

Capturing Carbon Cost in a Load-based Trading System

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Electricity Markets

- LSE power mix:
 - Utility - owned generators (owned assets)
 - Facility specific contracts
 - Purchased power with no specific facility
 - Real-time/spot market purchases
- Purchased power plays important role in ensuring system reliability and must be maintained
- Real-time conditions drive generator dispatch
 - To be effective, GHG regulations must affect generator dispatch – not just contracts

Tradable Emission Attribute Certificates

- Emission attributes of generators used as tracking mechanism rather than contracts
 - Certificates reflect *actual* emission rate and output of generator
- LSEs must still surrender allowances equal to emissions
 - Purchase of low-emission certificates reduces quantity of allowances that it must surrender
- Tracking capacity in existing and planned systems, e.g. NEPOOL, PJM GATS, WREGIS

Implementation of TEAC Model

- Load not covered by certificates assigned a high default emission rate (e.g. 2250 lbs/MWH)
 - Creates incentive for purchase of certificates
 - Ensures that generators with lower emission rate can capture full value of avoided carbon
- Certificates issued and tracked by WREGIS for power delivered into California
 - Emission rate and metered MWH
 - NERC E-tags to verify delivery into California
- Power sector trades allowances with other sectors
 - TEACs are traded only within power sector

Example

Default emission rate: 2,250lbs CO₂/MWH

Load-served: 100 MWH

Starting obligation: 225,000 lbs
(100 MWH * 2,250 lbs/MWH)

TEACs purchased and surrendered:

- 50 at 1100lbs/MWH
- 20 at 0 lbs/MWH

Final obligation: 122,500 lbs
(50 MWH * 1100 lbs/MWH) + (20 MWH * 0 lbs/MWH)
+ (30 MWH * 2250 lbs/MWH)

Advantages of TEAC Model

- Requires no tracking of power flows from generator to LSE
 - Capacity to track already built in WREGIS
- More effective because it captures carbon value in bid prices
 - Less GHG-intensive generators get additional revenue stream from certificates
 - Allows cleaner generators to dispatch at lower market prices
 - Encourages shift to cleaner generation

TEAC Advantages

- Eliminates contract-shuffling problem
- Does not require changes in power procurement practices of LSEs
- Will reduce wholesale electricity prices because TEAC revenue reduces variable cost
 - Separately values the emission attribute

Thank you