

U.S. EPA's State and Local Energy and Environment Webinar Series

Using Renewable Energy Certificates (RECs) to Achieve Local Environmental Goals

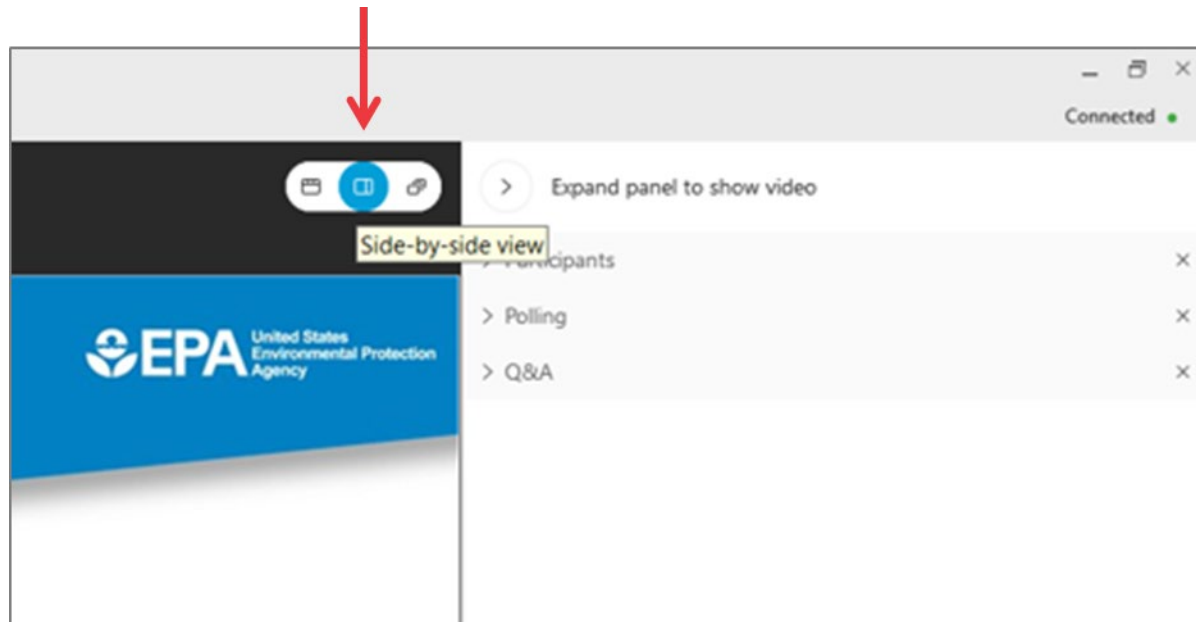
April 27, 2021
2:00 PM Eastern

Three audio options:

1. Listen via computer
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 3. Dial 1-415-655-0002 or 1-855-797-9485
- Event number: 185 487 2344



- There are several layout options
- We recommend the side-by-side view



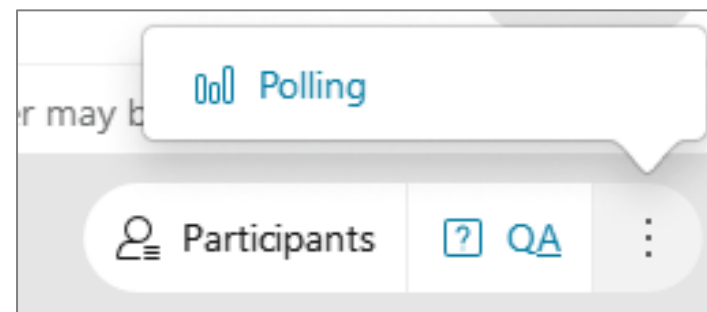
We'll use three panels

- Participants, Polling, and Question & Answer (Q&A)
- Use the arrow to expand or collapse the panels



Adding Panels

- If some panels don't appear, hover over the bottom of the screen and select the desired panels
- Select More Options (...) for additional panels
- Blue icons indicate active panels



