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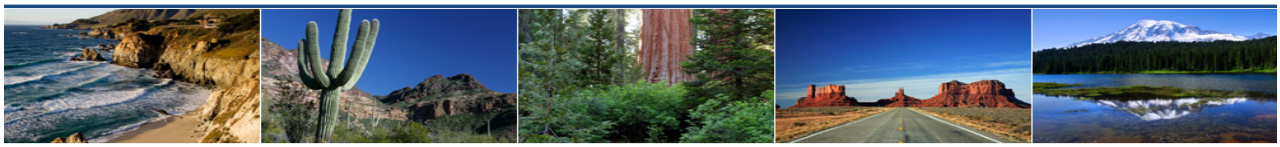

ELECTRICITY SUBCOMMITTEE DISCUSSION PAPER ON RENEWABLE PORTFOLIO STANDARDS, RENEWABLE ENERGY CERTIFICATES, AND GHG ACCOUNTING

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Introduction

Twenty-six states and the District of Columbia have adopted Renewable Portfolio Standards (RPS) that require retail providers of electricity to meet a minimum share of their loads with renewable energy sources. In order to simplify RPS compliance accounting and minimize locational constraints on renewable development, many RPS programs use Renewable Energy Certificates (RECs) to track compliance. Now that several states and provinces have implemented, or are in the process of implementing, greenhouse gas (GHG) cap and trade systems that cover electricity generation, questions have arisen concerning the appropriate role that RECs should play with respect to GHG accounting in a cap-and-trade system.

Much of the current confusion stems from the fact that some states have defined a REC as including "avoided emissions" of GHGs among the environmental attributes contained in a REC. With the impending need to develop reporting rules for the WCI Partners, it is becoming increasingly important to clarify what value the "avoided emissions" attribute conveys and how RECs may affect a purchasing entity's GHG compliance obligation.

This discussion paper addresses the relationship between GHG accounting and RECs used for RPS compliance, as well as the "null" power that remains when RECs have been unbundled and sold separately. It does not address two related topics. First, some parties have suggested that RECs be accepted as a form of offset to reduce regulated entities' GHG compliance obligations. While some REC definitions may allude to "avoided emissions," recent publications have expressed serious misgivings about the direct use of RECs as offsets (Gillenwater 2007; Point Carbon 2008). Objections are raised on two accounts: 1) estimates of avoided emissions are rarely subject to a rigorous calculation taking into account both short-term ("operating margin") and longer-term ("build

margin") effects and 2) the issuance of RECs is not subject to additionality analysis. A final consideration is that since offsets must come from outside the scope of the capped sectors, the possibility of using RECs as an offset equivalent would be limited to RECs produced by facilities located in uncapped jurisdictions.

The second topic not addressed here is the possible creation of allowance set-asides to support the voluntary renewables market. Such set-asides have been adopted in nine of the ten Regional Greenhouse Gas Initiative (RGGI) states. Set-asides support the voluntary market by allowing sellers of voluntary renewable energy products to continue to make claims that the purchase of their products contributes to GHG reductions. The RGGI states operate their set-asides by reserving a certain quantity of allowances and retiring them at a fixed rate for every megawatt-hour of renewable energy produced within the cap and sold into the voluntary market. In effect, the purchase of voluntary renewable energy reduces GHG emissions by removing allowances from circulation and thereby ratcheting down the cap.[1]

Implications of Cap and Trade on Avoided Emissions

Prior to the implementation of a cap, a wide variety of mandatory programs and voluntary actions contribute to GHG reductions. One of the principal programs for achieving GHG reductions in the electricity sector is the adoption of RPS laws. Because the addition of new renewable resources presumably avoids the need for additional generation from conventional sources, the addition of renewable sources leads to some level of avoided GHG emissions.

After implementation of a GHG cap, individual measures and programs no longer reduce GHG emissions because the allowable level of emissions has been determined by the cap and the corresponding number of allowances issued. To illustrate, imagine that before a cap, a wind farm's generation results in the ramping down of fossil-based generation that would have otherwise been needed to meet load. Every megawatt-hour that wind farm produces avoids the emissions that would have been produced by the marginal generator. Once the cap is in effect, reduced generation by a fossil-based power plant also reduces the compliance obligation of that plant. The need for fewer allowances by these generators frees up allowances that may be used by other generators or any other regulated entity in the economy. However, RPS, energy efficiency programs, tailpipe emission standards and other mandatory programs continue to serve as critical strategies for meeting the cap and ensuring that GHG allowance prices remain at acceptable levels.

