



Glossary

To view the full Guide, visit <https://www.epa.gov/greenpower/guide-purchasing-green-power>



DOCUMENT MAP

Summary

Chapter 1. Introduction

Chapter 2. Introducing Green Power

- What is Green Power?
- Introduction to Renewable Energy Certificates
- Introduction to the Voluntary Market
- Certification and Verification
- Tracking Systems

Chapter 3. The Benefits and Costs of Green Power

- The Benefits
- The Costs
- Public Relations Considerations

Chapter 4. Green Power Product Options

- Purchase Options
- Self-Generation Options
- Green Power Supply Options Summary

Chapter 5. Using Organizational Goals to Guide Green Power Purchases

- Setting Goals
- Identifying Key Decision-Makers
- Gathering Energy and Facility Data
- Choosing Green Power Options

Chapter 6. Contracting for Green Power

- Developing Criteria for Screening Green Power Suppliers and Products
- Collecting Product Information
- Creating a Procurement Plan

Chapter 7. Planning a Self-Generation Renewable Project

- Screening the Options
- Obtaining Resources and Assistance
- Creating a Project Plan
- Installing and Operating a Renewable Generation Project

Chapter 8. Capturing the Benefits of the Purchase

- The Environmental Benefits
- Promoting the Organization's Purchase

Chapter 9. Conclusion

Chapter 10. Resources for Additional Information

Glossary

Appendix A. Green Power Considerations for Federal Agencies

Appendix B. Commercial Solar Financing Options

Appendix C. Purchasing renewable energy as a residential customer



This glossary defines some of the important terms used in this guide. More definitions can be found at <https://www.epa.gov/greenpower/green-power-partnership-tools-and-resources>.

Additionality. A quality criterion for emissions reduction (offset) projects stipulating that the project would not have been implemented in a baseline or “business-as-usual” scenario. Additionality is often applied to greenhouse gas project activities, stipulating that project-based emission reductions should only be quantified if the project activity “would not have happened anyway”—i.e., that the project activity would not have been implemented in its baseline scenario. Additionality is a test(s) used only for project offsets that result in direct emissions accounting and not for RECs or green power purchases. See Chapter 8 for more information.

Annual consumption. The amount of electricity used by a consumer in one year, typically measured in kilowatt-hours (kWh). This information can be acquired from an electricity bill or by contacting the energy provider.

Balancing power. The power purchased or provided by the electric grid system operator to match the power supply with grid demand for maintaining voltage frequency of electricity service delivery.

Behind the meter. Connection of an on-site generating facility to the electrical grid on the energy consumer’s property before the energy reaches the main electrical panel, rather than on the utility side of the panel.

Bundled RECs. Renewable energy certificates (RECs) that are sold by a power marketer with electricity to an end-use consumer. For a retail electricity sale to be considered green power, it must include transfer of the RECs. See unbundled RECs.

Certification. A program or process in which an independent third party assures environmental standard compliance, quality and ownership of a green power product. Thus, certification bolsters the credibility and affirmation of the environmental benefits associated with a green power purchase.

Combined heat and power (CHP). An electricity generation technology, also known as cogeneration, that recovers waste heat from the electric generation process to produce simultaneously other forms of useful energy, such as usable heat or steam. On

average, two-thirds of the input energy used to make electricity is lost as waste heat. In contrast, CHP systems are capable of converting more than 70 percent of the fuel into usable energy.

Commodity electricity. Generic electricity not associated with a particular power generation source.

Community solar. A procurement option in which a solar or renewable-electric system provides power and/or financial benefit to, or is owned by, multiple community members. The green power purchaser will typically receive utility bill credits and associated RECs for its share of the community/shared project output.

Community choice aggregation (CCA). A policy that enables local governments to aggregate electricity demand within their jurisdiction and the authority to pursue and negotiate bulk electricity purchase contracts (primarily renewable power) on behalf of participating end users.

Competitive markets. Electricity markets in which consumers can choose from among several competing retail electricity suppliers. In the late 1990s and early 2000s, several states restructured their electricity markets to allow competition for retail customers, according to price or environmental preferences. In contrast, many states have continued traditional regulation of their electricity markets. In these regulated utility markets, customers may procure green power through separate green tariffs from their utility - which procures the green power from a renewable energy project, on behalf of their customers (see Chapter 4, Green Power Product Options).

