

Green Energy White Paper May 2007

Green Power

Green power is electricity generated from renewable resources, such as wind, water, or sunlight. When purchasing electric generation supply, Green power typically is represented in two product categories:

- a) Renewable Electric Generation Product – This form of green generation goes directly into the electric grid and may be purchased as a component of a customer's retail electric service. The amount and type of renewable energy in the product differs from supplier to supplier and from state to state. Some products are 100% green energy, while others are a mix of green energy and traditional fuels. The green energy component can be from wind or solar (Tier I), or from other sources, such as landfill gas. The renewable product may include or be bundled with Renewable Energy Certificates (RECs).
- b) Renewable Energy Certificates (RECs) – RECs represent the environmental benefits of renewable energy generation. They provide consumers and suppliers with a way to support renewable generation technologies, such as wind farms or hydroelectric dams, without purchasing the actual electric generation itself. A single REC is equal to one megawatt-hour (MWH), or 1,000 kilowatt hours (KWH) of electric generation. RECs that are traded as separate entities from the accompanying grid generation are called unbundled RECs. Some other names commonly used for RECs include green tags, tradable renewable certificates, alternative energy credits and renewable energy credits.

Wind Power

Wind power is the fastest growing form of renewable generation in the United States, with expected growth of 26% in 2007¹. As wind farms are installing across the nation, wind is becoming a more accessible resource and could provide up to 6% of the nation's electricity by 2020². Green products containing wind are offered by most major utilities, electric suppliers and green marketers. Many corporations, such as Sprint and Ben & Jerry's, are meeting corporate environmental goals with retail electric or RECs generated from wind. A more cost-effective resource compared to other forms of green generation, such as solar power, wind appeals to a wide range of consumers, including businesses, colleges and universities, and residential consumers. Wind farm projects also help stimulate local economies by creating jobs and regional support of wind power.

Renewable Portfolio Standards (RPS)

Demand for green power is growing across the United States, due in part to mandatory compliance markets created by Renewable Portfolio Standards (RPS). RPS require electric suppliers to acquire a certain percentage of their power supply from eligible renewable resources designated by state legislatures. These eligible resources are sometimes divided into tiers or classes based on their resource type. Tier I renewables usually include more expensive renewable energy options, such as wind, low-impact hydro, and solar. Tier II renewables include less expensive resource types, such as municipal solid waste and timber residues. Twenty-three states and the District of Columbia currently have renewable portfolio standards.

¹ U.S. wind power seen growing by a quarter in 2007. (New York: Reuters, 2007).

² American Wind Energy Association. Wind Energy: An Untapped Resource. (Washington D.C.)

Mandatory Compliance Market

The mandatory compliance market consists of utilities and competitive suppliers that are required to meet state legislated renewable portfolio standards. The amount of renewable energy each supplier must purchase each year is determined as a percentage of annual sales. These compliance percentages differ by state and usually increase each year or every few years. For example, a supplier selling 13,000 megawatt-hours of electricity annually in a state that requires an RPS of 5% would need to acquire 650 RECs by year end.

Voluntary Market

The voluntary market consists of consumers, both business and residential, who voluntarily elect to purchase renewable energy. This market is expanding, as corporations are increasingly focused on environmental objectives. Large companies, such as Kinko's and Starbucks, along with government agencies, such as the U.S. Air Force, support renewable energy by buying millions of kilowatts each year. Residential customers also support renewable markets, purchasing 2,980 million KWh of green power in 2005³. Total sales for voluntary markets in 2005 were approximately 5 million KWh (5,000 RECs)⁴.

Tracking Systems for RECs

Regional tracking systems in the U.S. are responsible for ensuring utilities comply with RPS. Because RECs provide an easy means of monitoring compliance, most tracking systems are certificate based, meaning that they take a supplier's green generation and unbundle it, separating each megawatt-hour from its green component and recording those attributes as RECs. Each REC is given a unique serial number, and once sold, is retired from the tracking system. Tracking systems are essential for REC trading because they verify the creation and transfer of RECs. This verifies that marketing claims are represented accurately, creates liquidity in the renewable market, and generates data that supports state renewable energy programs.

Some examples of REC tracking systems include:

Tracking System	State(s) Tracked for RPS
PJM Generation Attribute Tracking System (GATS)	Delaware, Illinois, Maryland, New Jersey, Pennsylvania, and the District of Columbia
NEPOOL Generation Information System (GIS)	Connecticut, Rhode Island, Massachusetts, Maine, Vermont
Western Renewable Energy Generation Information System (WREGIS)	Washington, California, Nevada, Montana, Wyoming, Colorado, Arizona, New Mexico
Texas Renewable Energy Credit (REC) Program	Texas
Wisconsin Renewable Resource Credit (RRC) Program	Wisconsin

FirstEnergy Solutions Corp.'s (Inc) RECs are traded in the PJM GATS system.

³ Bird, Lori and Blair Swezey. Green Power Marketing in the United States: A Status Report (Ninth Edition). (Colorado: National Renewable Energy Laboratory, 2006).

⁴ Evolution Markets Inc. An Overview of the Renewable Energy Credit (REC) Markets. New York, 2006.

Benefits of Buying Green

Supporting green energy projects may provide the following benefits:

- Reduction in the amount of greenhouse gas emissions produced
- Indication of good corporate citizenship to shareholders, employees, and customers
- Participation in an environmentally conscious project that is easy to implement
- Stimulation of diverse fuel markets