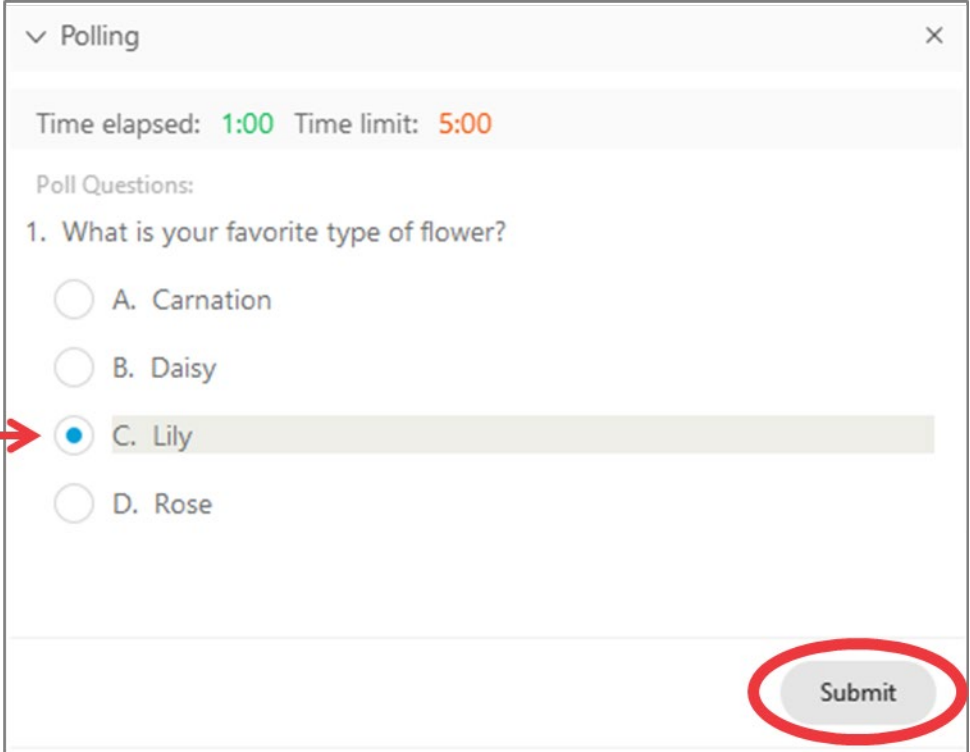
↑ Participants ↑ Q&A ↑ More Options
Polling

Polling

- We'll ask several poll questions during the webinar
- The polling panel will appear when we open the first poll
- Select your desired response and hit "Submit"

Webinar Feedback

- A feedback form will pop-up when you exit today's webinar



▼ Polling ×

Time elapsed: 1:00 Time limit: 5:00

Poll Questions:

1. What is your favorite type of flower?

A. Carnation

B. Daisy

C. Lily

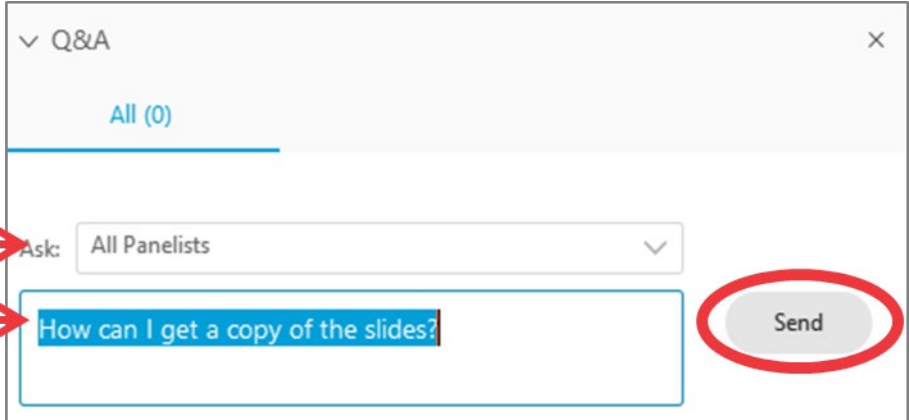
D. Rose

Submit

- Participants are muted
- Questions will be moderated at the end

- To ask a question:

1. Select “All Panelists” from the drop-down menu
2. Enter your question in the Q&A box
3. Hit “Send”



The screenshot shows a Q&A interface with a dropdown menu set to "All Panelists", a text input box containing the question "How can I get a copy of the slides?", and a "Send" button circled in red. Red arrows point to the dropdown menu and the text input box.

