VI.C.3.a.1, pg. 34867). EPA also continues to work on guidance for biomass (Proposed Rule, Sec. VIII.F.8, pg. 34923-5). EPA also states that "RE generation can be supplied by any RE capacity regardless of its date of installation" (Proposed Rule, Sec. VI.C.3.a.1, pg. 34869), and it is also our understanding that banking of RECs outside of the compliance period is not allowed under the Proposed Rule.

We recommend that EPA provide additional guidance to states on RE eligibility such that states may determine the extent to which existing RPS eligibility standards align with 111(d) eligibility standards and therefore prospective and historical eligible reductions from RPS programs. Currently, states can review EPA's state goal calculations and cost expectations to get a sense of what features and stipulations for RPS and other REC-based compliance measures will be needed to meet EPA's cost expectations.[39] But EPA should consider providing baseline qualifications for RE used in a state plan, including banking, age of facility, resource types, sourcing, use of unbundled RECs, etc.

Projected vs. Ex-post Determination of Emissions Performance

In response to EPA's request for comment regarding "whether the EPA should develop guidance that describes acceptable projection approaches, tools, and methods for use in an approvable plan" (Proposed Rule, Sec. VIII.F.7, pg. 34923), we recommend that the same parameters used in demonstrating emissions performance for compliance should be enforced for projections, and vice versa. For example, if avoided emissions are calculated and tracked one way for compliance reporting, then projections should use the same methods. This will provide consistency and prevent gaming.

RE in Multi-state Plans

We do not go into great detail here on how RE can be integrated into multi-state plans, though we feel multi-state compliance offers significant advantages to states in terms of reduced compliance costs, to the EPA in terms of reduced administrative costs, and with respect to the potential for greater alignment with regional electricity markets.[40] Some of these advantages are discussed in greater detail in the

on the location and the hourly, daily, or seasonal basis of renewable energy generation or energy savings" (Proposed Rule, Sec. VIII.F.4, pg. 34920). Also see pg. 73-4 of the State Plan Considerations TSD.

[39] "The RPS compliance measure cited is inclusive of credit multipliers and banked RECs utilized for compliance, but excludes alternative compliance payments, borrowed RECs, deferred obligations, and excess compliance" (Proposed Rule, Footnote 162, Sec. VI.C.3.a.2, pg. 34869).

[40] "States are part of assorted EGU dispatch systems and vary in the amounts of electricity that they import and export. For these reasons, we also recognize and appreciate the value in allowing and promoting multi-state reduction strategies" (Proposed Rule, Sec. VI.A, pg. 34855).

section below on "Alternative State Goals: Consumption-based Targets and All-generation Certificate Tracking."

To the extent that electricity imports and exports between states participating in a multi-state plan will need to be tracked in order to determine compliance obligations and demonstrate compliance with respect to different regional initiatives to achieve emissions reductions, states should be encouraged to use existing all-generation certificate tracking systems, where they currently exist, or work with existing RE tracking systems to track emissions from affected EGUs using certificates. See the section below on "All-generation Certificate Tracking Systems for Compliance with Consumption-based Targets" for more information.

EPA must also require that mass-based multi-state regions make similar adjustments as mass-based states (as explained in the subsection on "Requirements for RECs under 111(d) and Adjustments to Rates and Masses to Avoid Gaming and Double Counting of RE" above), since even multi-state regions are often not isolated. For example, if the RGGI states were to submit a multi-state, mass-based plan, RGGI can be considered to be equivalent to one large mass-based state. Since there is trading of electricity between RGGI and surrounding non-RGGI states, there could be double counting between RGGI and these states unless RGGI adjusts its mass to account for imported RE and RE not included in the multi-state plan.

