State EE/RE Technical Forum
RPS & Renewable Energy Credits (RECs)
Call #4 - Jan. 19, 2005, 2:00 – 3:30 PM (EST)
Background & Discussion Questions

A. Background

(1) ***Renewable Portfolio Standards*** refer to a requirement that a portion of all electricity sold must be generated from renewable sources.

- By November 2004, 20 states had renewable portfolio standards (TX,OK,CO, NM,NV,CA,AZ,HI,IL,WI,IA,MN,ME,RI,MA,MD,PA,NJ,NY,CT.) RECs are often the common unit of currency for a RPS.
- Electric utilities may meet RPS requirements through their own renewable energy facilities or, in many jurisdictions, through purchase of RECs.
- The percentage of renewable energy required by RPS policies ranges from 1.1% in AZ to 20% in CA and 30% in ME.
- The definition of what qualifies for RPS credit varies from state to state. Wind, solar, and geothermal are typically acceptable, while biomass and large hydropower eligibility varies.
- Research at the Lawrence Berkeley National Lab (LBNL) has shown that RPS policy design elements (such as administrative cost, compliance cost, length of power purchase agreements, flexibility allowed to regulators, and support for diverse renewable technologies) are critical to a successful program. They recommend seven principles and related best practices for RPS policy design:

  1. *Socially Beneficial* – Support increased renewable energy production, improved environmental quality, increased diversity in energy supply, decreased risk to economic development, and other objectives.
  2. *Cost Effective and Flexible* – Implement and administer the RPS in a straightforward, flexible, cost-effective, and not unduly burdensome manner.
  3. *Predictable* – Provide market stability for all participants, reducing regulatory risk for generators and electricity suppliers and improving the ability of renewable generators to obtain long-term contracts that foster eligibility for financing.
  4. *Nondiscriminatory* – Apply the RPS fairly, consistently, and proportionately to all market participants and customers.
  5. *Enforceable* – Provide enforcement mechanisms to ensure that the policy's renewable energy targets and broader goals will be achieved.
  6. *Consistency with Market Structure* – Design the RPS to be consistent with and complementary to the structure of a jurisdiction's electricity market, whether regulated or restructured.
  7. *Compatible with Other Policies* – Design the RPS for compatibility with other applicable policies and regulations in the state/county.

(2) ***Renewable Energy Certificates (RECs),*** a.k.a. renewable energy (or electricity) credits, tradable renewable certificates, and green tags, provide documentation for the generation of a unit (typically a MWh) of renewable energy. RECs represent the non-energy attributes (environmental, social and economic) of renewable generation that may be sold separately from the energy itself.

(3) ***States develop REC policies to:***

- Provide a measurable and verifiable metric for compliance with renewable portfolio standards (RPS);
- Support clean energy and its benefits, including: environmental improvements, contribution to energy diversity and independence, and moderation of price fluctuations;
- Accommodate a market for REC sales and purchases; and
- Accommodate consumer demand for green power.

(4) ***RECs are widely used and traded***:

- REC tracking systems are up and running in Texas, NEPOOL (CT, RI, MA, ME, NH, VT), and Wisconsin. Tracking systems are under consideration or being developed in New York, the PJM area (PA, NJ, MD, DE, WVA, and OH), the Western Interconnection area (including AZ, CA, CO, ID, MT, NV, NM, OR, UT, WA, and WY), and the Upper Midwest (MN, ND, SD, and WI, IA).

B. Key Issues

States must establish policies and administrative functions to define the attributes associated with RECs, to make it possible for RECs to be used in compliance and trading, to avoid confusion or fraud in the marketing and use of RECs, and to enable reporting for public and private uses. Some of the important issues states must consider are:

• ***Estimating Displaced Emissions*** -- Due to the nature of the electricity grid, it is difficult to determine exactly which sources of generation and emissions are displaced by increased renewable energy generation. Hence states must develop a reliable estimate or proxy for this information. This may be done through modeling of displaced generation. Alternatively, a conversion factor (sometimes representing an average emissions factor for generation in a particular area) may be used to estimate emissions associated with a given quantity of offset generation. The intended use of the emission estimates will influence the level of the analysis (e.g., state implementation plan (SIP) credit use may call for more sophisticated means as compared to what is called for under less formal public recognition programs).