- EPA will post final materials on the Webinar Series page:
www.epa.gov/statelocalenergy/state-local-and-tribal-webinar-series

Today's Agenda

- **David Tancabel**, U.S. Environmental Protection Agency (EPA)
- **James Critchfield**, U.S. EPA
- **Carole Collins**, City of Greenfield, Massachusetts
- Question and Answer Session

The views expressed by speakers on this webinar are solely those of the participants and EPA does not endorse any products or commercial services mentioned in this webinar.

Introduction and Overview of EPA's Renewable Energy Certificates Primer

David Tancabel

Local Energy and Environment
Policy Analyst

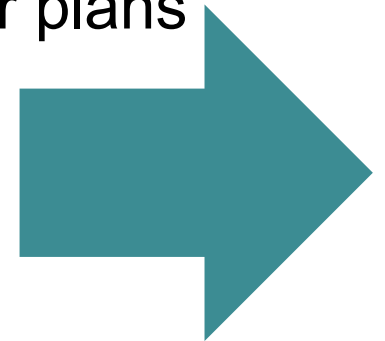
U.S. Environmental Protection
Agency



Which best describes your organization's experience with RECs?

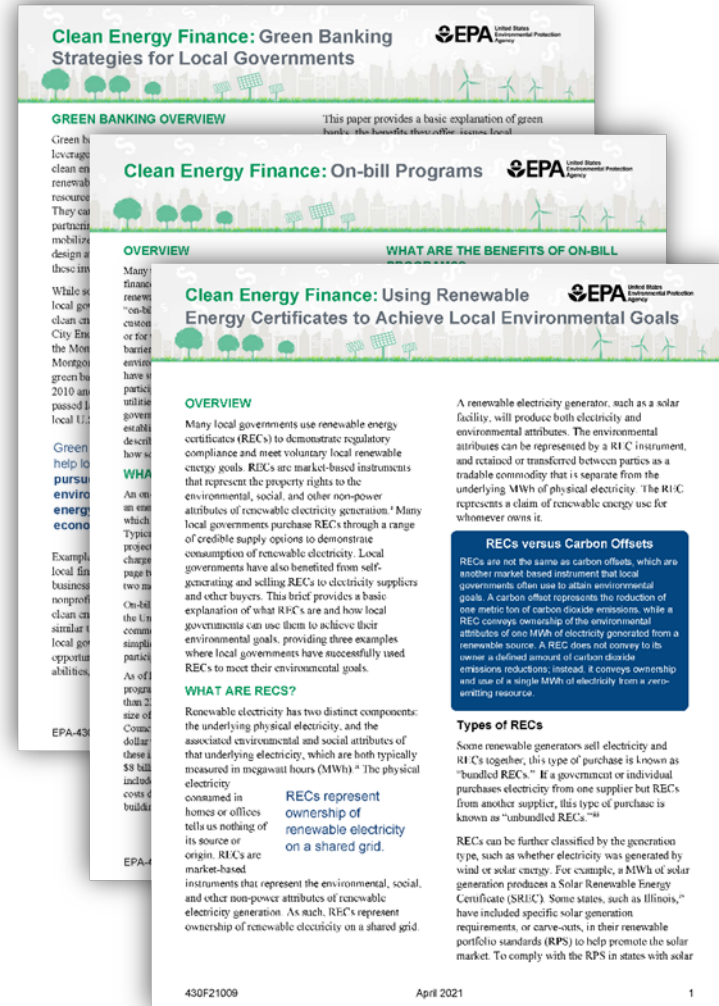
- We already sell or purchase RECs
- We are arranging to generate or purchase RECs
- We are considering options to generate or purchase RECs
- We have no plans to generate or purchase RECs
- I am unsure of my organization's experience or plans