Voluntary Renewable Energy

Regulation of power plant emissions will affect the impact of voluntary actions to use RE or EE, and the Clean Power Plan has the potential to negatively affect the U.S. VRE market.[41] Thousands of businesses and organizations, including the more than 1,300 participating in the EPA's Green Power Partnership, along with hundreds of thousands of individuals purchase green power and RECs in the U.S. VRE market, amounting to voluntary use of billions of kilowatt-hours of RE annually.[42] Where RE that has been sold in the voluntary market is included in 111(d) compliance, these voluntary actions to purchase and develop RE will no longer be going beyond what is required by law. That is, the actions of voluntary purchasers will no longer qualify as "regulatory surplus"—the avoided emissions are no longer surplus to regulation since they get factored into the reductions that a state can report to EPA—but rather will be subsidizing state compliance and perhaps allow others not to take action. Existing voluntary markets for RE value regulatory surplus and without it demand in this market could suffer along with its effectiveness as a climate change solution for participating companies and individuals.

[41] It is important to note that RE is not double counted if used in a voluntary product and for 111(d) compliance. 111(d) does not deliver RE to grid customers, like most RPS programs do for example. With use of RE under 111(d), voluntary and RPS purchases of RE under 111(d) still receive and deliver, respectively, RE and zero-carbon power and still contribute to demand for RE, but they also help the state to comply with 111(d). If there is no emissions cap, there are still avoided emissions (they are not zero as they would be under a cap), but the avoided emissions may be used for 111(d) compliance. The REC is not disaggregated and there is not double counting per se between the REC buyer (voluntary or RPS compliance entity) and the state reporting to EPA. While this will allow the voluntary market to continue regardless of the implementation of the Clean Power Plan, it does not reduce the potential negative impact and risks to the voluntary market that follow if VRE is included in 111(d) compliance.

[42] For more information about the importance and impact of voluntary green power purchasing, visit http://www.epa.gov/greenpower/. Also see NREL's market analysis at http://www.nrel.gov/analysis/market_green_power.html.

For example, consider Wisconsin, in which 1.8 million MWh of Green-e certified renewable energy were sold to 33,000 voluntary purchasers in 2013.[43] This is generation and reductions that cannot necessarily be entirely attributed to state plans, and the companies, utilities, and individuals taking this voluntary action expect to buy, deliver and use RE for voluntary purposes that do not get counted toward 111(d) compliance.

Additionally, certain VRE measures and programs may not meet EPA's requirement for enforceability of measures included in state plans: "The proposed components of states plans are: […] Demonstration that each emission standard is quantifiable, nonduplicative, permanent, verifiable, and *enforceable*" (emphasis added) (Proposed Rule, Sec. I.A.2.c.ii, pg. 34838). For example, a utility green pricing program is likely not enforceable in terms of generating reductions since states cannot "enforce or guarantee participation in a voluntary program, even if they require an LSE to offer such a program.

To restore regulatory surplus and avoid damage and to the voluntary market, EPA must require that voluntary green power and REC purchasing mechanisms and programs not be included in state plans. EPA must also require that emissions reductions from VRE are not counted as a part of other state policies included in 111(d) plans. For states using a rate-based approach, EPA must require that there be no adjustment to rates for VRE. For states using a mass-based approach, EPA must require that an upward adjustments be made for any VRE generation in the state. This is possible since VRE is tracked using RECs and REC retirement either in RE tracking systems or contractually. CRS and Green-e can provide EPA and state air office regulators with state-specific certified and verified voluntary sales data annually, as we already do for state RPS administrators to prevent double counting, in order to ensure that this generation is not included in 111(d) compliance. The National Renewable Energy Laboratory (NREL) also collects information on the voluntary renewable energy market.[44]

Finally, for states that adopt mass-based emission limits with allowance trading (i.e. a cap-and-trade program) or use an existing such program for 111(d) compliance, EPA must require that these programs include a VRE "set-aside" mechanism, which sets aside and retires allowances on behalf of voluntary RE purchases from facilities in the state. Without such a mechanism, voluntary actions to reduce emissions in capped sectors do not in fact reduce emissions since the level of emissions is determined by the cap (assuming that regulated entities will emit to the cap, i.e. the cap is sufficiently tight) and instead voluntary reductions merely free up room under the cap for more emissions, again removing a critical benefit for voluntary consumers. A VRE set-aside mechanism (also called a VRE reserve account in California, or an "off-the-top" mechanism) effectively restores the impact of the voluntary market to go above and beyond what is required by law and to result in avoided grid emissions.[45] The importance of such a mechanism to maintain and support voluntary activity was recognized by both California and the RGGI program: California[46] and every RGGI state[47] except Delaware have adopted a VRE set-aside mechanism.

