Anna Giovinetto reviews the US market for renewable energy certificates and highlights the importance of efficient certificate tracking systems.

The US market for renewable energy continues to grow. At present, 14 states have renewable portfolio standards (RPS), which typically mandate that retail electricity suppliers obtain a certain percentage of their sales from renewable sources. Four of these allow renewable energy certificates (RECs) to be traded independently of the underlying electricity (see box). REC trading is an important factor in the development of renewable energy markets, not only because it increases market efficiency but also because it creates financial incentives for the development of more renewable generation capacity.

REC trading maximises the potential value of a renewable generation project because it allows the market to allocate the RECs to the electricity they produce and the buyers that value them most. For example, the most interested buyer of the RECs may have no need of the underlying electricity. Furthermore, given the immature state of the renewables markets, determining the future value of the RECs can be challenging. The ability to sell the two commodities independently permits greater flexibility in forward contracts.

Active certificate tracking systems

To support the trading of RECs, systems are needed to track and verify their creation and transfer. A well-designed certificate-tracking system can reduce compliance costs and increase liquidity in the market. At present, two regions in the US have certificate tracking systems. Both were developed by APX of California and are called generation information systems (GIS). They act much like the US Environmental Protection Agency’s tracking systems. Both were developed by APX of California and are called generation information systems (GIS). They act much like the US Environmental Protection Agency’s tracking systems. The first GIS went on-line in Texas in June 2001. The second was implemented in the New England Power Pool (Nepool) in 2002, and covers six states, three of which (Connecticut, Maine and Massachusetts) have an RPS. A key difference between the two systems is that the Texas GIS tracks only the attributes associated with renewable generation, whereas the Nepool system tracks the attributes associated with all generation. The latter therefore supports other types of environmental reporting such as emissions disclosures.

Both the Texas and Nepool systems distribute certificates to generators on a quarterly basis. Under the Texas system, RECs have a life of three years and may be traded any time during that period. In Nepool, the system has a maximum period of four 60-day transfer periods a year, one for each quarter (see table). Although certificates can be sold on a forward basis, certificates from a given quarter may only be transferred during that period and may not be resold for compliance purposes after the close of the transfer period. There is some concern that the restrictions on the life of Nepool certificates creates a disincentive for buyers to enter into long-term forward contracts for certificates.

Tracking systems under consideration

Several other states are evaluating the feasibility of implementing certificate-tracking systems, including Wisconsin, California, and New York. Wisconsin is experimenting with a trial tracking system to support its RPS, and California’s RPS, which is still being finalised, contains tentative provisions for the use of a certificate tracking system in the future.

New York is in the process of developing an RPS, but a fledgling market for renewable energy attributes has already begun to form. New York is one of several states that have ‘environmental disclosure’ requirements, under which retail electricity suppliers – known as load serving entities (LSEs) in the North East – must disclose to their customers the fuel source mix and emissions data associated with their generation portfolio.

In the absence of a certificate tracking system, LSEs have two ways of acquiring the environmental attributes associated with a specific generation source: bilateral transactions and ‘conversion transactions’. In a bilateral transaction, an LSE purchases both the energy and certificate has a unique serial number. When a generator sells certificates, it transfers them into the LSE’s account with the certificate tracking system. At the end of a compliance period, certificates can then be ‘retired’, and regulators can easily verify compliance.

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attributes directly from a renewable energy generator, and the environmental attributes are reflected in the LSE's environmental disclosure statement. An LSE can also purchase energy in the spot market and then arrange a separate transaction, called a conversion transaction, to obtain title to just the environmental attributes associated with a specific generator. LSEs are using both bilateral and conversion transactions to improve their environmental disclosure statements.

In the PJM (Pennsylvania, New Jersey, Maryland) electricity trading region, only New Jersey has an interim RPS, but a stakeholder working group is exploring the implementation of a certificate-tracking system for the entire region. Under the New Jersey interim RPS, generation located anywhere in the PJM region qualifies, but environmental attributes cannot be unbundled from the energy. In many cases, renewable generators in PJM (and elsewhere) are selling power under long-term agreements, and the inability to unbundle the attributes prevents them from participating in the market for renewables. Furthermore, there is some confusion about the documentation necessary to support LSEs’ claims regarding the fulfillment of compliance requirements under the New Jersey interim RPS. A certificate-tracking system would both improve market liquidity and simplify compliance.

Certificates for the voluntary market
Whereas compliance markets are created in response to mandatory purchase requirements under an RPS, there are also voluntary markets for renewables. These are created by decisions taken at the individual or corporate level, and they differ from compliance markets in a number of key respects. Participants in the voluntary markets may be motivated by a desire to make their actions more sustainable or to demonstrate corporate responsibility and improve public relations. Examples include residential consumers opting for a ‘green pricing’ programme offered by their local utility, an organisation buying RECs to make a specific event ‘emissions free’ or ‘powered by renewable energy’, or a company deciding to purchase a quantity of RECs equivalent to a certain percentage of its electricity consumption.

Voluntary markets may operate in tandem with, or independently of, a compliance programme. For example, Texas has what is widely considered to be the most successful compliance programme in the US and is also home to Austin Energy which sold 250,000 MWh of ‘green’ energy to its customers in 2003, making it the most successful green pricing programme in the country.

Like the compliance markets, voluntary markets also benefit from certificate-tracking and verification systems that support and document the claims made by those buying and selling renewable energy products. Because the voluntary markets, by definition, lack an overarching regulatory system to verify the integrity of transactions, there is a need to guard against uncertainty and inaccurate representations on the part of either buyers or sellers. Of particular concern is the issue of ‘double counting’, which occurs when more than one party claims ownership of the same MWh of attributes. However, as noted above, only a handful of states are covered by certificate-tracking systems. For would-be market participants located elsewhere, documenting transactions can be challenging and time-consuming.

Looking ahead
The voluntary markets allow for more flexibility than compliance markets, but the need for certificate-tracking and verification systems to support them is equally important. A step in the right direction is the Green-e programme. Developed by the non-profit Center for Resource Solutions, Green-e standards exist for both tradable renewable certificates as well as bundled renewable energy products.

Entities such as green marketers who wish to transact in Green-e certified products pay an annual fee and submit to an annual audit of their marketing claims and transactions. In exchange, the marketers benefit from increased consumer confidence and, in recognition of their products. At present, however, there is no certificate tracking system specifically dedicated to supporting the Green-e programme. Another option to support both compliance and voluntary programmes is the creation of a registry of qualified facilities, such as Massachusetts and has done for its RPS programme.

Certificate-tracking systems are essential to support REC trading, and the ability to trade RECs independently of the underlying energy is a key factor in the development of strong markets for renewables. As outlined above, certificate-based tracking systems offer the highest level of security and transparency. At a minimum, such tracking systems should support and verify the right of certificate owners to claim ownership of the attributes tracked.

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