Poll 1



Clean Energy Finance Series

- Green Banking Strategies for Local Governments
- On-bill Financing
- Using Renewable Energy Certificates to Achieve Local Environmental Goals
- Clean Energy Finance Tool (CEFT)



Using Renewable Energy Certificates to Achieve Local Environmental Goals

- Overview
- How RECs work
- Purchasing RECs
- Self-Generating RECs
- Examples of Local REC Strategies
- Examples of Using RECs
- Resources

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

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.¹ 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).² 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.

RECs represent ownership of renewable electricity on a shared grid.

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."³

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,⁴ 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

Renewable Energy Certificates Overview

- What are RECs?
 - ▶ Renewable energy has two distinct components
 - Physical electricity
 - Environmental and social attributes (non-power)
 - ▶ RECs are different from “carbon offsets”
- Types of RECs
 - ▶ Bundled: Electricity and RECs sold together
 - ▶ Unbundled: Electricity and RECs sold separately
 - ▶ Technology specific RECs

How do RECs work?

- How to claim the environmental and social benefits of RECs?
 - ▶ An end-user must own and retire the REC

- Compliance with legal mandates
 - ▶ Renewable portfolio standards (RPS)
 - ▶ Local government intending to go above and beyond legal mandates would need to own and retire RECs

- Purchased directly along with electricity
 - ▶ Power purchase agreement (PPA) directly with wind or solar developers
 - Usually for long-term period (10-20 years)
 - ▶ “Retail choice” markets
 - PPA with the local electricity supplier
 - ▶ Community choice aggregation (CCA)
 - Requires legislation and setting up a not-for-profit entity
- Intermediaries (REC retailers or brokers)

Benefits of Purchasing RECs

- Ability to demonstrate use of renewable electricity regardless of options at the local level
- Flexibility to maintain existing electricity procurement contracts
- Customizable renewable energy criteria
- Stronger purchasing power

Self-Generating RECs

- Example: Installing solar panels on municipal facilities

- Self-generating RECs provides options:
 - ▶ Retain the RECs
 - ▶ Sell RECs to a third party and claim the use of the average grid generation
 - ▶ Sell RECs to a third party and purchase replacement RECs from another resource or supplier
 - “REC Arbitrage”

Examples of Local REC Strategies

- Adopting local resolutions
- Establishing local renewable portfolio standards
- Raising awareness
- Providing Support

Examples of Using RECs

- **Houston, Texas**
 - ▶ RECs supplied through competitive electricity supplier and offsite PPAs
 - ▶ Nearly 90% of local government electricity usage
- **Washington, DC**
 - ▶ Self-generating and selling RECs
 - ▶ Neighborhood Solar Equity project
 - Uses proceeds from solar REC (SREC) sales to benefit low-income residents
- **Greenfield, MA**
 - ▶ Carole Collins, Director of Energy and Sustainability

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

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**State and Local
Energy and Environment Program**

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www.epa.gov/statelocalenergy/clean-energy-finance-using-renewable-energy-certificates-achieve-local

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EPA's Green Power Partnership

James Critchfield
Green Power Partnership
Director

**U.S. Environmental Protection
Agency**





EPA's Green Power Partnership

James Critchfield, US EPA

April 27, 2021



EPA's Green Power Partnership

Launched in 2001, EPA's Green Power Partnership is a free, partnership program that encourages organizations to use green power to reduce the environmental impacts associated with conventional electricity use

www.epa.gov/greenpower

Partners include:

- Fortune 500 corporations
- Higher education institutions
- Federal, state and local governments
- Small and medium sized businesses
- Non-profits



EPA's Green Power Partnership

+700 Partners

+100 Green Power Communities

**+70-billion-kilowatt
hour (kWh)** used
annually

Partnership accounts for
43% of Voluntary Market

The equivalent electricity use of
6.6 million average American homes

13% of all
non-hydro renewable electricity
generated in the U.S.