• ***Verification and Tracking*** -- To provide a functional REC market, renewable generation must be verified. RECs must be issued and recorded and all transactions must be tracked so that there is no confusion or misrepresentation concerning the ownership of the attributes that the certificates represent. A few of the many important functions of verification, certification, and tracking are: (1) verifying that the renewably generated electricity on which the REC is based has indeed been generated, (2) tracking non-electricity attributes to ensure that ownership is correctly assigned and not double counted, and (3) tracking and recording

financial transactions detailing purchases and sales of RECs.

• ***Trading*** -- RECs may be made available for purchase by other electricity providers that wish to offset emissions or require a certain number of MWh of renewable power for compliance with RPS. A REC that is used by an electricity generating unit (EGU) or an electricity distribution company to offset emissions and demonstrate compliance represents an expansion of the amount of energy available without adding to emissions. RECs may also be sold to energy users that wish to avoid contributing to pollution and/or seek recognition for environmental and social responsibility.

• ***Disaggregating REC Attributes*** -- Different opinions exist on whether or not the attributes of a REC (for example avoided CO_2 emissions and avoided NO_x emissions) should be severable for separate trading and ownership by different entities. See for instance the positions of the Center for Resource Solutions and the Environmental Resources Trust in the Resource list below.

C. Discussion Questions

Policy Considerations

- What are the policy drivers that led your state to develop an RPS or REC market?
- What are the primary considerations in developing a REC market to support an RPS (e.g., whether RECs remain bundled with the electricity generation, and/or defining what qualifies as renewable generation)?
- What have been the major challenges of implementing the RPS or REC?
- What are the pros and cons of disaggregating the REC attributes (separating the various environmental attributes e.g., selling avoided SO_2 or carbon emissions separately from avoided NO_x emissions)?
- What is the interplay between RECs and emissions cap and trade programs and programs such as the Federal NO_x Budget EE/RE Set-aside Program?
- How do states differ in their definitions of RECs and the type of generation that qualifies as renewable? How do those differences affect regional markets?

Technical Considerations

- How do you measure and verify the amount of renewable energy generated? How does your state handle the potential for fraud, unintentional misrepresentation, and/or double counting in REC transactions?
- How do you estimate the reduced emissions associated with avoided fossil fuel generation?
- How does the state handle assignment of ownership rights of RECs? Does ownership follow the cost of administrating the program or the flow of revenues for the RECs? (For example, if ratepayers pay a premium to cover the added marginal cost of the renewable generation under an RPS, does ownership ultimately flow to the

ratepayers? The utility that engineers the transactions? The state agency that administers the program?)

- What type of technical assistance would be most useful to your state?

Institutional Considerations

- Which state agencies (commerce? energy? environment? PUC?) are involved with REC policies and implementation? What role does each agency play?
- What resources (e.g., staff; independent verification services; internet-based trading systems and data management services) are needed to establish a REC market? Do the resources required differ depending on whether the program is intended as a compliance strategy or to support voluntary programs such as disclosure and green marketing?

D. Resources

• Holt, Ed, *Renewable Energy Generation Certificates and Generation Attributes*, Regulatory Assistance Project Issuesletter, May 2003.
http://www.raponline.org/showpdf.asp?PDF_URL=%22Pubs/IssueLtr/RenewableEnergyCertificates.pdf%22

• Hamrin, Jan, PH.D. and Meredith Wingate, *Regulator's Handbook on Tradable Renewable Certificates, Center for Resource Solutions*, May 2003
http://crs2.net/handbook/TRC_Handbook.htm

• Leahy, Patrick and Alden Hathaway, *Renewable Energy Certificates and Air Emissions Benefits: Developing an Appropriate Definition for a REC*, Environmental Resources Trust, April 2004
http://www.ert.net/ecopower/ERT_REC_Position.pdf

• R. Wiser, K. Porter, and R. Grace, *Evaluating Experience with Renewables Portfolio Standards in the United States, LBNL-54439, Prepared for the Conference Proceedings of Global Windpower 2004 Chicago, Illinois: march 28-31, 2004*
http://eetd.lbl.gov/ea/EMS/EMS_pubs.html