



RAP™

Energy solutions  
for a changing world

# The RGGI System and Carbon Market Design

National Capital Area, Association for Energy Economics  
20<sup>th</sup> Annual Conference

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The Regulatory Assistance Project (RAP)™

# Emissions Trading Around the World

FIGURE 0.1 Emissions Trading Around the World



Source: ICAP 2016.

# Regional Greenhouse Gas Initiative - RGGI

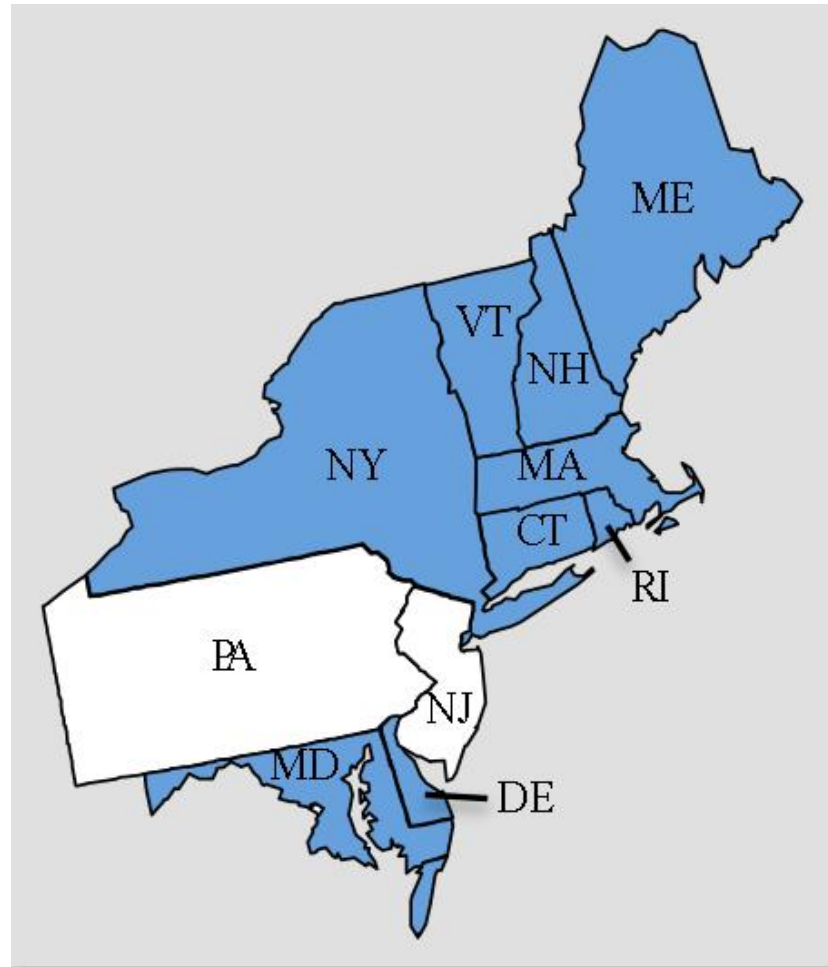


Image from CNY Energy Challenge

# Regional Greenhouse Gas Initiative - RGGI

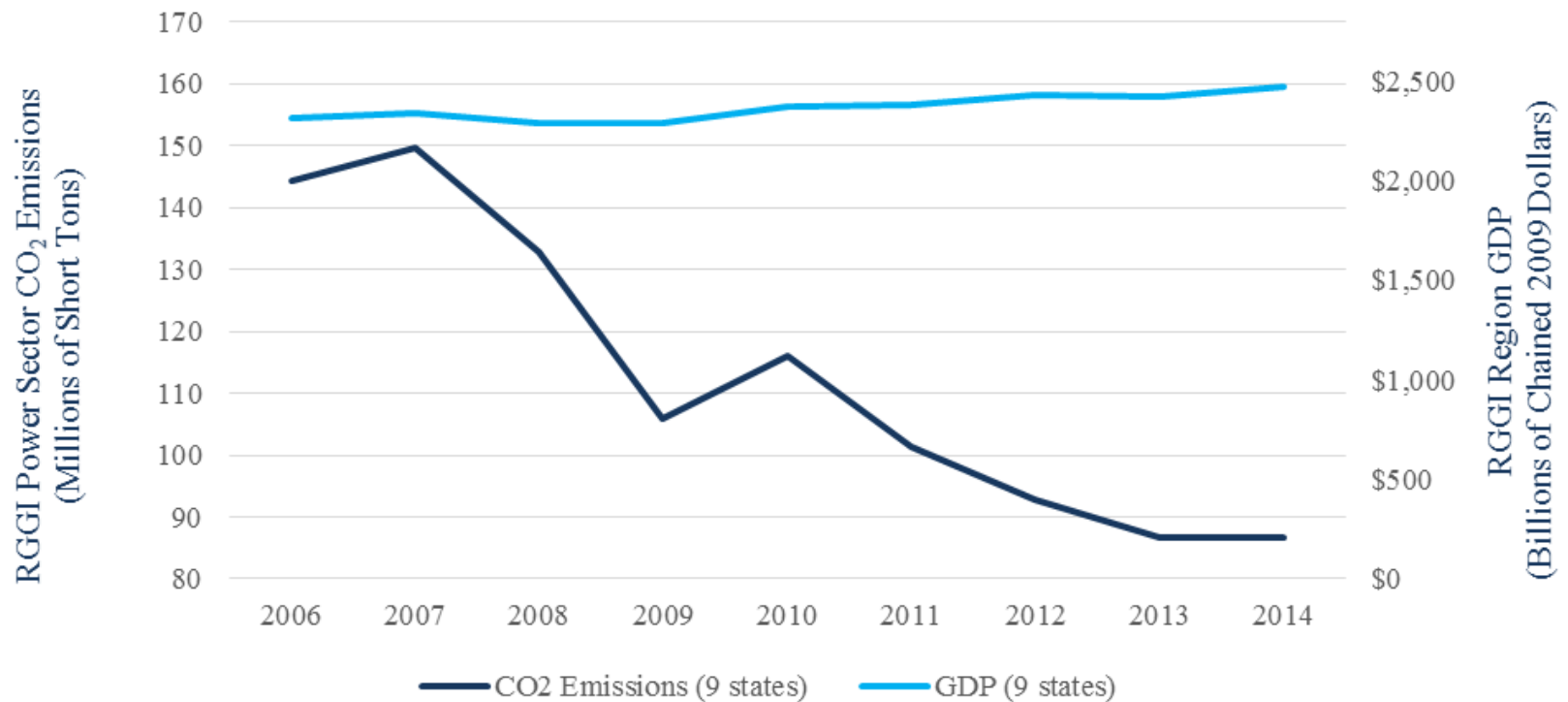
- Northeast and Mid-Atlantic states cap and reduce carbon dioxide emissions from the power sector
  - Power plants 25 MW or greater to hold one CO<sub>2</sub> allowance for each ton of CO<sub>2</sub>
  - Three-year control periods starting with 2009-2011, currently in third control period (2015-2017)
  - 2015 first year of interim compliance
- CO<sub>2</sub> Cap: 86.5 million short tons in 2016, and declines 2.5 percent each year until 2020
  - Two interim adjustments to the cap (2014-2020) to account for banked allowances
  - 2016 RGGI adjusted cap is 64.6 million short tons
  - Cost containment reserve (CCR) of 10 million allowances

# RGGI Mechanics in Brief

- Quarterly regional CO<sub>2</sub> allowance auctions
  - CO<sub>2</sub> allowances are issued by each state
  - Compliance occurs at the state level
  - One tradable CO<sub>2</sub> allowance market - CO<sub>2</sub> allowances are fungible across the multi-state region
  - CO<sub>2</sub> allowances issued by any participating state can be used for compliance in any of the participating states
- Auction proceeds invested by the states
- Centralized allowance tracking and emissions tracking platform (RGGI COATS)
  - Market monitoring of CO<sub>2</sub> allowance market
  - Limited use (3.3%) of offsets