Key Market Principles

- Consumer choice
- Energy attribute certificates (i.e., REC)
- Avoid double counting and double claiming
- Credible claims – consumer protection
- Incremental green power use (surplus to regulation)
- Standards for resource quality and content in North America



Motivations for Using Green Power

- Make a difference / have an impact
- Reduce carbon footprint / climate risk
- Be seen as a leader
- Differentiate product or brand
- Save on one's electricity expense
- Drive development of new projects

Green Power Supply Options

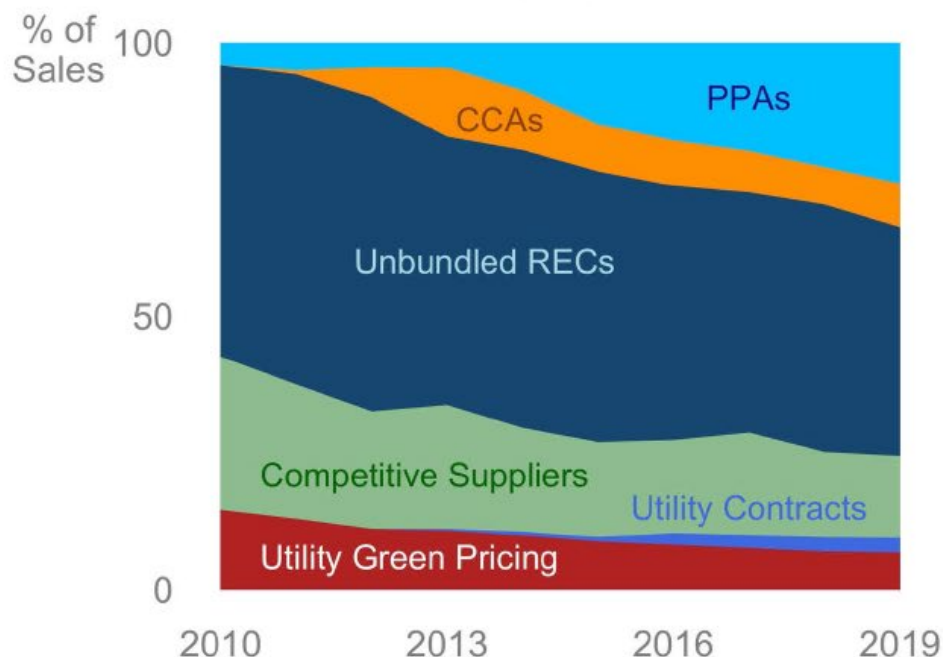
All green power supply and use is substantiated through REC instruments.

Retail Options	Retail (Unbundled) RECs
	Utility Products or Programs
	Community Choice Aggregation
Project Specific Options	Self-Supply
	Physical PPAs
	Shared Renewables
	Utility Green Tariffs
	Financial Contracts