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[43] See the 2013 Green-e Verification Report. Available online at: http://www.green-e.org/publications.shtml.
[44] See http://www.nrel.gov/analysis/market_green_power.html.
[45] See Busch, C. (2009) *CRS Issue Brief: Support Voluntary Purchases of Clean, Safe, 21st Century Energy with an Off-the-top Rule under Cap and Trade*. Center for Resource Solutions. Available online at: http://www.resource-solutions.org/pub_pdfs/C&T%20Policy%20Brief.pdf.
[46] See title 17, CCR, sections 95831(b)(6) and 95841.1. Available online at: http://www.arb.ca.gov/cc/capandtrade/capandtrade/unofficial_c&t_082014.pdf.
[47] RGGI Model Rule. Revised on December 23, 2013, Originally issued on February 7, 2013. Pg. 44-47. Available online at: http://www.rggi.org/docs/ProgramReview/_FinalProgramReviewMaterials/Model_Rule_FINAL.pdf.

Alternative State Goals: Consumption-based Targets and All-generation Certificate Tracking

In this section, we explore an alternative compliance solution and alternative state goals for regulating existing power plants under Section 111(d) of the CAA. Namely, we suggest the development and use of "consumption-based" state goals, rather than the "generation-based" goals in the Proposed Rule, where consumption-based goals are based on what a state consumes (e.g. generation that serves load and purchased generation), which includes emissions from imports and excludes exports, and generation-based goals are based on what a state generates (in-state generation only). Use of consumption-based targets may avoid many of the challenges faced under the Proposed Rule having to do with interstate trading of electricity and regional electricity markets. We describe the advantages of regional and/or consumption-based targets, including that this would reflect interstate trading, harmonize with the best system of emissions reduction (BSER) identified by EPA, increase states' options for achieving reductions, and create market efficiencies for RE. Finally, we describe how this could work using all-generation certificate tracking systems for compliance with consumption-based targets.

Challenges under the Proposed Rule and "Generation-based" State Goals

Since the Proposed Rule regulates in-state generation only, it:

1. Favors states that import emitting generation, which have reduced or no compliance obligations (e.g. VT and DC);
2. Favors states that consume their own in-state emitting generation, which have more policy options available to achieve compliance;
3. Disfavors states that export emitting generation, which must claim emitting generation that they're not consuming or paying for;
4. Favors states that export renewable generation, which may be able to claim reductions without paying for them; and
5. Disfavors states that import renewable generation, which are paying for reductions that they may not be able to claim.

The Proposed Rule will potentially disincentivize policies and measures that affect reductions anywhere but at in-state generation that is consumed in-state. Exporting units will not be affected by demand-side efforts in the exporting states and reductions at those same units caused by demand-side efforts at the importing state will not be counted. So states that are net importers, for example, see little reason to enact policies and pursue activities that reduce emissions from those generators. The result leaves low-cost, demonstrated reductions on the table.

Advantages of Regional and/or "Consumption-based" Targets

EPA recognizes many of the advantages of using regional evaluations and approaches to setting emissions goals, has considered these approaches, and calls for comment on "on whether, and if so how, the EPA should incorporate greater consideration of multi-state approaches into the goal-setting

process" (Proposed Rule, Sec. VII.E, pg. 34899).[48] From our perspective, the advantages of consumption-based targets and compliance for states include the following.

1. *Consumption-based compliance includes imports and exports and accommodates interstate trading of electricity.*

Electricity trading, purchasing, and use across state borders is a reality of the U.S. market. Consumption-based compliance will reflect states' imports and exports of electricity and demand for emissions from affected EGUs. The integrated grid should be reflected in state goals and compliance to achieve efficient emissions reductions according to BSER and to avoid inconsistent compliance that could result in double counting and underreporting. The EPA acknowledges throughout the Proposed Rule that it, "believes that the BSER for CO2 emissions from existing EGUs should reflect this integrated character" (Proposed Rule, Sec. VI.E.3, pg. 34881), but it argues that, "this state-wide approach […] harnesses the efficiencies of emission reduction opportunities in the interconnected electricity system" (Proposed Rule, Sec. IV.B, pg. 34853 and Sec. VI.E.9, pg. 34891). We disagree that the state-wide approach harnesses the full effectiveness of demand-side measures and efficiencies of emissions reduction opportunities in the interconnected electricity system precisely where the electricity system and market is interstate or regional. It limits efficiencies unless state goals are based on consumed electricity.

