

Renewable Energy Certificates and their Markets – Webinar Questions

On March 15th, 2023 the Public Service Department (“Department”) hosted a webinar covering the topic of Renewable Energy Certificates (RECs) and their Markets. During the question-and-answer period, the Department and the webinar speaker, Jason Gifford from Sustainable Energy Advantage, received many more questions than could be answered live.

Given the interest in this topic, the Department has compiled answers to the outstanding questions:

- ***Questions (Q) asked by webinar participants are listed below in bold italics.***
- Answers (A) are immediately underneath.

Please note: Questions below are modified slightly for clarity when appropriate.

The recording of the webinar and presentation slides are available on the Department’s Renewables page: <https://publicservice.vermont.gov/renewables>

- [Webinar Recording](#)
- [Jason Gifford Presentation Slides](#)

QUESTIONS (AND ANSWERS) NOT ADDRESSED LIVE DURING THE WEBINAR

Q. What are the entities obligated by the RES [Renewable Energy Standard]?

A. Vermont’s electric distribution utilities are obligated to comply with the Renewable Energy Standard.

Q. Why does the structure of the Renewable Energy Standard allow for banking of Renewable Energy Credits? How does it help reduce emissions?

A. Banking of Renewable Energy Certificates (RECs) is intended to 1) encourage large(r) renewable energy purchases by the utility and 2) allow for some flexibility in the timing and price at which utilities purchase RECs. By allowing the utility to purchase more RECs than necessary to comply with their obligation in a given year, the utility can then use those RECs to meet their obligation in a future year. Where timing of constructing of a renewable energy facility can be uncertain, and the price can fluctuate, the flexibility from banking allows for the purchase of the most renewable energy at the lowest price. Within Renewable Energy or Renewable Portfolio Standards, banking is usually limited in time (i.e. banking forever is generally not allowed). Under Vermont’s current Renewable Energy Standard, utilities can bank RECs for up to 3 years.

Q. How does this system of Renewable Energy Credits continue to lower our emissions?

A. Renewable Energy Credits themselves are the mechanism to account for and verify compliance with the Renewable Energy Standard. The obligations for electric distribution utilities – the renewable energy policy and targets – are what ultimately impact emissions of the electric sector.

Q. Why is not the goal to lower emissions? Not simply verify compliance?

A. Renewable Energy Credits are the mechanism used to verify compliance with policy, not the policy itself. Reducing emissions is one of several goals of renewable energy policy in Vermont articulated by statute in [30 V.S.A. §8001](#).

Q. Can a state 'weight' RECS used to meet state emissions reduction targets so that an apples-to-apples comparison can be made between generation sources with different manufacturing emissions profiles?

A. Renewable Energy Credits are assigned emissions coefficients based on their emissions at the time the electricity is generated (e.g. solar = zero emissions). Theoretically, a different coefficient could be applied to capture the lifecycle emissions profile of each resource. It should be noted that Vermont's Global Warming Solutions Act, which sets Vermont's requirements for reducing carbon dioxide emissions (or carbon dioxide equivalent), uses [Vermont's Greenhouse Gas Inventory](#) to set the required reductions, and to track progress toward these reductions. The Greenhouse Gas Inventory currently does not use lifecycle emissions coefficients. The Agency of Natural Resources is currently completing a study on lifecycle emissions of different energy sources that could be informative here.

Q. Some people say that polluting power plants buy RECs that enable them to keep polluting. Is that true?

A. No. RECs are purchased by load-serving entities (e.g., distribution utilities) and customers. They are the mechanism we use to assign the characteristics of the electricity used to meet customer retail needs (i.e energy consumption). When fossil fuel plants operate, they also create certificates for every MWh produced. Those certificates, along with all other certificates that are not purchased or claimed by a utility or other entity, are called the "residual mix" in the ISO New England region and assigned to the portion of electricity of the load-serving entities that did not proactively purchase certificates to meet 100% of their load.

Q. If I sell my solar RECs to a utility that burns coal, are the negative attributes of the coal now attributed to me?

A. The attributes assigned to you reflect the mix of certificates your utility holds at the end of each year. For example, if the utility needs to provide customers with 100 MWh of electricity to meet their consumption, buys 50 MWh of solar RECs from you (and others), and retains 50 MWh of coal certificates, then the supply attributed to you is 50% solar and 50% coal.

Q. If a utility buys a REC from Lowell wind, does that energy replace any polluting energy by the buying utility? Or is it just added energy for that utility.

A. If a utility purchases a REC from a generator like Lowell, that doesn't necessarily mean it is also purchasing the energy from that resource. The REC just represents the attributes of the electricity produced by the generator, and the energy is a separate product. In this case, the measurement of the utility's portfolio will show 1 more MWh served by wind, and one less served by the "residual mix".

Q. Are there any legal issues associated with state policies that require the retirement of RECs? For instance, what if a state requires that all RECs are retired? Does that trigger some sort of commerce clause violation?

A. There is not enough information here to answer this question clearly. State policies now require obligated *utilities* to retire RECs equal to a certain percentage of their retail sales. The implications of requiring all RECs associated with every renewable energy generator located in Vermont has not been examined at this time.

Q. Could you please comment on the feasibility of accounting for the time of generation for RECs as states and organizations seek to move towards 24/7 carbon-free energy?

A. It is feasible to include an hourly time-stamp on all certificates within the NEPOOL GIS (New England Power Pool Generator Information System), the system that tracks all the certificates for MWh from generators and load in New England in addition to those imported from neighboring regions. An ISO-New England working group about the NEPOOL GIS is currently considering this change.

Q. Could you please discuss if and how energy equity and resilience are considered in this model, and if not how they COULD be (e.g. implications of bundling/unbundling)

A. RECs are a compliance mechanism for utilities to show compliance toward meeting their obligations under the Renewable Energy Standard, and don't necessarily impact equity and resilience. A state could theoretically require certain types of RECs that might support those policy goals to be retired or make certain RECs ineligible. However the RECs themselves would not need to change.

Q. Does battery storage from a solar array have separate RECs associated with it?

A. No. Only renewable generation create RECs. If a battery is co-located with a solar facility, a REC would be created when that battery is discharged provided that the energy that charged the battery was shown to have been solar. The REC created would have attributes associated with the solar facility. It is possible to create a market supporting storage that is discharged, for example, to reduce peak. That type of credit would not be a Renewable Energy Credit, however. (For example, see the Massachusetts Clean Peak Standard: <https://www.mass.gov/clean-peak-energy-standard>).

Q. Is there a difference in value between RECs generated by different generation sources. For example do solar and wind RECs have a different value than biomass or large hydro? If so can the different values be arbitrated?

A. The value of a REC differs based on the extent to which it meets the eligibility criteria under different state renewable energy policies (i.e the Renewable Energy Standard (RES) in Vermont or other New England state's Renewable Portfolio Standards). These eligibility criteria are typically differentiated by different Tiers or Classes of those policies (ex. [see presentation slides 15 and 16 from the Department's webinar on current Vermont renewable energy policies](#) for definitions of Vermont Tiers I and II of the RES). Tiers or Classes for new renewable generators (e.g., New England regional Class I and Vermont Tier II) generally carry a higher value than Tiers or Classes for existing renewable resources (e.g., New England regional Class II and Vermont Tier I). If a utility generates (or contracts for) more Tier II RECs than it needs to fulfill its obligation under the RES, then those excess RECs can be sold to others who need them and be replaced by (in Vermont) by Tier I RECs (this is a form of arbitrage).

Q. Can you speak to Hydro-Quebec (H-Q) as renewable in Vermont, and what might happen to the REC market if other New England states declare H-Q power to be renewable?

A. Hydro Quebec is a company that owns electric generating facilities, not a supply resource itself. The electricity supply they provide comes mostly from large hydroelectric resources, with some other renewables and less than 0.1% of fossil resources, as identified by legal attestations. Eligibility for

Vermont's Tier 1 of the Renewable Energy Standard is determined by Vermont statute, which classifies generation from large hydroelectric facilities as renewable.

Other states in the Northeast have already classified large hydroelectric resources as eligible for classes of their renewable or clean energy requirements that aim to provide support for maintaining existing renewable or clean energy resources like Tier 1 in Vermont. The Massachusetts Clean Energy Standard (<https://www.mass.gov/doc/frequently-asked-questions-massdep-clean-energy-standard/download>) is one example.

Implications on the REC markets depend on the details of how large hydroelectric power imported into New England is classified under such state policies.

Q. Is Vermont moving from "renewable" to "clean"?

A. Vermont's Comprehensive Energy Plan and Climate Action Plan both call for consideration of a 100% Clean (low carbon) or 100% Renewable Energy Standard. This engagement effort, including the informational webinars, are a first step in providing information toward this policy consideration.

Q. RECs are the market-based instrument used to demonstrate compliance with renewable energy standard policies, among other things... are there others? What would it look like to consider compliance in terms of generation and consumption without unbundling/trading... is this possible (not just financially- other consideration)

A. The Department of Public Service reports Vermont's total energy purchases compared to total energy consumption. On this accounting, in 2021 Vermont was roughly 63% renewable. [See slide 21](#) of the first informational webinar, which describes what electricity Vermont utilities generate or buy to meet the energy use needs of their customers. Slide 23 from the same presentation shows that after accounting for Renewable Energy Certificates in 2021, Vermont was about 72% renewable.

Q. Why would a company like GMP sell RECs? Is it a 100% economic decision? For instance to keep rates as low as possible GMP sells RECs to gain income that can have a positive impact on its cost of providing electricity to its customers?

A. Utilities and other load-serving entities will buy and sell RECs until they meet their obligations under the Renewable Energy Standard and any other goals set by the individual entity. They may sell RECs consistent with least-cost planning required by 30 V.S.A. 218c to mitigate rate pressure.

Q. How do I know whether the electricity I receive from my utility is renewable or not?

Review

A. Many utilities in Vermont publish information on their annual energy mix and REC retirements on their websites. It can also be found in their Integrated Resource Plans (IRPs) and 5.200 Resource Reports. The Department is currently in the process of updating its energy data management system, which will include the development of a data portal to make data like this more readily available. The Department hopes that resource will be live in the next year or two.

Q. If VT wanted to encourage the development of biomass or landfill gas in the state, could the selling of these REC attributes to out-of-state parties who're willing to pay more for them, have the effect of discouraging that in the long term?

A. The availability of both instate and out of state markets seems more likely to *encourage* development rather than discourage it. For example, out-of-state demand for VT agricultural products does not discourage instate businesses.

Q. Can RECS be sold for generation that does not go onto the grid because of grid constraint?

A. No. If a generator is curtailed because of grid constraints, then no RECs are produced.

Q. What percent of RECs generated in Vermont are consumed in VT (retained/retired, sold within the state)?

A. The Department does not have access to the detailed generation information from privately owned generating facilities and the disposition of their RECs, and so cannot answer this question.

Q. What changes do we need to implement in the RES system to move to 100% clean, zero emissions energy?

A. Vermont's Comprehensive Energy Plan and Climate Action Plan both call for consideration of a 100% Clean or 100% Renewable Energy Standard. The engagement effort, including the informational webinars, are a first step in providing information toward this policy consideration. This 2023 process is intended to better understand whether and how to meet those targets.

Q. How does rooftop solar at a customer location work regarding creation of RECs? Who owns that REC?

A. One REC is created for each MWh. REC ownership depends on state policy design. For example, In Vermont's current net metering program, the utility owns the REC unless the customer has explicitly opted out of receiving the REC incentive payment.

Q. As Vermont needs to import more energy than it can generate shouldn't Vermont pay for the whole lifecycle of that energy creation?

A. The Vermont Climate Council's Science and Data Subcommittee is considering work by the Agency of Natural Resources regarding lifecycle emissions associated with Vermont's energy usage. This work will inform future decisions about how Vermont's Greenhouse Gas Inventory tracks and reports emissions. Who pays for the lifecycle of energy creation is a complicated issue that may be beyond the scope of the Department's consideration of the Renewable Energy Standard. Ultimately, Vermont should acquire energy sources and achieve greenhouse gas emissions at the lowest possible cost. That cost should be evaluated on both a societal and Vermont-specific (and consumer specific) basis.

Q. Does DPS track additionality from new emissions-free generation that is displacing fossil generation vs increasing RECs from existing Hydro?

A. New distributed generation interconnections, as well as the amount of RECs purchased from all sources, including existing hydroelectric, are tracked by the Department. These can be available upon request.

Q. Do REC systems slow/obscure investment in local renewable energy generation facilities? (Inherently or based on approach/implementation)

A. No. It is more likely that the REC market encourages local investment because it provides a mechanism to sell commodities and earn revenue.

QUESTIONS ADDRESSED LIVE DURING THE WEBINAR

The questions listed below from webinar participants were answered lived during the question-and-answer period of the webinar. Responses to these questions can be viewed [on the webinar recording](#) from minute 24:00 onward.

Q. Can trading in RECs lead to double counting of renewable energy production? For example a utility owns a solar array that produces 10 MWh that is fed into it's distribution grid. As I understand it, there would also be 10 RECs issued for that production. Can the utility trade those RECs to another utility (which then claims 10 MWh of renewable energy), or retire the RECs and claim another 10 MWh for itself? What is built into the system that precludes this from happening?

Q. How does unbundling help reduce emissions?

Q. Why do emitting utilities like McNeil receive RECs?

Q. What are the attributes that can be assigned to a REC?

Q. It would be really helpful if Jason could walk through an example for Vermont of Slide 6

Q. Over what time periods can RECs be transferred? Can they be traded in the clearinghouse on an hourly basis? Quarterly? Or is it just annual?

Q. Do REC's expire at the end of each year?

Q. If a municipality or even individual is trying to make decisions around ownership/financing renewables- can you take more generally about what to consider about RECs (e.g. what decisions are they making when they sell vs retain)

Q. Could you ask Jason to discuss (on slide 7) the comment that energy and RECs delivered from outside New England need to be bundled? Did I misread that? This not what happens with Hydro-Quebec (HQ) is it?

Q. Why is this presentation not discussing the Vermont Renewable Energy Standard (RES) and in particular the Hydro-Quebec (HQ) attributes? Most of the attributes recorded in the annual RES compliance filings are HQ attributes - they are not traded in the NEPOOL GIS unless they come from a specific generator and I am not aware of any HQ attributes used in the VT RES that fall into that category

Q. What is the motivation for selling McNeil RECs and then buying Hydro-Quebec (HQ) RECs? Is it financing? Policy to meet the Renewable Energy Standard (RES)?