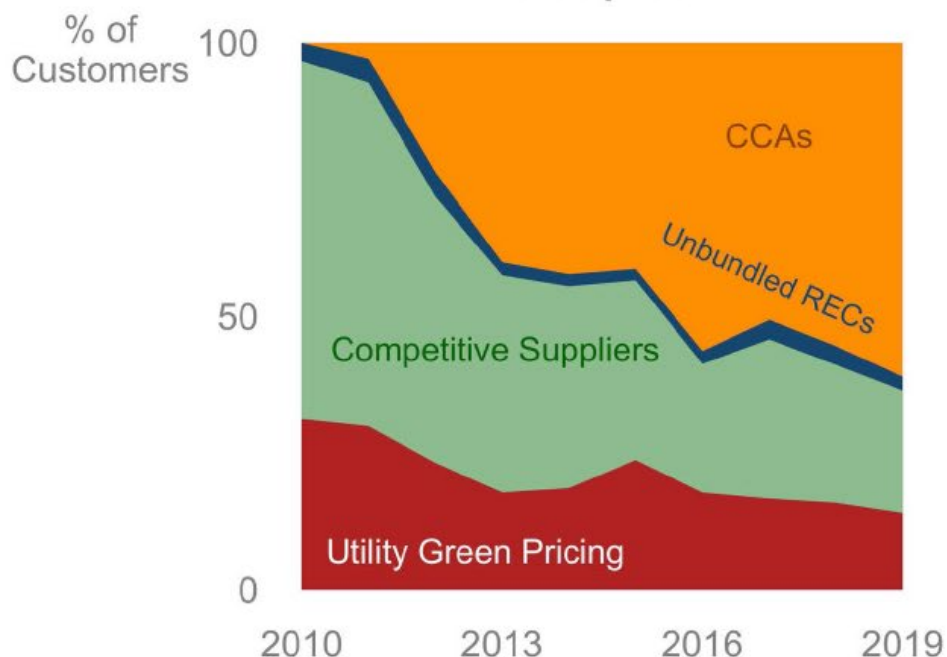
Supply Option Trends 2010-2019

In 2019, most voluntary sales were via unbundled RECs, while most customers were via community choice aggregation

Sales



Participation



Source: National Renewable Energy Laboratory. Note: Utility contracts have a small number of customers (<25) so are not visible on the figure



Consumer Access to Green Power

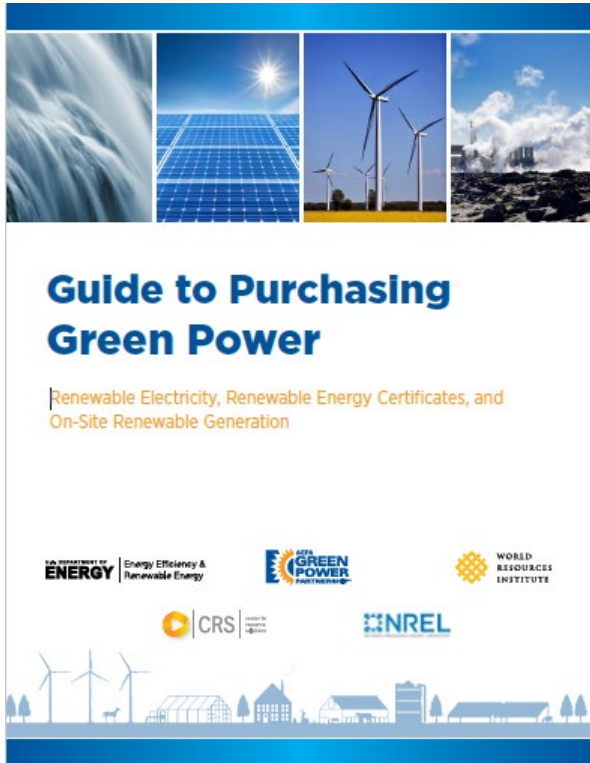
Green Power Supply Option	Number of States with Green Power Access	Total Green Power Access by Option		Total Green Power Access Compared to Total US Electricity Data	
		Customers* (Million)	Electricity Sales (Billions of kWh)	Percent of Customers*	Percent of Electricity Sales
Utility Green Pricing Programs	37	58.3	1097	43.0%	35.0%
Competitive Green Power Marketing Products	19	45.2	1017	33.0%	32.2%
Community Choice Aggregation	7	3.3	9	2.4%	0.3%
Physical Power Purchase Agreements	27	21.8	659	15.9%	20.9%
Financial Power Purchase Agreements	50	0.21	756	0.2%	23.9%
Renewable Energy (Green) Tariffs	16	3.2	76	2.4%	2.4%
Community Solar/Shared Renewables	17	54.3	270	40.0%	8.6%
On-site Generation	48 ¹	33.7	570	24.7%	18.1%
Retail (Unbundled) RECs ²	50	All	All	100%	100%