2. *Harmony with BSER and increased options for reductions for states.*

Building blocks 2-4—redispatching, RE generation and demand-side EE measures—affect regional reductions, reductions from both in-state and out-of-state generation. EPA recognizes that, "the electricity system is physically interconnected or networked and operated on an integrated basis across large regions. System operators routinely increase or decrease the electricity output of individual EGUs to respond to changes in electricity demand" (Proposed Rule, Sec. VI.B.3, pg. 34857), and that "instituting measures in building blocks 2, 3, and 4, […] due to the interconnected and integrated nature of the grid, would elicit the response of reducing generation at some or all affected EGUs" (Proposed Rule, Sec. VI.E.3, pg. 34881).

As such, affecting generation without changing consumption will be difficult for states, while changing consumption leads to changes in generation; emissions from consumed generation are emissions that states can control and influence: "dispatch decisions are based on electricity demand at a given point in time" (Proposed Rule, Sec. VI.C.2.a, pg. 34862) and "reduced utilization of the higher-emitting affected EGUs" is a "component" of BSER (Proposed Rule, Sec. VI.B.1, pg. 34856). In other words, states can affect construction and use of electric generation, but use is what causes emissions, and emissions reductions in the case of RE, and use also affects construction.

[48] "The EPA has considered other approaches to setting goals. In particular, given the interconnected nature of the power sector and the importance of opportunities for shifting generation among EGUs, we considered whether goals should be set on a multi-state basis reflecting the scope of existing regional transmission control areas. We also considered whether goals should be set on a state-specific basis, but regional rather than state-specific evaluations should be used to assess the estimated opportunities to reduce utilization of the most carbon-intensive EGUs by shifting generation to less carbon-intensive EGUs. A potential advantage of using regional evaluations is the ability to recognize additional emission reduction opportunities that would be available at reasonable costs based on a more complete representation of the capabilities of existing infrastructure to accommodate shifts in generation among EGUs in multiple states" (Proposed Rule, Sec. VII.E, pg. 34899).

Under the Proposed Rule, demand-side reduction efforts associated with building blocks 2-4 (e.g. efforts to use more natural gas-derived electricity, more RE, or undertake more demand-side EE) will do less to achieve compliance in states where there is significant importing and exporting of electricity: "For states that are net importers of electricity, the estimated reduction in the generation by the state's affected EGUs was scaled down to reflect an expectation that a portion of the generation avoided by the demand-side energy efficiency would occur at EGUs in other states" (Proposed Rule, Sec. VII.C, pg. 34896). EPA has created a difference between state goals and the pool of regulated emissions (in-state only), on the one hand, and BSER and the pool of emission reductions (could be either or both in state and out-of-state), on the other. This difference limits the ability of states to comply and reveals that state goals are not aligned with the intent of regulation, which is to reduce emissions from power plants in accordance with BSER, as easily and cheaply as possible.

3. More accurate and complete state goal calculations.

With respect to building block 4, demand side EE, EPA has invited comment on an alternative to, "[scale] up the estimated reduction in the generation by affected EGUs in net electricity-exporting states to reflect an expectation that a portion of the generation avoided in conjunction with the demand-side energy efficiency efforts of other, net electricity-importing states would occur at those EGUs, analogous to the proposed adjustment for net electricity-importing states described in Step 5. We also request comment on the alternative of making no adjustment in Step 5 for either net electricity-importing or net electricity-exporting states" (Proposed Rule, Sec. VII.C, pg. 34897). This again recognizes the interstate nature of reductions achieve through demand-side measures. But under the Proposed Rule, there is no reason to expect states to help other states meet targets, so we do not recommend that EPA adjust exporting and importing states' goals anticipating this. Rather, EPA can make each state responsible for its own consumption with consumption-based targets.

