



ENERGY SAVINGS CERTIFICATES

Energy savings certificates (ESCs) are used in some states as a mechanism through which third parties, such as commercial and industrial companies, can help utilities comply with energy efficiency targets. This issue explains ESCs and discusses their role in compliance markets.

WHAT ARE ENERGY SAVINGS CERTIFICATES (ESCs)?

Energy savings certificates (ESCs) are tradable certificates, similar to renewable energy certificates (RECs), that typically represent one megawatt-hour (MWh) of energy savings from efficiency projects. ESCs are also known by various other names, including:

- Energy efficiency certificates or credits (EECs)
- White certificates or tradable white certificates (TWCs)
- White Tags™

Differing terminology is also used to describe ESCs in individual markets, based on specific state policy language such as:

- Connecticut – Class III Renewable Energy Credits
- Nevada – Portfolio Energy Credits
- Pennsylvania – Tier II Alternative Energy Credits

ESCs can be used in both compliance and voluntary markets. This fact sheet focuses on compliance markets

HOW ARE COMPLIANCE ESC MARKETS CREATED?

Several states—and some countries—have passed legislation that requires utilities to reduce their expected energy load growth by improving the energy efficiency of their customers. For example, a utility with expected annual sales of five million MWh may be required to “generate” one percent of this demand by creating energy savings of 50,000 MWh—equivalent to 50,000 ESCs. In the United States, many states have established efficiency targets by passing an Energy Efficiency Resource Standard (EERS) or a Renewable Electricity Standard (RES) with a provision for energy efficiency (for more about RES policies, see Issue 5 of WRI’s *Bottom Line* series). Such policies may require that a percentage of MWh or thermal sales are met with efficiency, or they may require that efficiency be used to meet a specified percentage of annual load growth.

WHERE DO EERS-TYPE PROGRAMS EXIST?

Currently 21 states have energy efficiency targets either through EERS-type programs or RES programs with efficiency targets (see Figure 1). These targets can be mandatory or voluntary, depending on the state. Several states (including Connecticut, Nevada, Pennsylvania, and New Jersey) have included provisions in their legislation that would allow third parties, such as commercial and industrial customers, to generate ESCs and sell them to utilities that are seeking to comply with energy efficiency targets. It is unclear whether all states with such provisions will implement a trading program, but Connecticut has established an active market for ESCs.

Outside of the United States, New South Wales (Australia) instituted the first EERS-type program that uses ESCs in 2003. Italy, Great Britain and France have since established ESC trading programs, and in June 2008 India released a Climate Action Plan that encouraged the creation of a national market for ESCs. In the United States, although EERS and RES programs have thus far been implemented only at the state level, there is ongoing discussion of a federal RES policy that could include efficiency targets



Figure 1. States that have implemented EERS or RES efficiency targets as of August 2008 (source: U.S. Environmental Protection Agency).

WHAT TYPES OF PROJECTS CAN GENERATE ESCS?

Guidelines for energy efficiency projects are established by each state's specific legislation. Although eligibility varies from state to state, examples of efficiency projects that can generate ESCs include:

- Commercial and industrial lighting upgrades
- Cogeneration or combined heat and power (CHP)
- Increased efficiency of heating, ventilation, and air conditioning (HVAC) systems, or improved insulation to prevent losses

HOW ARE ENERGY EFFICIENCY SAVINGS MEASURED AND VERIFIED?

The process of measuring the energy efficiency savings represented by ESCs requires establishing a baseline for energy use and/or demand before and after the implementation of an efficiency project. The approach to doing this depends on the specific market design rules and can include “deemed savings” figures (standard figures for projects where the expected savings are well understood), engineering calculations, and direct measurement. Many compliance markets require third party verification using a measurement and verification (M&V) protocol. The protocol may vary depending on policy decisions about program implementation cost, ease of compliance, and other factors. Many M&V standards are based on the International Performance Measurement and Verification Protocol (IPMVP), although some programs have chosen to create their own protocols.

HOW MUCH ARE ESCS WORTH?

ESC prices vary depending on the market. In compliance markets, the maximum price can effectively be capped by the regulatory authority by means of a non-compliance penalty. In Connecticut, for example, an alternative compliance payment (ACP) of \$31/MWh is charged to utilities that fail to meet their efficiency targets. Programs may also set a minimum price—\$10/MWh in the case of Connecticut. In July 2008, the trading price for ESCs in Connecticut was \$26.75/MWh. Over the history of the program—six quarterly trading periods—indicative prices have generally been between \$20 and \$25. In Italy, ESC average prices are around \$69/MWh (approximately €47), according to the most recent available data. Only a handful of trades have occurred in the British scheme—less than ten trades combined during the three compliance years of the market—so pricing data is unavailable. For more information on ESC trading experience, see the November 2008 issue of *Energy Efficiency* in the Additional References section.

HOW DO ESCS ENCOURAGE INVESTMENTS IN ENERGY EFFICIENCY?

ESCs can offer utilities a flexible means of achieving energy efficiency targets while rewarding commercial and industrial companies that are successful in reducing energy use with an additional revenue stream that may improve the economics of a project. Commercial and industrial companies may choose to implement eligible projects independently or seek financing from a third party, such as a utility or a clean energy fund, often in exchange for future ownership of the credits. Ownership can vary depending on the rules that govern the market. In some cases, the entity that funds the efficiency project will own the credits, while in others, the facility owner where the equipment is installed is entitled to the rights.

ARE THERE VOLUNTARY MARKETS FOR ESCS?

Some commercial and industrial companies are participating in voluntary ESC markets. In these markets, firms buy and sell credits representing energy savings from voluntary energy efficiency projects in order to demonstrate corporate commitment to environmental sustainability and enhance brand image. The voluntary market does not yet have a singular certifying body to add credibility to the market, as the “Green-e” standard does for renewable energy certificates.

ADDITIONAL REFERENCES

- WRI's US Climate Policy Resources: <http://www.wri.org/climate/usclimate>
- ACEEE's Energy Efficiency Policy Resources: <http://www.aceee.org/energy/state/policies/utpolicy.htm>
- CRS: *The Potential for Energy Savings Certificates (ESC) as a Major Tool in Greenhouse Gas Programs* www.kendall.org/publications/reports/ESC.pdf
- *Energy Efficiency*, Volume 1, Number 4 (November 2008): Mundaca, L. et al. “Market Behaviour and the To-Trade-Or-Not-To-Trade Dilemma in ‘Tradable White Certificate’ Schemes”
Pavan, M. “Tradable Energy Efficiency Certificates: The Italian Experience” <http://www.springer.com/environment/journal/12053>
- NREL: *Considerations for Emerging Markets for Energy Savings Certificates*, NREL/TP-670-44072
- State of Connecticut: *Act Concerning Energy Independence* www.cga.ct.gov/2005/ACT/PA/2005PA-00001-R00HB-07501SS1-PA.htm
- U.S. Environmental Protection Agency's State Policy Maps: http://www.epa.gov/cleanenergy/energy-programs/state-and-local/efficiency_actions.html#eeps