Conventional power. Power produced from nonrenewable fuels such as coal, oil, natural gas and nuclear fuels. These fuels are a finite resource that cannot be replenished once they have been extracted and used.

Direct purchase. A procurement option in which the purchasing organization contracts directly with a specific generator to purchase REC-based green power. Physical and financial power purchase agreements (PPAs) are examples of direct purchase. These options are generally customized products negotiated between the consumer and supplier and involve long-term commitments by consumers to purchase a volume tied to the output of a pre-determined generation capacity.

Distributed generation. Small, modular, decentralized, grid-connected or off-grid energy systems located in or near the place where energy is used.

Electricity supplier. A generic term encompassing regulated utilities as well as non-utility electricity marketers that provide retail generation service.

Energy efficiency. Using less energy to provide the same or better energy service (e.g., heating, cooling, lighting) than conventional products or systems. Energy efficiency saves energy, saves money on utility bills and helps protect the environment by reducing the amount of electricity that needs to be generated (and associated environmental impacts).

Financial power purchase agreement (PPA). A contract in which a generator and purchaser agree upon a predetermined reference electricity price (also called a “strike price”), but the power is sold into the local wholesale electricity market near the generator rather than directly to the power purchaser. The generator and the purchaser compensate each other on the difference between the previously agreed-upon reference electricity price and wholesale market prices, providing both with stable income and expense. Financial PPAs are also referred to as contracts for differences, virtual power purchase agreements (VPPAs), or synthetic PPAs.

Green power. Electricity generated or used from renewable energy sources with low or no environmental impacts. Green power implies a lesser environmental impact than that from conventional electricity generation and some forms of renewable energy. Large hydropower or municipal solid waste are generally not considered green power despite being renewable energy resources due to their environmental impacts. Green Power is renewable electricity that goes above and beyond what is otherwise required by mandate or requirement – it is voluntary or surplus to regulation. For more details, see Chapter 2, Introducing Green Power.

Green power products. Electricity supply options generated from renewable resources. Options include electricity products purchased from electricity suppliers, community choice aggregators and renewable energy generators, as well as renewable energy that is self-generated.

Interval meter. An electricity meter that measures a facility’s energy usage in short increments (typically 15 minutes). These meters are useful for determining electricity demand patterns and participating in real-time pricing programs.

Kilowatt-hour (kWh). The basic unit for measuring the generation and consumption of electrical energy. A megawatt-hour (MWh) of electricity is equal to 1,000 kilowatt-hours. A kilowatt and a megawatt are units of generation capacity.

Low-impact hydropower. Hydroelectric power generated with fewer environmental impacts than large-scale hydropower, by meeting criteria such as minimum river flows, water quality, fish passage and watershed protection. These hydropower facilities may be certified by the Low Impact Hydropower Institute and often operate in a “run of the river” mode, in which little or no water is stored in a reservoir.

Net metering. A policy that allows owners of certain on-site power generation systems to export the net excess electricity to the utility grid and accrue credit for it on their electric bills. Customers generating their own electricity offset what they would have purchased from their utility. If they generate more than they use in a billing period, their electric meter turns backward to indicate their net excess generation. Depending on the individual state or utility rules, the net excess generation may be credited to their account (either at the retail price or the avoided cost of electricity generation, carried over to a future billing period, or ignored). Presently many states are reconsidering the compensation mechanism for net metering.

New renewable generation facilities. Facilities built in the recent past or that will be built to meet the growing market demand for green power. Currently, new generation must be from renewable energy generating facilities that began operation within the past 15 years (a moving window), according to the Green-e Energy certification standard and EPA Green Power Partnership requirements.

Offsets. A project offset is measured in metric tons of carbon dioxide equivalent (MTCO₂e) and represents a direct reduction of global GHG emissions that can compensate for or offset emissions made elsewhere. Project offsets may be created from a variety of actions not necessarily related to energy production, such as energy efficiency or changes in land use. While a

project offset allows its owner to claim direct global emissions reductions, offsets do not support claims of renewable energy use. However, output from a project that is used to create RECs cannot also be claimed for offset purposes.