# RGGI States: Pollution Reductions with Economic Growth

## RGGI Power Sector Pollution Reductions



# RGGI Experience: Environmental Benefits



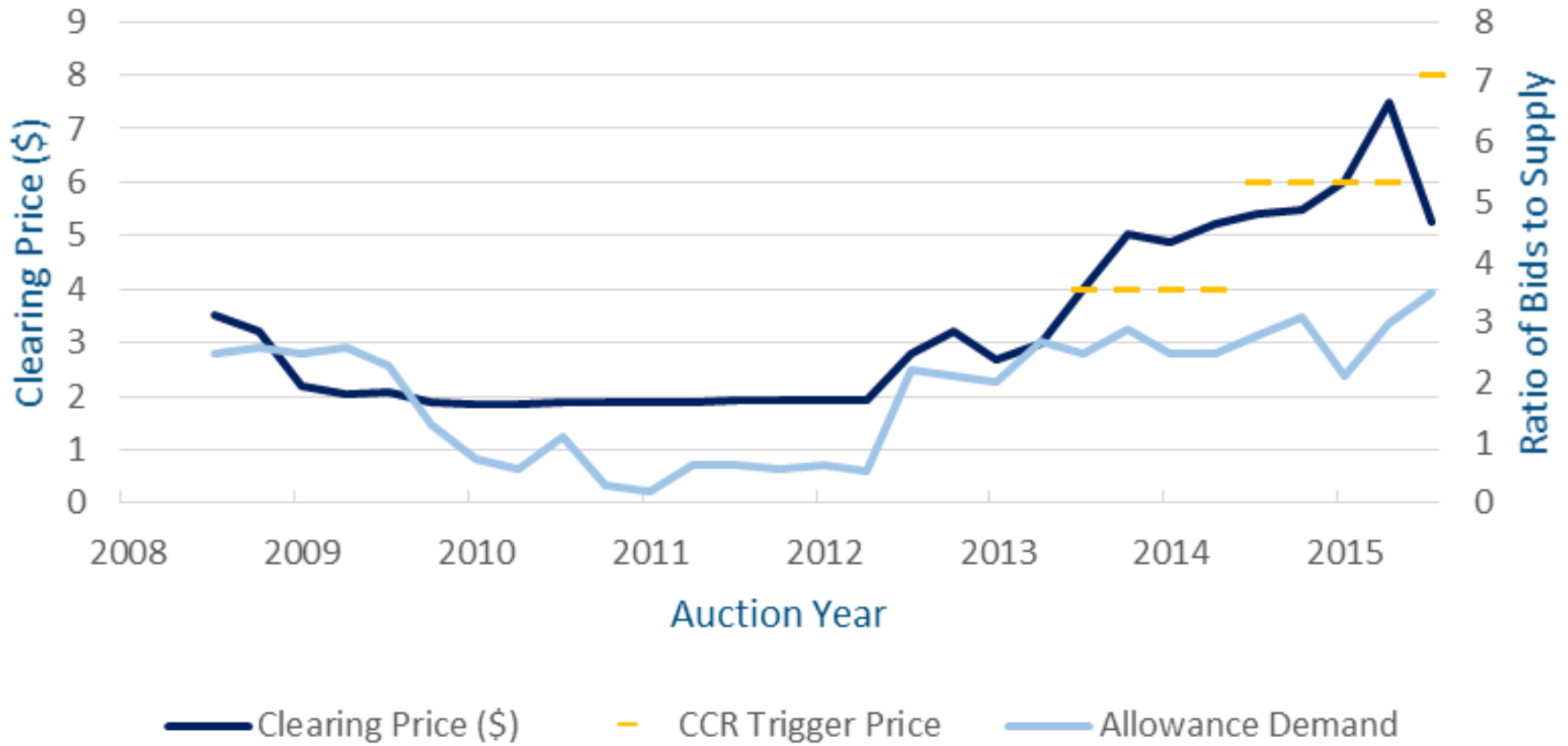
- Reinvestment of auction proceeds helps reduce GHG and traditional Clean Air Act pollutant emissions
  - RGGI power sector CO<sub>2</sub> emissions declined over 45 percent since 2005
- By 2020 RGGI power sector emissions projected 50 percent lower than 2005
- RGGI cap helps drive transition to cleaner fuel and energy sources
  - In 2014, almost half of total power generation in the RGGI states was clean or renewable

# RGGI's Market-Based System

- CO<sub>2</sub> allowance auctions are open to all prequalified bidders
- After seven years, no evidence of anti-competitive conduct
- 31 quarterly auctions held since September 2008
  - Total of 815 million CO<sub>2</sub> allowances sold
- CO<sub>2</sub> allowance auction clearing prices have ranged from \$1.86 to \$7.50.