EPA also invites comment, "on whether the regional or state scenarios should be given greater weight in establishing the appropriate degree of re-dispatch to incorporate into the state goals for CO2 emission reductions, and in assessing costs" (Proposed Rule, Sec. VI.C.2.c, pg. 34865). Again, regional scenarios are likely more accurate in terms of actual effects of re-dispatching, but since state targets under the Proposed Rule are for in-state generation only, EPA should not anticipate in state goal calculations that states will pursue policies that achieve regional reductions without significant in-state reductions. State goals and compliance are ideally consumption-based, which accommodates regional reduction scenarios and which better reflects the effect that states may have using building blocks 2-4.

4. Market efficiencies for RE.

To the extent that generation-based compliance incentivizes more development of RE in state and less development of RE out of state, which could potentially be claimed for 111(d) compliance in that other state, this could result in an inefficient distribution of resources to serve regional electricity markets as renewable energy is no longer being built where it makes the most sense. As a result, RE development and 111(d) compliance is likely more expensive under the current proposed rule than it would be with consumption-based targets, which more strongly incentivize regional approaches.

5. Fairness.

All imports displace in-state generation or allow for in-state generation not to be built, and if the in-state generation is or would have been emitting, then imports displace in-state emissions as well. States

should be responsible for what they pay for and consume, regardless of whether that is in or out of state. States should be held accountable for what they do. A consumption-based compliance system will allocate responsibly for emissions by what states do about what resources they use and not only what resources they have. In so doing, consumption-based targets would also give states more control over their own compliance.

For example, "The EPA has not developed goals for Vermont and the District of Columbia because current information indicates those jurisdictions have no affected EGUs" (Proposed Rule, Footnote 258, Sec. VII.C, pg. 34895). Consumption-based goals and compliance would solve this problem. Vermont and Washington DC consume electricity and are therefore responsible for emissions from power plants and can affect reductions from power plants through demand-side measures. Yet neither state must take any action under the Proposed Rule.

Potential for Double Counting with a Mix of Generation- and Consumption-based Compliance

States must not have flexibility to choose which generation to include, or to select either a generation-based or a consumption-based target. All states must use either generation- or consumption-based goals and compliance, otherwise tracking of emissions with generation will be necessary for all states to avoid double counting (see Figure 4).

All-generation Certificate Tracking Systems for Compliance with Consumption-based Targets

Consumption-based compliance would require tracking MWh from affected EGUs and emissions with those MWh to the point of consumption in order to avoid double counting and underreporting. Regional all-generation certificate tracking systems—which issue a certificate for each MWh of generation in a region from all sources (as opposed to only RE sources)—can satisfy this need where states and compliance entities are required to report emissions based on the certificates that they had acquired and retired. Such systems are already being used in the Northeast for fuel source disclosure requirements: PJM-GATS and NEPOOL GIS are both all-generation tracking systems. As explained by the Environmental Tracking Network of North America (ETNNA) in a 2010 white paper:

> "Utilities purchase these certificates to substantiate use of electricity from the facility specified on the certificate. At the end of each reporting period the certificates in a utility's account are tallied to determine the mix of resources that utility used for the year. Any electricity used by a utility in the region in excess of the number of certificates held by all utilities is assigned an average emissions figure, which is based on the total number and type of certificates that are left un-purchased by load serving entities ["residual mix"]. Regional system mix calculations can then be applied to any MWh purchased by a utility that do not have the attributes of generation [certificate] associated with them, allowing the utility to factor the regional system mix into their particular overall system mix along with MWh from identifiable [specified] facilities."[49]

This would allow states and the EPA in this case to calculate emissions based on the direct emissions of each certificate and the residual mix of unused certificates.

