

Energy Saving Certificates: A Market-Based Tool for Reducing Greenhouse Gas Emissions

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Topics

- The Climate Imperative
- Nomenclature & ESC Definitions
- Uses of ESCs & Principles for Use
- Experience to Date
 - International (Italy)
 - U.S. (Connecticut)
- Technical Opportunities
- Elements for a Successful ESC Program
- New York & ESC
- Behavior



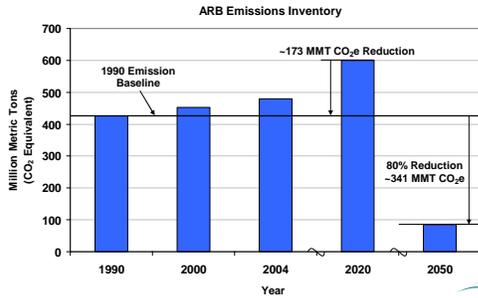
California's GHG Emissions Goals



- Reduce GHG emissions to 2000 levels by 2010
- Reduce GHG emissions to 1990 levels by 2020
- Reduce GHG emissions to 80% below 1990 levels by 2050



Magnitude of the Challenge



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Nomenclature

- White certificates
- Energy saving certificates
- Energy efficiency certificates
- White tags

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Definitions

- Energy Savings Certificate (ESC) – an instrument issued by an authorized body guaranteeing that a specified amount of energy savings has been achieved.*
- Energy Efficiency Portfolio Standard (EEPS) – a market-based mechanism that sets a specific target for energy savings to encourage more efficient generation, transmission, and use of electricity and natural gas.

* ESCs are a tool that can be used with a variety of programs

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Uses

Four primary uses for ESCs:

- To verify compliance with energy savings target (e.g., EEPS)
- As a trading device for meeting energy savings (GHG) obligation
- To demonstrate eligibility for tax incentives, subsidies or carbon offset programs
- All of the above within a larger allowance, certificate, or project credit trading regime where the ESC benefits equal or exceed their incremental cost

Principles for Use of ESC (1)

Programs that use ESCs should:

- Have transparent rules & procedures
- Information available to public
- Designed so program does not:
 - Exacerbate lost opportunities
 - Undermine special needs
 - Undermine longer payback measures

Principles for Use of ESC (2)

Programs that use ESCs should (cont.):

- Have technical provisions that ensure real, measurable, verifiable and beyond BAU (i.e., additional) energy savings
- Have a mechanism for independent verification
- Be inclusive and support environmental equity

Experience to Date

(as of March 5, 2009)

- Italy – has most extensive experience
- France – most recent program using ESCs
- New South Wales (Australia) – first program started (GHG reduction program)
- UK (EEC-2, 2005-2008) – next best experience
- Connecticut - first in U.S.; started in 2007

Approaches Used Internationally

- Fund energy savings in own customer's dwellings
- Contract with appliance retailers who increase EE goods in exchange for \$\$ from energy supplier - for residential & commercial sectors
- Use energy service companies
 - Key area of emphasis: how to get the private sector more involved in promoting energy efficiency??
 - Non-energy benefit: economic development (more jobs)

Italy (1)

- Goal: reduce energy intensity (energy use per domestic product) by 2%/year until 2015 - then 2.5%/year until 2030
- 2001: gas and electricity distribution companies with more than 100,000 customers in 2001 must achieve annual energy savings targets during a five-year period (2005-2009). Program became operational in 2005.
- Distribution companies reduce energy use by:
 - Implementing EE programs for their own customers or for customers of other distributors - electricity & gas measures
 - Jointly operate programs with ESCOs, product manufacturers, installers, or financial institutions
 - Buy ESCs from third parties

Italy (2)

- Results so far (Jan. 1, 2005 - Oct. 8, 2007)
 - Overall energy savings target for first year achieved
 - 1,100 energy saving projects
 - 60% performed by ESCOs
 - 40% by electricity and gas distributors
 - Popular measures:
 - Cogeneration, district heating improvements, and public lighting