# RGGI Auction Clearing Prices Summary

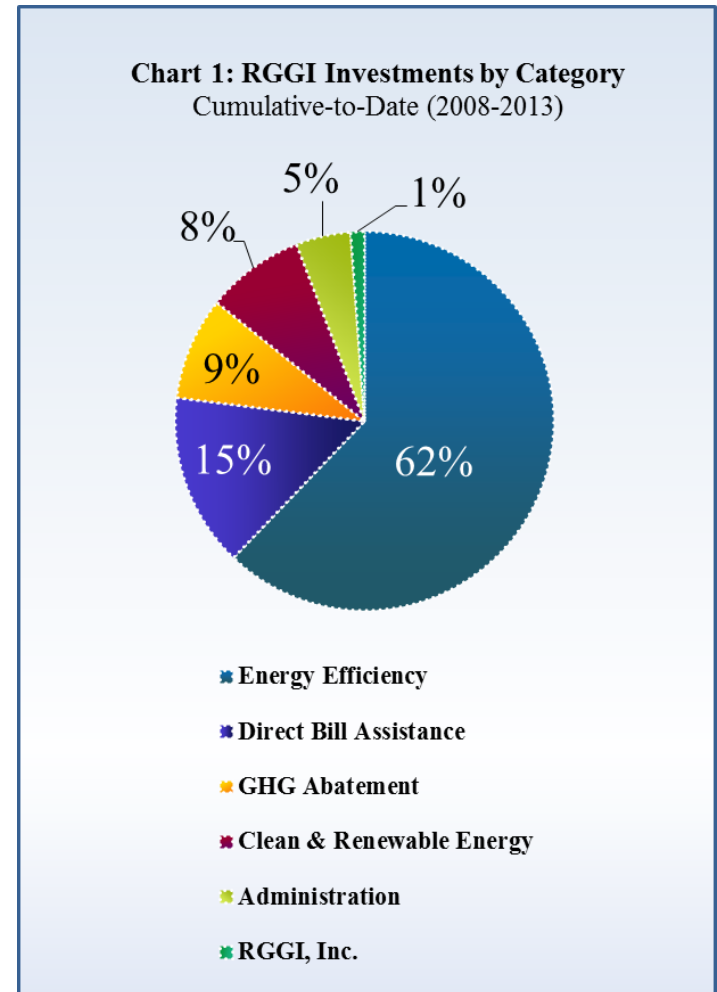


# RGGI Addition: Market Monitor

- RGGI retains Potomac Economics as an independent market monitor (MM)
- MM issues reports on each auction with aggregate data on the auction results
- MM reports quarterly on the secondary market
- MM issues annual report on the RGGI allowance market
- Consistently found no evidence of market manipulation or collusion

# RGGI's Market-Based System

- RGGI states have distributed approximately 90% of allowances by auction
- More than \$2.4 billion in auction proceeds through 31 auctions
- Invested more than \$1 billion of auction proceeds in range of energy efficiency, clean and renewable energy, direct bill assistance, GHG abatement programs



# RGGI Experience: Consumer Benefits

- More than 3.7 million households and 17,800 businesses are participating in RGGI proceeds-funded programs
- RGGI proceeds invested in energy efficiency, clean and renewable energy, energy bill assistance and GHG abatement through 2013 returning \$2.9 billion in lifetime bill savings to consumers



