Carbon Budgets and Efficiency Resources – Emerging Opportunities

Richard Cowart
ACEEE Berkeley, CA
September 26, 2005
WE HAVE A NEW ENERGY BILL.
The Northeast Regional Greenhouse Gas Initiative (RGGI)

- 9 states actively engaged
- 2 states (PA, MD) are observing
- Begun 2003, Model Rule expected 2005
- State-by-state adoption 2006
- Launch 2009
Why electricity matters
New gas does not displace old coal: Both are rising

*Figure 4. Electricity generation by fuel, 1970-2020 (billion kilowatthours)*
RGGI Cumulative Capacity Additions

- 2x Efficiency
Efficiency

2006 2012 2024

GW

Reference  Reference  -2x Efficiency  Unlimited Efficiency
Reference  Reference  -2x Efficiency  Unlimited Efficiency
Reference  Reference  -2x Efficiency  Unlimited Efficiency

Other Renewables
Wind
Gas
Nuclear
Wrong assumptions

1. Just manage pollution, price increases and demand elasticity will deliver the efficiency
2. Generators lose money under carbon cap and trade, so give them allowances for free
3. Smokestack cap and trade (eg Acid Rain model) is best model for carbon
Generator allocation and the generator windfall problem

Theoretical representation of “windfall revenues”
A fossil unit on the margin increases the market clearing price (i.e., the price paid to all generating units dispatched) to reflect the cost of CO₂ compliance.
Carbon reduction is big business

Venus
- NO$_X$ $1.7$ Billion

Earth
- SO$_2$ $2.7$ Billion

Jupiter
- Carbon 34% Reduction (Kyoto) Economy Wide $450$ Billion

Neptune
- Carbon 6% Reduction in Electricity $15$-$24$ Billion
Emissions from Coal Generation Decreased by 1/3 While Coal Use Tripled

Source: U.S. EPA and Energy Information Administration.
West Coast approach: Load-Side Cap & Trade

Basic rule: LSEs must have credits to cover the emissions associated with their sales to retail customers? Steps:

1. Measure historic emissions associated with electricity serving the state (or region) –
   - All sources, wherever located -- both in-state and imports
2. Set “hard” emissions caps to lower impact in stages
3. Distribute allowances (“carbon credits”) to LSEs
4. LSEs spend credits as needed to match their portfolio of sources
   - can sell excess credits from RE & EE choices
5. Gains: (a) no leakage problem (b) no generator windfall (c) EE and RE earn carbon value automatically
East Coast approach: Consumer Allocation

- Allocate 50% or more of initial credits to consumer representatives (e.g., distribution utilities)
  - RGGI minimum 20% - Regional average higher
- Generators need to purchase allowances, recycling the windfall revenue BACK to consumers
- PUCs supervise use of the $$, focus on investments that lower carbon (EE & RE)
- Result: lower program cost, greater efficiency
Can We Rebuild Right?
Tragic loss –
also a lost opportunity?
For more information...

“Another Option for Power Sector Carbon Cap and Trade Systems – Allocating to Load”

“Addressing Leakage in a Cap-and-Trade System: Treating Imports as a Source”


Email questions to RAPCowart@aol.com