Italy (3)

- The second year target (2006) has been reached
 - The number of certificates issued so far was almost double the targets of the first two years of implementation
 - As a result of the supply surplus, together with the lack of targets for the post-2009 period, the price of certificates dropped
 - Next steps to increase demand and provide certainty to investors:
 - Approved targets for the post-2009 period
 - Lowered the threshold that identifies obligated distributors
 - Publicized "deemed savings" for those technologies that have attracted the most attention and/or whose markets have been particularly dynamic

State Energy Efficiency Resource Standard (EERS) Activity November 2008



Eighteen states have enacted energy savings goals, or Energy Efficiency Resource Standards (EERS), through legislation and two states have a pending EERS

Connecticut - Leading State

- EE is part of state RPS (as amended in 2005)
- Electricity suppliers must procure % of electricity supply from EE & CHP:
 - 1% -- 2007
 - 2% -- 2008
 - 3% -- 2009
 - 4% -- 2010
- 2007: only for commercial /industrial facilities
- 2008: residential customers included
 - Minimum threshold of 100 kW of savings & aggregation of multiple residences allowed
 - If not ratepayer funds used, then 100% of value of credits go to the resident or its agent

Connecticut's Future

- Distribution companies and competitive suppliers seek additional energy savings:
 - Expand existing programs
 - Purchase verified energy savings from third parties (ESCOs)
 - Buy energy savings certificates directly from the state
- How do people view the success of this program so far?

Technical Opportunities

- Renewable & thermal technologies:
 - Renewable electricity generation (PV, wind, small biomass)
 - Solar water heating
 - Geothermal and air source heat pumps
 - Renewable thermal power (e.g. waste heat)
 - Smart Grids
 - Combined heat & power (cogen)
- These often fall between the cracks (Supply? Demand?)
 - But many allowed in Italy, Great Britain, and France

Elements for a Successful ESC Program

- Transparent rules & procedures
- Information available to public
- M&V system that ensures real, measurable, verifiable and additional energy savings
- Independent third-party verification system
- A process for issuing & tracking certificates
- A system for detecting noncompliance including significant penalties
- Does Connecticut have a successful program?

New York Proposal

- NYDPS - Staff Preliminary Proposal for EE Program Design and Delivery (August 28, 2007)
 - "Independent EE program providers can play a significant role in achieving the NY Energy Portfolio Standard (EPS) goals"
 - "Creating a third-party 'white tags' market that taps private-sector investment more effectively than traditional program designs should also be considered."
- 2008: NYDPS received proposals from independent program providers (not NYSERDA or utility)
 - No formal action taken; still under discussion wrt EE Performance Standard (EEPS)

Behavior

- What are the assumptions about behavior that program managers use when designing and implementing the programs?
 - How do people use energy equipment?
 - How do people make decisions to invest in energy efficiency?
- How do home displays or dashboards affect behavior in the home, offices, dormitories, etc.?
- What energy behaviors and lifestyles should be promoted?

CPUC-Funded White Papers on Behavior and Energy Consumption

1. Energy efficiency potential studies & behavior*
2. Measurement & evaluation of energy savings & non-energy impacts from energy efficiency behaviors *
3. Process evaluation's insights on energy efficiency program implementation *
4. **Behavioral assumptions underlying energy efficiency nonres. programs ****
5. Behavioral assumptions underlying energy efficiency residential programs *
6. Market segmentation & energy efficiency program design **
7. Experimental design for energy efficiency programs *
8. Motivating policymakers, program administrators, & program implementers to pursue behavioral change strategies ***
9. Encouraging greater innovation in the production of energy-efficient technologies & services ***

* Final report being prepared

** Final report, project summary, & presentation available at: <http://ciee.ucop.edu/energyeff/behavior.html>

*** Draft report being prepared or being reviewed

The Potential of Energy Saving Certificates (ESC) as a Major Tool in Greenhouse Gas Reduction Programs



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CRS report:

<http://www.kendall.org/publications/reports/ESC.pdf>

Time for Questions