Because renewable electricity produced in a capped jurisdiction does not, in a sense, reduce GHG emissions, no avoided emissions occur and consequently, the avoided emission value of a REC generated in a capped region equals zero. In other words, the REC would not have a "negative" value that could be used to

[1] For a general introduction to set-asides, see Petlin 2008.

reduce the GHG compliance obligation of the buyer. To do so would be to treat the REC as an offset despite the fact that the generation that produced the REC was subject to the GHG cap. If RECs from capped jurisdictions were to have an avoided emissions value that could reduce one entity's compliance obligation, then, in order to balance the GHG accounting books, WCI regulators would have to attribute emissions to the null power. Renewable facilities would lose any additional marketable value that RECs might acquire from their offset capacity to the need to also purchase allowances to comply with the GHG cap-and-trade regime.

Continuing to assign an avoided emission value to RPS RECs after a cap would create additional complications because RPS programs and GHG cap-and-trade programs cover two different (but sometimes overlapping) points of regulation. RPS programs, by definition, apply to retail providers of electricity. Since the cap and trade system is applied at the generator level for the electricity sector, retail providers are not, per se, regulated entities in the cap and trade system. Retail providers would only have a compliance obligation for emitting generation plants that they own. Many retail providers have very little, if any, owned fossil-fired generation. This is true of electric service providers, restructured retail providers that are primarily distribution utilities, and utilities served mostly by hydro plants. Any offset value contained in the RECs would be useless to these retail providers. For utilities that do own a substantial amount of fossil-fired generation, the offset value would simply shift the compliance obligation from the utility-owned sources to renewable energy generators, who would have to factor a GHG compliance cost into their prices. While utility-owned sources would potentially benefit from the GHG compliance reduction benefits of the RPS RECs, independent generators would not.

In light of the discussion above, it is recommended that RECs produced in the WCI, or other capped jurisdictions, have no GHG compliance reduction value. These RECs would serve as an RPS compliance accounting tool, but there would be no interaction between these RECs and the reporting of GHG emissions for compliance purposes. If RECs generated within a capped jurisdiction and used for RPS compliance have no avoided emissions value, GHG accounting remains simple and straightforward. This is the approach that has been adopted in the RGGI states.

The treatment of RECs and null power imported from uncapped areas is potentially more complex. Since renewable facilities located in uncapped jurisdictions are not subject to the WCI cap (except to the extent that First Jurisdictional Deliverers (FJDs) import power from these facilities), it could be argued that purchases of RECs from uncapped jurisdictions do avoid emissions. If the RECs from an uncapped region were able to reduce a GHG compliance obligation (e.g., an electricity importer could retire a non-WCI REC for each MWh imported in lieu of surrendering allowances at the default rate) and the null power could be imported as zero-GHG power, the zero-GHG attribute of any given megawatt-hour could be double counted. In order avoid the possibility of double counting the zero-GHG attribute, the WCI Partners should not accept non-WCI

RECs as a compliance reducing mechanism and attribute zero GHG emissions to specified imports of null power.

Preventing double counting of non-WCI renewable power can be accomplished in one of three ways. To receive zero-GHG attribution:

1. renewable power would have to be sold on a bundled basis with both the power imported on a specified basis and the corresponding RECs retired by a WCI entity, or
2. RECs from uncapped jurisdictions could be paired with imported unspecified power in order to "respecify" the power as having originated from the facility designated on the REC and null power from uncapped jurisdictions would be attributed default emissions, or
3. the power from a renewable facility imported on a specified basis would be attributed zero emissions and RECs from uncapped jurisdictions would have no effect on GHG accounting.

A description of each option and the implications of each option for the electricity market, the REC market, and GHG accounting are provided below.

Option 1: Zero GHG Attribution Requires Import of Bundled Renewable Energy and RECs

This option would require imported renewable power to be bundled with RECs in order to receive the attribution of zero GHGs. Consider an example in which a retail provider in WCI enters into a contract for both the power and the RECs from a wind farm in Wyoming. The WCI retail provider retires the RECs from the wind farm in the same year they are generated. The WCI retail provider also arranges the transmission from the wind farm's balancing authority into its own balancing authority and is therefore the entity shown on the NERC e-tag at the first point of delivery in WCI. In this case, the attribution of zero GHG is clear. The WCI retail provider is the FJD, buys both the power and the RECs, and retires the RECs. However, there are several restrictive assumptions in this scenario that, if violated, would complicate implementation of this option.