On-site renewable generation. Electricity generated by renewable resources using a system or device located at the site where the power is used.

Peak demand. The maximum power consumption for a facility, measured over a short time period such as 15 minutes or an hour.

Physical power purchase agreement (PPA). A contract for the purchase of power and associated RECs from a specific renewable energy generator (the seller) to a purchaser of renewable electricity (the buyer). Physical PPAs, which are usually 10- to 20-year agreements, define all of the commercial terms for the sale of renewable electricity between the two parties, including when the project will begin commercial operation, schedule for delivery of electricity, penalties for underdelivery, payment terms and termination. The project may be located onsite at the user's location, or be off-site with the electricity being grid-delivered to the user. Physical PPAs by non-utility consumers are generally only allowed in competitive electricity markets, and the renewable energy generator and customers must be located in the same power market to allow for physical delivery of electricity. Compare to financial PPA.

Power marketer. An entity that buys and sells power generated by others. Power marketers exist at the wholesale market level, buying and selling power from generators and to retail resellers such as utilities. Power marketers at retail level distribute and sell power to end users. A green power marketer is an electricity supplier that offers a green power product.

REC arbitrage. When there is significant discrepancy in REC prices in different REC trading markets, an organization can gain financially by selling its RECs (generated from a renewable system it owns) in the higher priced (usually compliance) market and purchasing replacement RECs in the lower priced market. This is commonly referred to as REC arbitrage (also known as a REC swap). Under REC arbitrage, an organization would have to claim the attributes of the replacement RECs it purchases rather than the attributes of the RECs it sells.

Renewable electricity. Power generated from renewable energy resources. See Chapter 2, Introducing Green Power.

Renewable energy certificates (RECs). A REC is a tradable instrument that represents the environmental attributes of the generation of 1 megawatt-hour (MWh) of electricity from a renewable energy source. RECs serve two purposes--one as a tracking instrument to substantiate and verify green power and environmental claims (either to meet a compliance obligation or to satisfy a voluntary goal), and one as a key component of all green power product options. As a component of green power products, RECs can be sold separately from electricity (as unbundled RECs), sold with electricity service (as bundled RECs), or retained as an output of a renewable energy project. Each REC denotes the underlying generation energy source, location of the generation, year of generation (a.k.a. "vintage"), environmental emissions and other characteristics associated with the generator.

Renewable energy resources. Resources that are continuously replenished on the Earth, such as wind, solar, geothermal, hydropower and biomass. Some definitions include other types renewable resources, such as municipal solid waste. See green power.

Renewable portfolio standard (RPS). Sometimes called a renewable electricity standard. A regulatory mandate or target stating that a minimum percentage or amount of each electricity supplier's resource portfolio must come from renewable energy.

Self-generation. A procurement option in which an energy consumer installs and owns generation to supply all or a portion of its electricity needs, either on-site or off-site.

Shared renewables. An emerging model allowing multiple customers to buy, lease or subscribe to a portion of a shared renewable electricity system that is located away from their homes or businesses. The model is especially appealing to customers who do not have sufficient renewable resource, who rent, or who are otherwise unable or unwilling to install renewables on their residences or commercial buildings. Shared renewables can be in the form of 'community-owned' projects or third party-owned renewable electricity generators whose electricity is shared with multiple customers. Consumers must receive the renewable

energy certificates from a shared renewables project in order that they can claim use of renewable electricity.

Tracking system. An electronic database that is used to track the ownership of RECs, much like an online bank account. A tracking system issues a uniquely numbered certificate for each MWh of electricity generated by a generation facility registered in the system, tracks the ownership of certificates as they are traded, and retires the certificates once they are used or claims are made based on their attributes or characteristics. Because each MWh has a unique identification number and can only be in one owner's account at any time, a tracking system reduces ownership disputes and the potential for double counting.

Unbundled RECs. Renewable energy certificates (RECs) that are purchased separate from electricity; in other words, RECs and electricity are purchased from two different suppliers. See bundled RECs.

Verification. A third-party audit of a green power purchase that accurately accounts for the quality and quantity of the product and protects against dual claims or double counting of the green power purchase's environmental benefits. Verification may be a requirement of a certification program.

Virtual power purchasing agreement (VPPA). See financial PPA.