Draft Preliminary Findings / 2016 Data



You are **only using**
RENEWABLE **ELECTRICITY**
when you **have both a**
REC and **ELECTRICITY**

Resources: Getting Started



Guide To Purchasing Green Power

- Great place to start if you have never purchased green power before
- Authors include EPA, Department of Energy, World Resources Institute, Center for Resource Solutions and National Renewable Energy Laboratory

www.epa.gov/greenpower/guide-purchasing-green-power

Contact Us

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www.epa.gov/greenpower

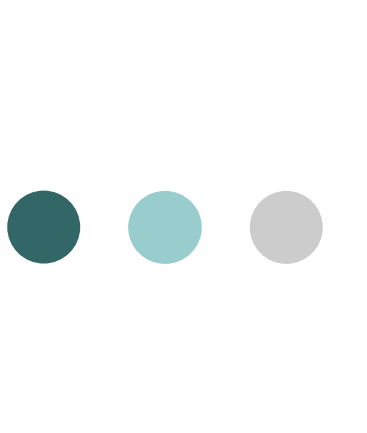


Carole Collins

**Energy and Sustainability
Director**

City of Greenfield, MA





Using Renewable Energy Certificates to Achieve Local Environmental Goals Greenfield Light & Power and RECs

April 27, 2021

Carole Collins

Director of Energy & Sustainability

City of Greenfield, MA





Background

- Greenfield is a small city of 18,000 located in western Massachusetts, the county seat of the most rural county in the state
- As the first Green Community in Massachusetts, looked to municipal aggregation as an untapped vehicle to achieve clean energy goals by providing 100% green electricity to the community
- One of the first communities in Massachusetts to use municipal aggregation to green the supply, now over half the communities in Massachusetts have municipal aggregations that provide different models of green electricity
- Each year, Greenfield Light & Power provides approximately 50-55 million kWh to all rate classes
- Over 65% of residential and about 80% of small commercial and industrial customers participate in Greenfield Light & Power

Greenfield has avoided over 194 million tons of carbon dioxide (CO₂) since 2015



Municipal Aggregation in Massachusetts

Municipal Aggregation is made possible by:

Restructuring Act of 1997

- Deregulated electricity market and allows anyone to purchase power on the open market from any regulated suppliers to the Commonwealth of Massachusetts

Green Communities Act of 2008

- Authorizes any municipality or any group of municipalities acting together within the Commonwealth to aggregate the electrical load of interested electricity consumers within its boundaries



Why Municipal Aggregation?

Predictability: Greenfield has negotiated a contract with fixed rates through January of 2024.

Choice: The program provides three alternatives to Eversource's Basic Service and an alternative to other electricity supply offers in the marketplace.

Renewable energy, cost effectively: Your electricity is powered by 100% renewable energy, unless you choose the Budget option.