First, the retail provider may not necessarily retire RECs in the same year they are purchased. RPS programs generally allow retail providers to bank RECs so that RPS targets do not have to be perfectly matched to generation every year. If the WCI retail provider does not retire the RECs associated with its bundled imports, it could potentially sell the REC back into the market in a subsequent year, and the REC could ultimately be retired by a non-WCI utility. If that were to happen, the WCI retail provider would have received zero GHG attribution for what was essentially null power. A requirement that the RECs from bundled imports be retired during the reporting year to receive zero GHG attribution would prevent this. This would simply incentivize WCI retail providers to retire the RECs associated with bundled imports during the year of the transaction and use only WCI RECs for banking.

An additional complication arises if any entity other than the WCI retail provider retiring the RECs is the FJD selling the bundled product into the WCI. A wholesale power marketer could sell a bundled renewable energy product from a non-WCI jurisdiction to a WCI retail provider, but if the marketer is the FJD, it would depend on the purchasing retail provider to retire the RECs during the reporting year the transaction takes place. Otherwise, the FJD marketer would be hit with a compliance obligation that it did not expect.

Contracts could be structured to deal with these issues in one of two ways. Either the contracts could specify that the WCI utility buying the bundled product would always be the FJD, or the contracts could hold the WCI utility liable for the failure to retire the RECs associated with the bundled product.

Aside from the restrictive rules of this approach, one possible legal concern is that it could trigger objections related to the dormant Commerce Clause. Developers of renewable facilities in non-WCI jurisdictions might argue that the bundling and retirement obligations for imported renewable electricity are more burdensome than the zero GHG attribution given to renewable facilities in WCI, which would face no such requirement.

Option 2: Zero GHG Attribution Stays with RECs

Another option for ensuring that the zero GHG attribute is not double counted is to allow non-WCI RECs to have to the ability to respecify unspecified imported energy such that imported system power bundled with imported RECs would be treated, for GHG accounting purposes, as having originated from the facility identified on the REC.[2] In turn, any renewable energy imported on a specified basis would have emissions attributed to it at the default rate. This would probably result in very little importing of specified renewable power since there would be no compliance benefit.

Similar to Option 1, this option is relatively simple as long as the FJD of the imported power is also the same entity buying and retiring non-WCI RECs. However, FJDs of unspecified power who would have the GHG compliance obligation frequently differ from the retail providers that must purchase and retire RECs for RPS compliance. It would be unfair if marketers were not also enabled to bundle non-WCI RECs with imported system power. Like Option 1, the FJD marketers would depend on the retail providers to which they sell re-bundled power to retire the RECs. Contractual arrangements could also be made similar to Option 1, but this might raise transaction costs between marketers and retail providers. It would also complicate any transactions for FJD marketers wanting to sell the bundled product into a pooled market or at a major hub. The obligation to

[2] Theoretically, non-WCI RECs could also be used to respecify other specified power, but this may induce the use of non-WCI RECs to respecify coal-fired power. The Electricity Subcommittee hesitates to give non-WCI RECs that degree of compliance reduction potential.

retire the RECs during the reporting year would have to flow through to every subsequent buyer until it terminated with a WCI retail provider.

Any unbundled non-WCI RECs purchased by a WCI retail provider would also have foregone value if the WCI retail provider finds itself with more non-WCI RECs than imported system power for which they are the FJDs. This would offer the possibility of deals to be struck between WCI utilities and FJDs facing a compliance obligation for unspecified power. Since a retail provider's non-WCI RECs would have the ability to reduce an FJD's compliance obligation, FJDs could find retail providers who, in exchange for some cost sharing of the non-WCI RECs, would claim that the system power was imported for their loads. The non-WCI RECs would essentially be matched to unspecified imports after the fact.

Because non-WCI RECs would serve the dual function of demonstrating compliance with RPS programs and reducing GHG compliance obligations, non-WCI RECs may fetch a higher price than WCI RECs. However, this would not bias development in favor of non-WCI locations as long as emissions are attributed to the null power. The following tables demonstrate the possible market dynamics that could occur with non-WCI RECs having the ability to respecify imported power as zero-GHG power. Table 1 lists the assumed values used to derive the wholesale power prices, REC values, and compliance costs used for the WCI and non-WCI revenue comparisons in Table 2.