[49] Environmental Tracking Network of North America (ETNNA). (2010) *The Intersection between Carbon, RECs, and Tracking: Accounting and Tracking the Carbon Attributes of Renewable Energy*. Pg. 15. Available online at: http://etnna.org/images/PDFs/Intersection%20btwn%20Carbon%20RECs%20and%20Tracking.pdf

Existing RE-only tracking systems covering the rest of the country could be modified to be all-generation tracking systems, or at least systems that track both RE and MWh from affected EGUs for this purpose. If consumption-based targets were adopted, EPA should ensure that this technology is available to all states. Tracking systems could include a flag for 111(d) to identify which subset of instruments and generators could be used for compliance (e.g. existing rather than new generators, to reflect vintage requirements, etc.). There should also be coordination between tracking systems around imports and exports.

Example: Wyoming

According to the Energy Information Administration (EIA), "Wyoming sends nearly two-thirds of the electricity it produces to nearby states. High-voltage transmission lines carrying electricity from Wyoming are often operating at maximum capacity, and the state government is encouraging transmission expansion. Six major interstate projects are under way to transmit more power out of Wyoming to western population centers."[50] In addition, "Coal-fired power plants dominate Wyoming electricity generation, producing about 8 of every 9 kilowatthours of net generation. Wind energy's share has increased rapidly, to nearly one-tenth of net electricity generation."[51]

Consumption-based targets and compliance for Wyoming and its neighboring states that import its coal-fired electricity would look very different than the proposed state goals, but would more accurately reflect each state's responsibility for emissions from existing power plants. It would also afford Wyoming more control over its compliance (as it would only be responsible for emissions from the subset of in-state generators that serve load in the state) and its neighboring states would have more options and a greater ability to reduce emissions through demand-side measures.

In Wyoming's case, the WREGIS tracking system could be modified as described in the previous subsection to track MWh from affected EGUs. EPA would calculate Wyoming's emissions performance based on the direct emissions of each certificate acquired and retired by compliance entities in the state and the residual mix of unclaimed certificates for any electricity used in excess of the number of certificates held.

Legal Basis for Recommendations

CRS's comments focus on implementation of the Clean Power Plan and hinge on EPA's clearly stated ability to accept or reject state proposals. The EPA may disapprove a state's implementation plan if the plan is "unsatisfactory" according to the metrics of Section 111(d) regulation[52]. In furtherance of the goals of health, air quality, and nationally uniform standards, the EPA may reject state implementation plans which risk or double count RECs or avoided emissions already accounted for in other state implementation plans. To do otherwise would risk the effectiveness of the Clean Power Plan program and result in poor air quality endangering Americans public health and welfare.

[50] EIA. State Profile and Energy Estimates: Wyoming. (August 21, 2014). Retrieved from: http://www.eia.gov/state/analysis.cfm?sid=WY on November 24, 2014.
[51] *Ibid.*
[52] 40 CFR Section 60.27(b)-(c)

EPA has the authority to regulate CO2 emissions from electric generating units as it has a rational basis for protecting public health or welfare. The EPA can rely on the 2009 Endangerment Finding combined with the fact that EGUs are the largest stationary source emitters of CO2. In addition, the alternative plan provided here (in the "Alternative State Goals: Consumption-based Targets and All-generation Certificate Tracking" section above) could function at different points of regulation.

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

Sincerely,

Todd Jones
Manager

Appendix A. Figures

- Figure 1: Interstate effects of renewable energy – Scenario 1: The location of RE and displaced generation determine claims on RE for 111(d) compliance
- Figure 2: Interstate effects of renewable energy – Scenario 2: RECs determine claims on RE for 111(d) compliance
- Figure 3: Interstate effects of renewable energy – Scenario 3: Bundled electricity determines claims on RE for 111(d) compliance
- Figure 4: Interstate trading with mixture of generation-based and consumption-based compliance

Figure 1: Interstate effects of renewable energy – Scenario 1: The location of RE and displaced generation determine claims on RE for 111(d) compliance

Where

- State A is exporting renewable energy to State B; and
- Only the location of RE and displaced generation determines claims on RE for 111(d) compliance and RECs are not required for RE claims for 111(d):

