



Regional Greenhouse Gas Initiative

An Initiative of the Northeast & Mid-Atlantic States of the U.S.

Regional Greenhouse Gas Initiative (RGGI) Allocation Approach:

Achieving Least-Cost Reductions through a Consumer Allocation
Framework

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What is RGGI?

- 10-state cap-and-trade program addressing power plant CO₂ emissions (New England states, plus NY, NJ, DE, MD)
- Regulates approximately 225 electric generation facilities in region
 - Representing ~ 95% of regional CO₂ emissions from electric generation
- CO₂ allowance represents an authorization to emit 1 ton of CO₂ (in total, regional “emissions budget” or cap)
- Allocation of CO₂ allowances primarily through auction
 - Raise significant proceeds to accelerate market deployment of energy efficiency and clean energy technologies
 - Achieve emissions reductions at lower cost by taking both supply-side (electric generation) and end-use focus (electricity demand reduction)

RGGI Program Components

- Start date of January 1, 2009
- Covers fossil fuel-fired electric generating units 25 megawatts and larger
- Two-phase cap: stabilize emissions through 2014 (188 million tons annually); reduce 10% by 2018 relative to initial cap
- Three-year compliance period
- Allowance banking allowed without limitation
- Allocations: minimum 25% allocation to Consumer Benefit and/or Strategic Energy Purpose (Governors' MOU agreement)
 - CO₂ allowances allocated at discretion of each state
 - More than 85% of regional CO₂ emissions budget auctioned initially, increasing to more than 90%
- Offsets allowed with limitations; requirements prescribed in rule

RGGI Consumer Allocation Approach

- Allowance auction and use of proceeds to accelerate deployment of end-use energy efficiency and mitigate ratepayer impacts
- Allows cap-and-trade program that regulates power plant CO₂ emissions to take an integrated approach that also addresses electricity end-use
 - Emissions a function of both generation portfolio and electricity demand
 - Key to achieving emissions reductions at least cost, as end-use efficiency is least cost abatement opportunity
- End-use energy efficiency avoids CO₂ emissions
 - lower demand for CO₂ allowances; lower CO₂ allowance prices; lower ratepayer impacts
- End-use energy efficiency improvements provide additional ratepayer benefits
 - Bill savings; reduction in peak electricity prices; deferment of T&D investment; increased system reliability; creation of green jobs; market transformation effects

Allocation Approach - Market Rationale

- RGGI program implemented in deregulated wholesale electricity market
- CO₂ compliance costs of marginal unit incorporated into wholesale market clearing price, regardless of allocation method (free allocation or auction)
 - CO₂ allowances analogous to a marginal O&M cost
- Electric generators expend allowances when generating electricity, resulting in forgone revenue that could be received through sale of allowances (“opportunity cost”)
- As a result, opportunity cost of CO₂ allowances (based on current market price of allowances and unit CO₂ emissions rate) factored into generator bids into the wholesale market
 - Represented as \$/MWh CO₂ cost adder

Allocation Approach - Market Rationale

- Wholesale electricity price increase based on market price of CO₂ allowances and CO₂ emissions rate of marginal unit
 - Result is a \$/MWh CO₂ adder
- Generation units recover a portion or all of CO₂ allowance opportunity costs due to market pass-through
 - If gas on the margin, coal unit recovers ~ 50% allowance opportunity cost
 - If coal on the margin, gas unit sees an increase in net revenue (increase in electricity clearing price exceeds allowance opportunity cost)
 - All non-emitting units see an increase in net revenue
- Important to evaluate financial impact to regulated community on a portfolio basis given these effects
 - Potential for increase in net revenue for generation sector based on allocation treatment (e.g., EU ETS Phase I)

Allocation Approach - Abatement Cost & Ratepayer Impact Rationale

Old logic:

- Allocation approach doesn't matter – simply an asset distribution exercise (read: political)
 - Current federal cap-and-trade proposal follows same logic to significant degree

Old logic based on old context:

- Prior cap-and-trade programs (e.g., Acid Rain, NO_x Budget) preceded full advent of competitive wholesale electricity markets
- Dollar per megawatt-hour compliance costs modest (e.g., NO_x Budget < \$1/MWh equivalent)
- “End-of stack” controls commercialized
 - Expected abatement costs based on cost of existing control technology
 - Allocation method not expected to impact marginal cost of abatement

Allocation Approach - Abatement & Ratepayer Rationale

New logic:

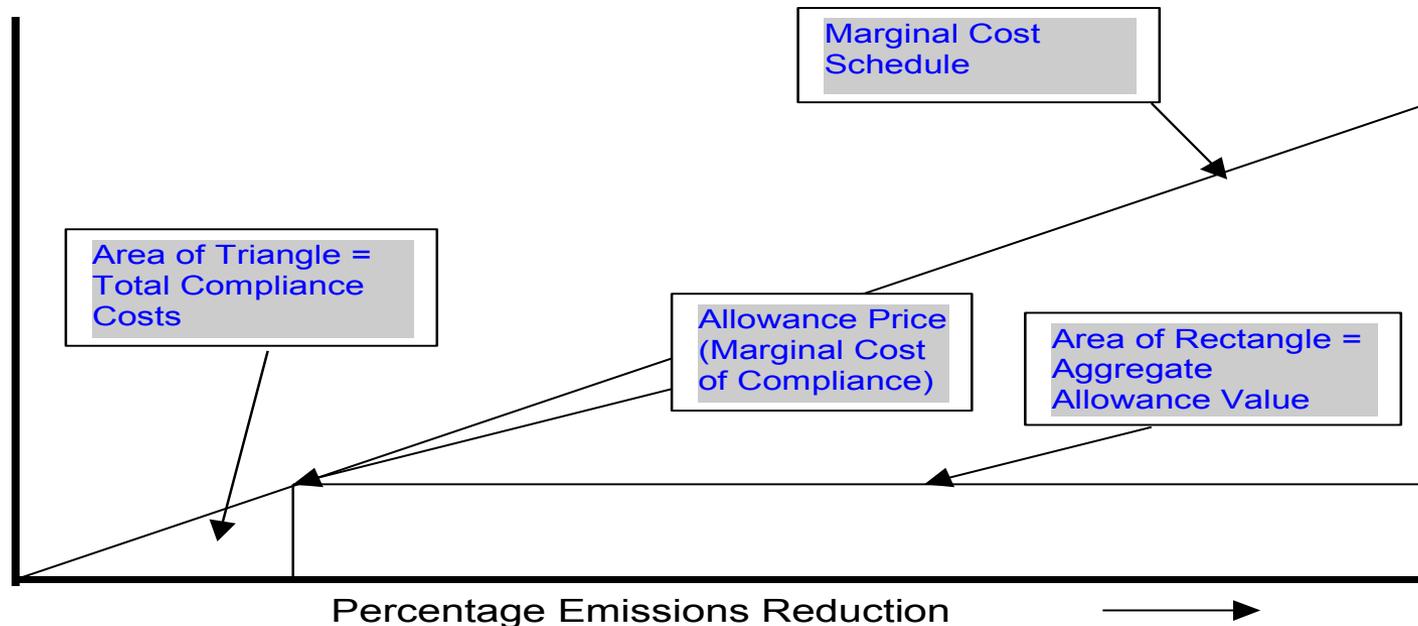
- Allocation approach **does** matter - critical to economic success of cap and-trade program and mitigation of ratepayer impacts

New logic based on new context:

- Cap-and-trade programs (in many regions) implemented in competitive wholesale electricity markets
- Dollar per megawatt-hour compliance costs expected to be significant (e.g., \$3/MWh equivalent and up, dependent on cap stringency and program design)
 - Given greater compliance costs, distribution of allowance value matters
- “End-of-stack” controls in developmental or early commercialization stage
 - Allocation method impacts marginal cost of abatement if directed to electricity end-use (RGGI economic impact projections sensitive to electricity demand)
 - End-use energy efficiency key to moderating allowance price in absence of fully commercialized “end-of-stack” controls

Allocation Approach - Abatement & Ratepayer Rationale

- Aggregate value of emissions budget and value of budget relative to compliance costs significantly larger for carbon cap-and-trade
 - The value of 2002 OTC NO_x Budget Program emissions budget for states now participating in RGGI was \$92 million, based on an emissions budget of 123 thousand tons and assuming an allowance price of \$750/ton. RGGI emissions budget projected to have a value of \$560 million annually through 2014, based on an emissions budget of 188 million tons and an allowance price of \$3/ton.



Key Allocation Issues for Consideration

- Integrated allocation approach needed to ensure cap-and-trade program success
 - Impact of carbon market price signals on business and consumer behavior may be subject to market barriers and market failures
 - Existing market barriers to greater end-use efficiency (e.g., high implicit consumer discount rates, spilt incentives, capital rationing by business)
 - Inelasticity of electricity demand, vehicle miles traveled
- Carbon price signal alone unlikely to be sufficient
 - Market transformation approaches in complement with price signals key to realizing low-cost emissions reductions and moderating allowance prices
- Align allocation approach with achievement of least-cost reductions
 - Direct significant portion of allowance value to activities that avoid emissions in capped sector
- Allowance value is larger than in past programs, increasing importance of equity issues
 - Free allocation to sectors that can pass through opportunity costs to consumers results in transfer of wealth from ratepayers to regulated industry



For more information:

<http://www.rggi.org>

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