Table 1. Input Values for Comparison of WCI and non-WCI Renewable Energy Generation Revenues

Input Description	Value
GHG Allowance	\$40/metric ton CO_2e
Marginal Operating Emission Rate of in-WCI Generation and Imports	500 kg CO_2/MWh
Default Emission Rate	500 kg CO_2/MWh
Prevailing Wholesale Electricity Price, no GHG Cost	\$60/MWh
Prevailing WCI Wholesale Electricity Price, w/ GHG Cost	\$80/MWh
Levelized Renewable Generation Cost	\$90/MWh
WCI REC Price*	\$10/MWh

* This assumes that REC prices in a mature market will tend to cover the difference between prevailing wholesale prices and the generation cost of renewable resources.

Given these assumptions, it seems possible that non-WCI RECs would sell for a higher price than WCI RECs because the non-WCI RECs would have regulatory value for satisfying RPS requirements as well as reducing GHG compliance obligations. For example non-WCI RECs could sell for around \$30 because they would provide the RPS compliance value that \$10 WCI RECs do and a GHG compliance value of \$20.

Table 2. Comparison of per MWh Revenues for Renewable Energy Facilities in and out of WCI

Revenues and Costs	RE facility in WCI, sells power and RECs to WCI	Non-WCI RE facility sells power and RECs to WCI	Non-WCI RE facility sells RECs to WCI and power to non-WCI
Electricity	$80	$80	$60
REC	$10	$30	$30
GHG Cost	$0	($20)	$0
Total	$90	$90	$90

Table 2 shows that whether the renewable facility is located in WCI or outside WCI it will in most cases earn the same per MWh revenues. If a non-WCI facility sells into the WCI markets that reflect an internalized GHG compliance cost, it will earn higher revenues but it will also face a compliance cost. Any additional revenue it could earn would be largely forfeited as an additional compliance cost.

There are some interesting implications of implementing Option 2. One is that by requiring the use of RECs to receive attribution of zero-GHG power, non-WCI renewable energy could not be used both to satisfy the RPS compliance of a non-WCI retail provider and to help the WCI meet its cap. If the REC from a non-WCI renewable facility is used by a non-WCI utility for its RPS, emissions would be attributed to the null power. However, this would not be true for renewable facilities in WCI. Their RECs could potentially be used by a non-WCI utility to meet its RPS requirements, but the null power would have no emissions attributed to it. One would expect that to the extent there are unspecified imports, non-WCI RECs would be used to respecify them as zero-GHG power. Non-WCI retail providers who need RECs would be indifferent to the source. The market would likely match non-WCI RECs closely to the level of unspecified imports, and non-WCI retail providers would purchase WCI RECs to cover any shortfall in non-WCI RECs. Simply put, this approach may induce some REC swapping between capped and uncapped jurisdictions that would not necessarily occur otherwise.

This option would seem to create incentives for unnecessary transactions among WCI retail providers and FJDs of unspecified power and a division of the REC market into two different products with different regulatory values.

Option 3: Renewable Power Imported on a Specified Basis Receives Zero-GHG Attribution and RECs from Uncapped Jurisdictions have no Effect on GHG Accounting

Under Option 3, renewable energy could be imported on a specified basis like electricity from other sources, subject to verification of contractual terms, settlements, and transmission data. Null power and RECs from non-WCI sources would be treated the same as null power and RECs from WCI sources. While this would avoid the complications that stem from explicitly linking RPS

programs and RECs to GHG accounting, some parties may object on the grounds that renewable energy generated outside WCI could be used to meet a non-WCI state's RPS targets, while the null power would also receive a zero GHG attribution and thereby contribute to meeting the WCI Partners' cap. However, in this regard, the non-WCI renewable facility would be no different than in-WCI renewable generators because RECs generated in a WCI state could also be used by a non-WCI retail provider to meet its RPS requirements, and the null power would help the WCI Partners meet their cap.

Option 3 would require the WCI Partners to share information on specified imports to ensure that reported imports from any given source do not exceed output during the reporting period. Note that Option 3 does not preclude the use of shaping and firming to efficiently transmit non-WCI renewable energy from its region of origin.

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