

CO2 Allowance Allocation in Regional Greenhouse Gas Initiative

RGGI Stakeholder Workshop on
Allowance Allocation
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Mark Younger
Vice President
Slater Consulting

Electricity Sector Background

- ❑ Electricity Sector is among the most complicated industrial sectors with load demand fluctuations on an hourly, daily, and seasonal basis.
- ❑ Reliability requires nearly instantaneous (six second interval) matching of supply and demand.
- ❑ System reliability requires the balancing of generation resources, the electric transmission system, and gas transmission system simultaneously.
- ❑ Both Electric and Gas Transmission systems have specific ratings which can not be exceeded without threatening system reliability.
- ❑ Generation is limited by the physical parameters of the unit including minimum run time, start-up time, minimum down time, and rate of unit ramp capability.

Allocation of CO2 Allowances

- ❑ Past environmental regulations have allocated emission allowances largely by providing them to generation sources based upon historic emission rates.
- ❑ RGGI is debating the issue of the best method of allocating CO2 emission allowances.
- ❑ Some parties have theorized that allocation directly to the emitting resource results in a windfall revenue for the generator.
- ❑ The theory is that increased electricity revenues with CO2 allowance price included will meet or exceed the cost of purchasing allowances.
- ❑ The studies of the issue that have been performed have generally used a high level scenario model of the electric system.

Significance of Unit Physical Parameters

- ❑ A generating unit's fuel conversion rate ("heat rate") is generally highest when it is operating at its minimum generating level.
- ❑ A generating unit's incremental heat rate is generally 10% or more below the unit's average heat rate.
- ❑ Unit start up time, minimum run time, and shut down time limit the ability of the unit to shut down whenever market clearing prices decline.
- ❑ Units frequently must be run at low levels so that they are available to provide reserves and load following capability.
- ❑ Emission rates vary by fuel and by resource.
- ❑ Market clearing prices are set based on the incremental cost of the marginal generator.

Significance of Transmission System

- ❑ A major focus of the electric system is operating units so as to avoid overloading the transmission system.
- ❑ Congestion on the transmission system effectively breaks the larger ISO markets into smaller parts with their own clearing prices
 - Persistent transmission limits frequently result in Western New York generators being unable to serve higher price markets in the Lower Hudson Valley, New York City, and Long Island.
 - A Western New York generator is likely to have a clearing price based upon an efficient combined cycle unit utilizing natural gas.

Significance of Energy Contracts

- ❑ Numerous market participants in the deregulated markets sell part or all of a unit's energy output under physical or financial contracts.
- ❑ Resources selling under contracts will not realize any increased market revenue to help recover their allowance costs for any energy output already contracted.
- ❑ A CO₂ emitting resource without direct allowance allocation will experience reduced operating revenues; and possibly, the inability to cover total fixed costs of operation.

Generation Unit Financing Considerations

- ❑ Under deregulation, generation assets were sold and financed in individual packages
- ❑ Generation owners have individual portfolios of resources, not slices of the generation system which is how the analysis of allocation issue to date has represented the units
- ❑ A failure to directly allocate sufficient allowances has the potential to make individual packages uneconomic, creating a series of individual financing failures thereby impacting financial industry confidence, increasing future capital costs, and affecting asset bond ratings and risk profiles

Other Potential Energy Market Concerns

- ❑ The potential shutdown of higher CO2 emitting resources will result in the installed capacity market clearing at higher prices
- ❑ The potential shutdown of higher CO2 emitting resources will also result in higher energy market prices because the retiring units generally had lower variable operating costs
- ❑ Change in generation portfolio will result in greater dependence on natural gas and intermittent resources
- ❑ Over dependence on a single fuel for electric generation will reduce the reliability of the electric system
- ❑ Significant increases in intermittent generation will result in more fossil fueled units being run at low capacity levels to assure reserves are available to address intermittent energy output variability