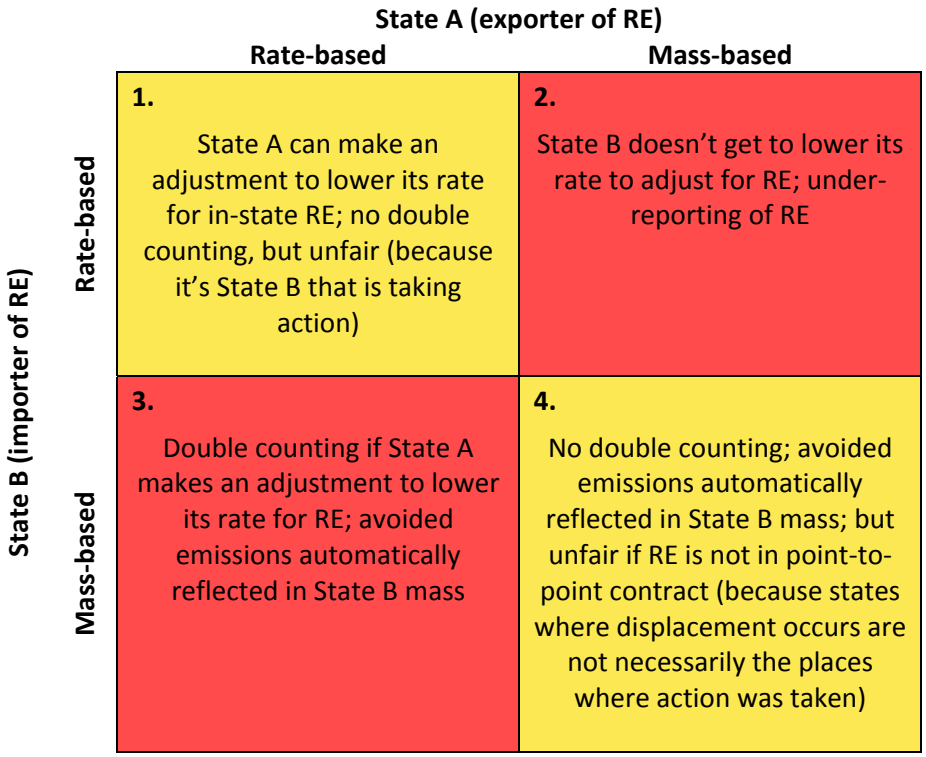

Figure 2: Interstate effects of renewable energy – Scenario 2: RECs determine claims on RE for 111(d) compliance

Where

- State A is exporting renewable energy to State B; and

- Only RECs determine claims on RE for 111(d) compliance (electricity is not required for RE claims for 111(d)):

State B (importer of RECs) \ State A (exporter of RECs)	Rate-based	Mass-based
Rate-based	**1.** State B can make an adjustment to lower its rate	**2.** State B can make an adjustment to lower its rate; State A must make an adjustment to increase its mass
Mass-based	**3.** State B can make an adjustment to lower its mass	**4.** State B can make an adjustment to lower its mass; State A must make an adjustment to increase its mass

Figure 3: Interstate effects of renewable energy – Scenario 3: Bundled electricity determines claims on RE for 111(d) compliance

Where

- State A is exporting renewable energy to State B; and
- Only bundled electricity and RECs determine claims on RE for 111(d) compliance (both are required):

State B (importer of bundled electricity) \ State A (exporter of bundled electricity)	Rate-based	Mass-based
Rate-based	**1.** State B can make an adjustment to lower its rate; State A doesn't get to make an adjustment.	**2.** State B can make an adjustment to lower its rate
Mass-based	**3.** State A doesn't get to make an adjustment to lower its rate; avoided emissions automatically reflected in State B mass	**4.** No adjustments necessary; no double counting; fair; avoided emissions automatically reflected in State B mass

Figure 4: Interstate trading with generation-based and consumption-based compliance

Where

- State A is exporting power to State B;
- "Generation-based" means compliance is assessed against emissions from power generation sources located in-state only, which do not include emissions associated with imported electricity and do not exclude emissions associated with exported electricity;
- "Consumption-based" means compliance is assessed against emissions from power generation that gets consumed in the state, which include emissions associated with imported electricity and exclude emissions associated with exported electricity; and
- Regardless of whether mass-based or rate-based reporting is used by either state: