Clean Energy Finance: Using Renewable Energy Certificates to Achieve Local Environmental Goals

United States Environmental Protection Agency

OVERVIEW

Many local governments use renewable energy certificates (RECs) to demonstrate regulatory compliance and meet voluntary local renewable energy goals. RECs are market-based instruments that represent the property rights to the environmental, social, and other non-power attributes of renewable electricity generation.[i] Many local governments purchase RECs through a range of credible supply options to demonstrate consumption of renewable electricity. Local governments have also benefited from self-generating and selling RECs to electricity suppliers and other buyers. This brief provides a basic explanation of what RECs are and how local governments can use them to achieve their environmental goals, providing three examples where local governments have successfully used RECs to meet their environmental goals.

WHAT ARE RECS?

Renewable electricity has two distinct components: the underlying physical electricity, and the associated environmental and social attributes of that underlying electricity, which are both typically measured in megawatt hours (MWh).[ii] The physical electricity consumed in homes or offices tells us nothing of its source or origin. RECs are market-based instruments that represent the environmental, social, and other non-power attributes of renewable electricity generation. As such, RECs represent ownership of renewable electricity on a shared grid.

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A renewable electricity generator, such as a solar facility, will produce both electricity and environmental attributes. The environmental attributes can be represented by a REC instrument, and retained or transferred between parties as a tradable commodity that is separate from the underlying MWh of physical electricity. The REC represents a claim of renewable energy use for whomever owns it.

RECs versus Carbon Offsets

RECs are not the same as carbon offsets, which are another market-based instrument that local governments often use to attain environmental goals. A carbon offset represents the reduction of one metric ton of carbon dioxide emissions, while a REC conveys ownership of the environmental attributes of one MWh of electricity generated from a renewable source. A REC does not convey to its owner a defined amount of carbon dioxide emissions reductions; instead, it conveys ownership and use of a single MWh of electricity from a zero-emitting resource.

Types of RECs

Some renewable generators sell electricity and RECs together; this type of purchase is known as "bundled RECs." If a government or individual purchases electricity from one supplier but RECs from another supplier, this type of purchase is known as "unbundled RECs."[iii]

RECs can be further classified by the generation type, such as whether electricity was generated by wind or solar energy. For example, a MWh of solar generation produces a Solar Renewable Energy Certificate (SREC). Some states, such as Illinois,[iv] have included specific solar generation requirements, or carve-outs, in their renewable portfolio standards (RPS) to help promote the solar market. To comply with the RPS in states with solar

carve-outs, regulated utilities can typically supply the mandated amount of solar power directly, purchase SRECs comparable to the amount of required solar energy, or pay the alternative compliance payment. Therefore, SRECs and other generation-specific certificates are often more valuable for local governments to sell than general RECs because there is a more limited supply to meet generation-specific RPS targets.

HOW DO RECS WORK?

To claim the environmental and non-power attributes of renewable electricity, a local government must own the RECs, whether generated from a project the government owns or purchased from a project that is owned and operated by a third party. When a claim is made on the environmental and non-power attributes of a REC, the REC is "retired" and cannot be used to claim renewable electricity use by another party. For example, if a government bought RECs from a supplier that also supplied RECs to a second buyer who claimed them or counted the RECs toward a state mandate, this would constitute a double claim or double-counting of environmental attributes.

Many electricity suppliers use RECs to comply with states' RPS. Local governments may help support the state's mandate by selling their RECs to a regulated entity, which will use them to comply with the RPS, but the local government cannot then make a usage claim to the renewable electricity itself. If a local government wants its investment in renewable electricity to go above and beyond the state's legal mandate of the RPS, it would need to own and retire the RECs. The local government will then be able to claim the use of renewable electricity from a zero emissions resource. By voluntarily owning and retiring RECs, the supply of RECs available to a compliance mandate is reduced. This ensures that both the state compliance policy (i.e., state RPS) and the voluntary local actions are incrementally additive to each other.

What Is Green Power?

Green power is a subset of renewable electricity that represents the renewable energy resources and technologies that provide the highest environmental benefit. The market defines green power as electricity produced from specific sources such as wind and solar. Some state RPS programs include sources that generate RECs for state compliance that do not qualify as green power, such as municipal solid waste or biomass.

PURCHASING RECS

RECs can be purchased directly along with electricity through an electricity supplier, such as a wind or solar developer, using a contract called a physical power purchase agreement (PPA). RECs are usually purchased for a long-term period such as 10–20 years.[v] This contract can provide a known price for the electricity and guarantee that the purchaser will own the RECs from the same generator. If a local government owns its electric utility, then the utility can obtain RECs through a PPA with developers. The local government may then either claim the RECs itself or may pass them on to the municipal utility for incorporation into the utility's delivered grid mix, resulting in a lower emissions rate for all customers, but it cannot do both.

If a local government is in a market that allows "retail choice," where customers may choose their energy supplier, it may be able to enter into a PPA directly with an electricity supplier. If state legislation allows it, the local government may choose to set up a not-for-profit entity called a community choice aggregation (CCA), which may then enter into the PPA on the government's behalf.[vi] As of early 2021, only seven states have adopted enabling legislation to permit local governments to adopt CCAs.[vii] By aggregating demand, a local government can gain leverage to negotiate better rates. If a local government is not in a market with retail choice, it may choose to enter into a virtual PPA to directly purchase RECs at a set price from an electricity supplier that is located in a wholesale power market.

Local governments may also buy RECs from intermediaries called REC retailers or brokers. These intermediaries help facilitate transactions between a local government (i.e., a buyer) and a renewable energy generator (i.e., a seller) by matching a buyer's specific REC needs with an appropriate seller or renewable source.[viii] While retailers and brokers may not be required to purchase RECs, they can be helpful when a buyer does not have sufficient buying power to engage directly with large generators.

Benefits of Purchasing RECs

Benefits of purchasing RECs include:

- *Ability to demonstrate use of renewable electricity regardless of what options are available through a local provider.* Local governments can use RECs to cover part or all of their purchased electricity footprint even if the local electricity provider does not offer renewable electricity directly.
- *Flexibility to maintain existing electricity procurement contracts*. Local governments do not always have access to renewable electricity through their electricity providers, to whom they are often committed under long-term contracts. Purchasing, owning, and retaining RECs allows local governments to claim the benefits of renewable resources while preserving existing electricity procurement contracts.
- *Customizable renewable energy criteria.* REC purchase contracts are customizable, in that local governments can stipulate criteria about the type of renewable energy (e.g., wind vs. solar), as well as the location and year (i.e., "vintage") of generation. Each of these three criteria can impact price (e.g., an unbundled REC bought from inside the local grid may be more costly than one from outside, but local governments may still prefer the local option to influence the local market).
- *Stronger purchasing power.* Partnering with other local governments or organizations can enable local governments to combine demand to enable better purchasing power and potentially obtain better pricing for RECs; this is referred to as "collaborative procurement."[ix]

SELF-GENERATING RECS

Local governments sometimes choose to self-generate renewable electricity (e.g., by installing solar panels on municipal facilities). In these cases, their renewable projects will produce two different and separable commodities: physical electricity and environmental and social attributes. Local governments have several options if they choose to self-generate RECs:

- *Retain the RECs* and the claim of renewable energy use from the project. Over the long run, generating renewable electricity and retaining the RECs can enable a local government to claim use of renewable electricity at a lower cost than purchasing renewable electricity products directly from a power provider.
- *Sell the self-generated RECs to a third party and claim use of the energy that is made up of the average grid generation mix*. Revenue from REC sales may be used to provide financial support for other energy or sustainability initiatives, or to reduce the cost of power delivered to the local government (e.g., proceeds from REC sales could be used to fund clean energy programs for low-income residents). While selling RECs to a third party may help lower the overall delivered cost of electricity, it does so at the expense of the local government's ability to claim renewable electricity use.
- *Sell the self-generated RECs to a third party and make a replacement REC purchase from another renewable resource or project* (claims are connected to the source of the replacement RECs).

Local governments usually choose this option if, due to their state's RPS, REC prices within the state are higher than REC prices outside of the state. This practice is often referred to as REC arbitrage.[x] When considering the sale of self-generated RECs, it is important for local governments to be aware that not all states permit out-of-state RECs for RPS compliance. For example, Pennsylvania does not recognize SRECs from outside of the commonwealth for the purposes of compliance with Pennsylvania's Alternative Energy Portfolio Standard.[xi]

To receive RECs generated by a renewable resource, a local government must register the project with a regional tracking system. The process of registration is different depending on the region or what the owner of the RECs wants to do with them. For example, if a project is within the service territory of PJM (a major regional transmission organization), it must be registered with the PJM Environmental Information System's Generation Attribute Tracking System (GATS) for the owner to receive its RECs. If the owner of the RECs wants the option of selling the RECs to a regulated entity that will use them to comply with the state's RPS, the owner may need to take additional steps. For example, the owner may need to first register the project with the targeted state's public service commission or public utility commission.

Local governments often self-generate RECs on their own. Alternatively, local governments could partner with other municipalities or organizations to develop larger projects, through a process called "aggregation." Aggregation leads to economies of scale, making project costs lower and more favorable for developers. Aggregation enables local governments to develop larger projects that they would not be capable of developing on their own.

PROMOTING RECS AT THE LOCAL LEVEL

Local governments have promoted the use of RECs in several ways:

Key Resources Available to Local Governments

- EPA Green Power Partnership Website: www.epa.gov/greenpower
- EPA Green Power Partnership "Making Environmental Claims": www.epa.gov/greenpower/making-environmental-claims
- EPA Local Government Strategy Series – Green Power Procurement: www.epa.gov/statelocalenergy/green-power-procurement
- Green-e Website: www.green-e.org
- American Cities Climate Challenge – Renewable Accelerator: https://cityrenewables.org/
- EPA Toolbox for Renewable Energy Project Development: https://www.epa.gov/repowertoolbox
- Local Government Solar Project Portal: https://www.epa.gov/repowertoolbox/local-government-solar-project-portal
- National Renewable Energy Laboratory Renewable Electricity Fact Sheet: www.nrel.gov/docs/fy15osti/64558.pdf

- *Adopting local resolutions*. Resolutions can establish renewable energy procurement requirements for government facilities. The local government can purchase RECs as an alternative to purchasing renewable electricity directly from a provider or generating its own renewable electricity.
- *Establishing local renewable portfolio standards*. Many states have created standards that investor-owned utilities must meet. Some states also require municipally owned utilities to comply with standards. If a state exempts municipally owned utilities from its RPS or does not have a statewide standard, local governments may consider establishing local RPS requirements for their utilities. These utilities can purchase RECs to meet RPS requirements. The municipal utility in Columbia, Missouri, for example, purchases RECs from wind power projects to help meet its locally mandated RPS.[xii]

- *Raising awareness*. Local governments can help businesses and residents understand what RECs are and how to generate or purchase them. Businesses and residents may not know the differences among generating, buying, or retiring RECs, and which of these options ensures that their efforts go beyond state mandates or enables them to claim the use of renewable electricity.
- *Providing support*. Local governments may also assist constituents who enter into third-party lease agreements (typically for rooftop solar) to ensure they understand who owns the RECs, a commonly misunderstood key provision. A local government may also choose to participate in programs such as the U.S. Environmental Protection Agency's (EPA's) Green Power Partnership.

What Is the Green Power Partnership?

The Green Power Partnership is a cost-free, voluntary EPA program that assists organizations with procuring electricity generated from renewable resources. The EPA can provide technical support in purchasing green power and in communicating the economic and environmental benefits of green power use to stakeholders and constituents. Partners will be networked with like-minded communities, colleges and universities, businesses, and organizations across the country.

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[i] U.S. EPA. (n.d.). Renewable Energy Certificates. Available: www.epa.gov/greenpower/renewable-energy-certificates-recs. Accessed 10/12/2020.

[ii] Ibid.

[iii] U.S. EPA. (n.d.). Unbundled Renewable Energy Certifications (RECs). Available: https://www.epa.gov/greenpower/unbundled-renewable-energy-certificates-recs#:~:text=Unbundled%20Renewable%20Energy%20Certificates%20(RECs)%20refer%20to%20RECs%20that%20are,one%20selling%20them%20the%20REC. Accessed 11/4/2020.

[iv] NC Clean Technology Center. (n.d.). Illinois, Renewable Portfolio Standard. Available: https://programs.dsireusa.org/system/program/detail/584. Accessed 2/4/2021.

[v] U.S. EPA. (n.d.). Physical Power Purchase Agreements. Available: https://www.epa.gov/greenpower/physical-power-purchase-agreements-physical-ppas. Accessed 11/4/2020.

[vi] U.S. EPA. (n.d.). Community Choice Aggregation. Available: https://www.epa.gov/greenpower/community-choice-aggregation. Accessed 11/4//2020.

[vii] Ibid.

[viii] National Renewable Energy Laboratory. 2011. The Role of Renewable Energy Certificates in Developing New Renewable Energy Projects. Available: https://www.nrel.gov/docs/fy11osti/51904.pdf. Accessed 11/4/2020.

[ix] U.S. EPA. (n.d.). Collaborative Procurement Initiative. Available: https://www.epa.gov/greenpower/collaborative-procurement-initiative. Accessed: 11/4/2020.

[x] U.S. EPA. Renewable Energy Certificate (REC) Arbitrage. Available: https://www.epa.gov/sites/production/files/2017-09/documents/gpp-rec-arbitrage.pdf. Accessed 11/3/2020.

[xi] NC Clean Technology Center. (n.d.). Pennsylvania's Alternative Energy Portfolio Standard. Available: https://programs.dsireusa.org/system/program/detail/262. Accessed 2/5/2021.

[xii] Columbia Power and Light. 2020. Renewable Report. Available: www.como.gov/utilities/wp-content/uploads/sites/20/2020/01/RenewableReport2020-Final-Draft.pdf. Accessed 11/3/2020.

Examples

Greenfield, Massachusetts

- Community Choice Aggregation (CCA) supplied RECs
- Green power used since 2017
- Over 50 million kWh of green power per year
- Wind and solar resources

Greenfield, a city of approximately 18,000 people, established the Greenfield Light & Power program in January 2015. This CCA program purchases and retires RECs on behalf of participating residents and businesses, offering these community members the option to have 100% of their electricity provided from renewable resources. At least 65% of the community has been enrolled in the aggregation since 2015. The CCA enables the city to negotiate a long-term, fixed rate for electricity from renewable sources.

The CCA offers different products to participating residences and businesses, including a budget (new in 2021), standard, and local green product option. The local green option is 100% renewable electricity, all from Class I renewable electricity generated in New England. The standard and budget options offer competitive rates to the local utility offering with varying levels of environmental benefits (e.g., one option stipulates that all power comes from local wind; another allows other types of RECs).

For more information, see: www.masspowerchoice.com/greenfield.

Houston, Texas

- RECs supplied through a competitive electricity supplier and offsite PPA
- Green power used since 2008
- Supplies nearly 90% of local government's annual electricity usage
- One billion kWh of green power per year

As the fourth-largest city in the United States with more than 2 million people, Houston is the largest user of green power among local government partners within EPA's Green Power Partnership. In 2017, it won EPA's Green Power Partner of the Year award. Houston was an early leader in green power purchases, beginning its REC purchases in 2008 through a contract with its local utility. The city purchased more than 1 billion kWh in 2020 through a combination of competitive retail supply and a physical PPA contract that provides the city the necessary RECs to substantiate voluntary claims of renewable electricity use. According to the EPA's Green Power Partnership, the city's purchases accounted for nearly 90% of the local government's annual electricity usage in 2020. The city intends to eventually power their entire government with 100% renewable energy.

For more information, see: www.greenhoustontx.gov/green-power-program.html.

Washington, DC

- Self-generate and sell RECs
- Revenue benefits low-income residents
- Project funded in 2017
- More than 1 billion kWh used by the community in 2020

Washington, DC's Solar for All Program, which began in late 2016, aims to increase the consumption of renewable energy in the city; expand the city's solar capacity; and provide benefits of locally generated solar energy to low-income households, small businesses, nonprofits, and seniors. The program oversees a grant program that has multiple objectives, including providing low-income households with the benefits of solar energy, either the energy itself or the financial benefits, for at least 15 years. Projects applying to the grant program must meet one of these stated objectives. The grant funds multiple proposals each year for a three-year period. One currently funded project is the Neighborhood Solar Equity organization, which installs solar energy systems on large, public-sector institutions such as local university rooftops; sells the Solar Renewable Energy Certificates (SRECs) that are generated; and uses the revenue generated from the project to benefit low-income residents. While solar project recipients cannot claim to be using solar power due to the sale of the SRECs, they benefit from the shared environmental benefits of complying with the District's RPS.

For more information, see: www.doee.dc.gov/node/1226501.