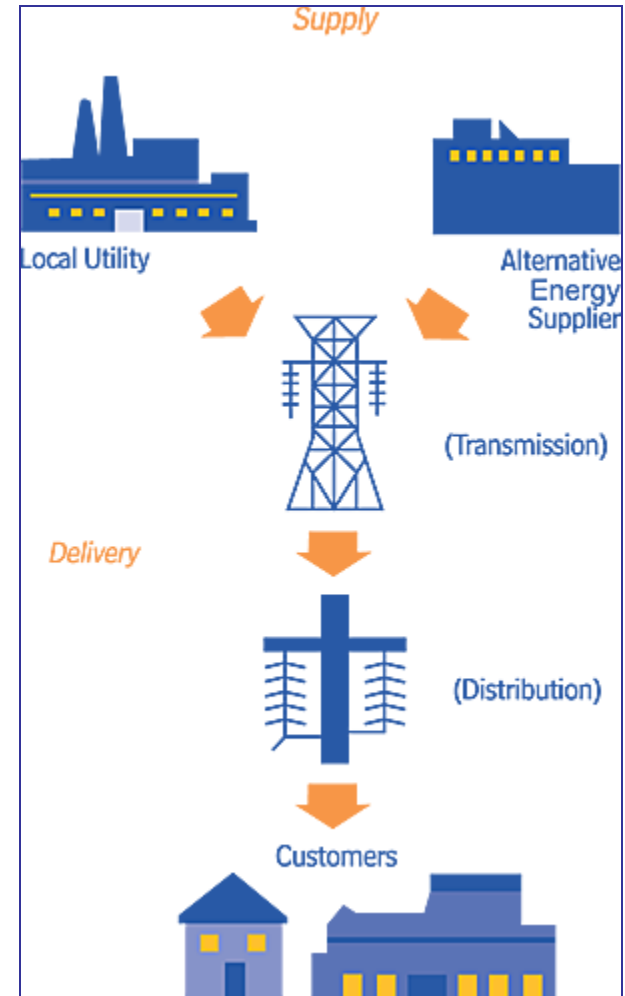
Transparency: The program is a City-vetted option with no hidden fees. You may opt out at any time with no penalty. All program terms are public. Electricity prices are fixed by contract, known in advance, and posted.

How Does Electricity Service Work Now?

50% +/- for Supply
Purchase of electricity

50% +/- for Delivery

- Mass Save (energy efficiency program)
- maintenance of poles and power lines
- meter reading
- billing





How REC Usage has Evolved for Greenfield

- Initially used 'light green' RECs from older hydropower projects in Maine (ineligible for EPA Green Power Partnership) to provide 100% green electricity with minimal cost premium
- In 2017, started using newer RECs that were eligible for the EPA Green Power Partnership and Greenfield became a member
- In 2019, Greenfield added a "Local Green" Option comprised of 100% Class I RECs – the greenest RECs available in MA from newer New England based renewable energy projects and helps support further renewable energy development in Massachusetts and New England
- In 2021, the standard option was modified to include 5% Class I RECs as part of the 100% green electricity. Since these RECs are more expensive, the remainder of the RECs are from National Wind, in order to keep prices competitive
- 2021 also saw the introduction of a "Budget" option, electricity made up of the minimum required RECs (18%) and responds to members of the community with limited budgets. This is an opt-in product



Current Greenfield Light & Power Offerings

Cleaner electricity and consumer-friendly choices

You may choose between three options in Greenfield Light & Power:

1. **Standard:** Provides electricity that is 100% from renewable sources, primarily wind projects outside of New England. Standard is default program offering, which means new participants will be automatically enrolled in Standard if another option is not chosen.
2. **Local Green:** Provides electricity that is 100% from “premium” renewable sources in the New England region. By opting up to Local Green, you increase the demand for renewable energy produced in New England, which drives the development of new renewable energy projects on the New England power grid.
3. **Budget:** Provides only the minimum amount of your electricity required by law from renewable sources, but is the least expensive option in the program.

STANDARD
(default)

100% renewable
electricity

9.879 ¢/kWh

**LOCAL
GREEN**
(option)

100% renewable
electricity from New
England

13.281 ¢/kWh

BUDGET
(option)

only the minimum
amount of renewable
electricity required
by law

9.629 ¢/kWh



Using RECs to Benefit the Community

In Massachusetts, the SREC market was oversupplied for a few years, so we negotiated with our supplier to purchase all their required RPS RECs from local Greenfield projects first, and supplement with regional renewable projects to fulfill their obligation. This helped guarantee the purchase of locally produced renewable energy when many RECs were not being purchased at auction. This also dovetailed with a Greenfield Solar Challenge Program that added 500-kilowatt of Greenfield citizen owned solar arrays to the grid.



Thank you!

For more information:

greenfieldlightandpower.com

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Greenfield Light & Power



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Question and Answer Session

Access the RECs Primer

www.epa.gov/statelocalenergy/clean-energy-financing-tools-and-resources-local-governments

Connect with the State and Local Energy and Environment Program

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Guest Speaker

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