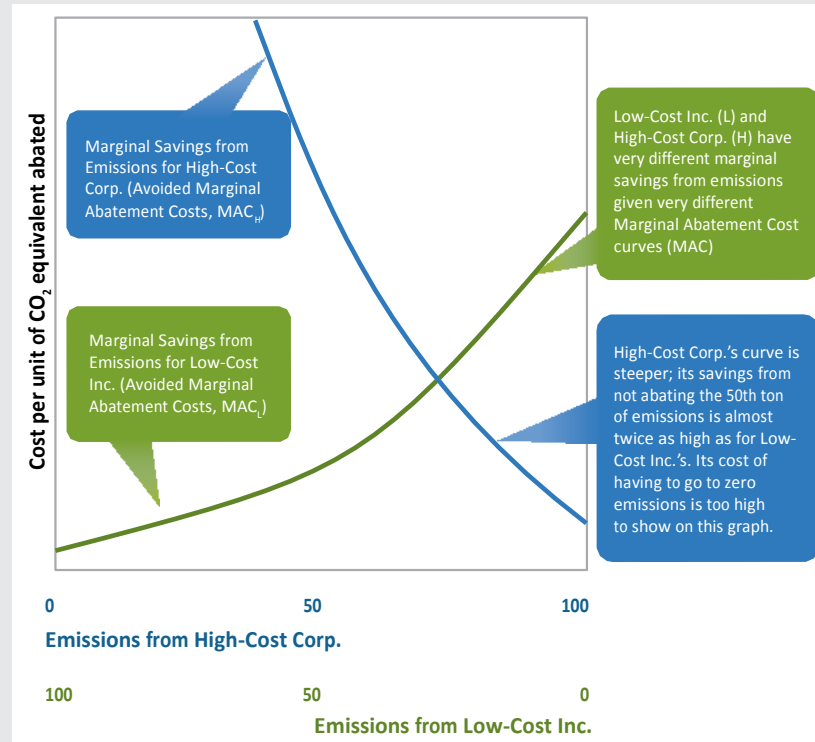
# RGGI Experience: Economic Benefits



- An independent 2015 report by the consulting firm Analysis Group found that RGGI's second three years are creating:
  - \$1.3 billion in net economic benefit
  - 14,200 additional job-years
- In addition to benefits from RGGI's first three years:
  - \$1.6 billion in net economic benefit
  - 16,000 additional job-years
- Benefits in each state – but more with higher energy efficiency investments

# Firms with Different Abatement Costs

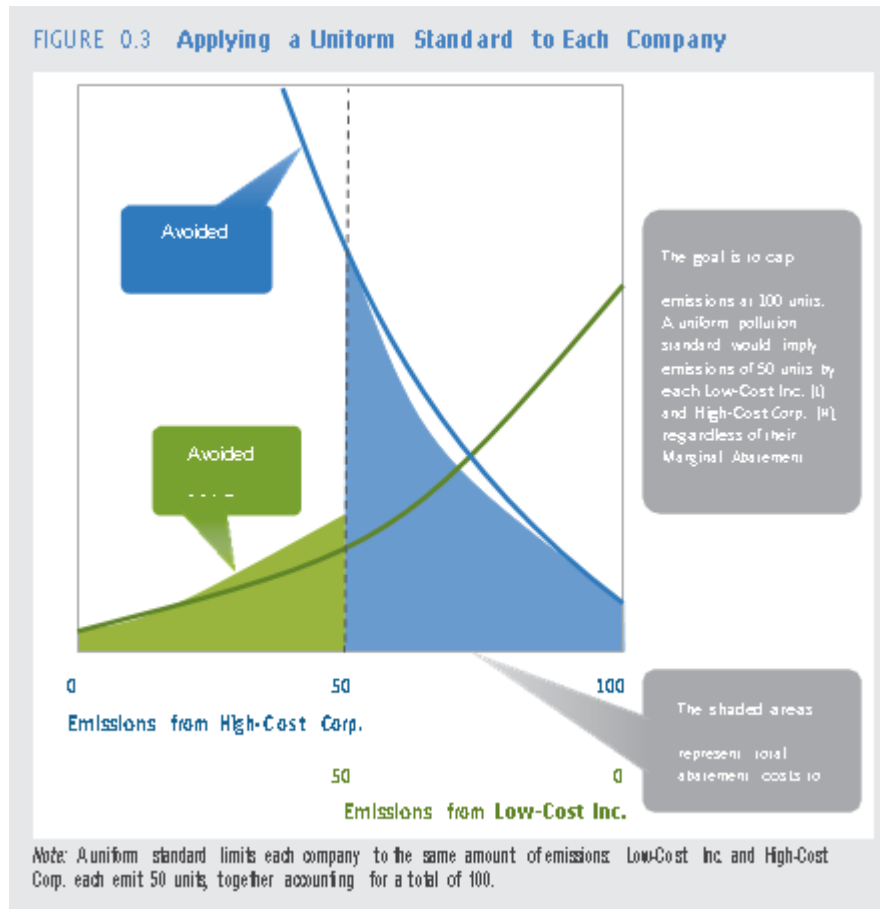
FIGURE 0.2 Example of Two Firms with Different Abatement Costs



Note: Two firms with different "abatement" (emissions reduction) costs: High-Cost Corp., with emissions shown from left to right, and hence abatement from baseline emissions in reverse, has a steeper incremental or marginal abatement cost curve and thus steeper marginal savings from emissions; Low-Cost Inc., with emissions plotted from right to left, has a flatter curve. Note that the total emissions are the same (and equal to 100) at every point along the horizontal axis; what changes is how those emissions are allocated between the two firms.

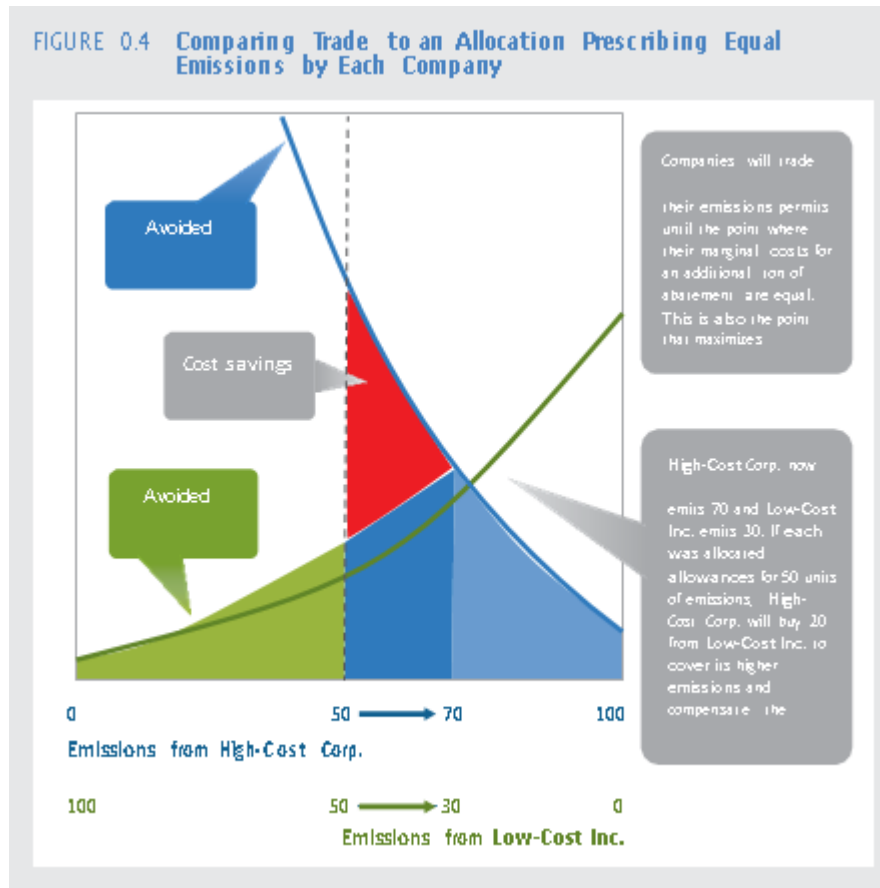
International Bank for Reconstruction and Develop., The World Bank, PMR, ICAP, Emissions Trading in Practice, p. 26

# Applying a Uniform Standard to Each Firm



International Bank for Reconstruction and Development, The World Bank, PMR, ICAP, Emissions Trading in Practice, p. 27

# Comparing Trades to Prescribed Allocations to Each Company



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## About RAP

The Regulatory Assistance Project (RAP) is a global, non-profit team of experts that focuses on the long-term economic and environmental sustainability of the power sector. RAP has deep expertise in regulatory and market policies that:

- Promote economic efficiency
- Protect the environment
- Ensure system reliability
- Allocate system benefits fairly among all consumers

Learn more about RAP at [www.raonline.org](http://www.raonline.org)

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