

Allocation in the Electricity Sector: Efficiency and Distributional Effects

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November 16, 2007
Congressional Budget Office
DIRECTOR'S CONFERENCE ON CLIMATE CHANGE
2168 Rayburn House Office Building, Washington DC

What is academic advice on the distribution of emission allowances?

- Economics literature broadly finds there are significant efficiency advantages to auctioning emission allowances.

Why give any allowances away for free?

1. Compensation

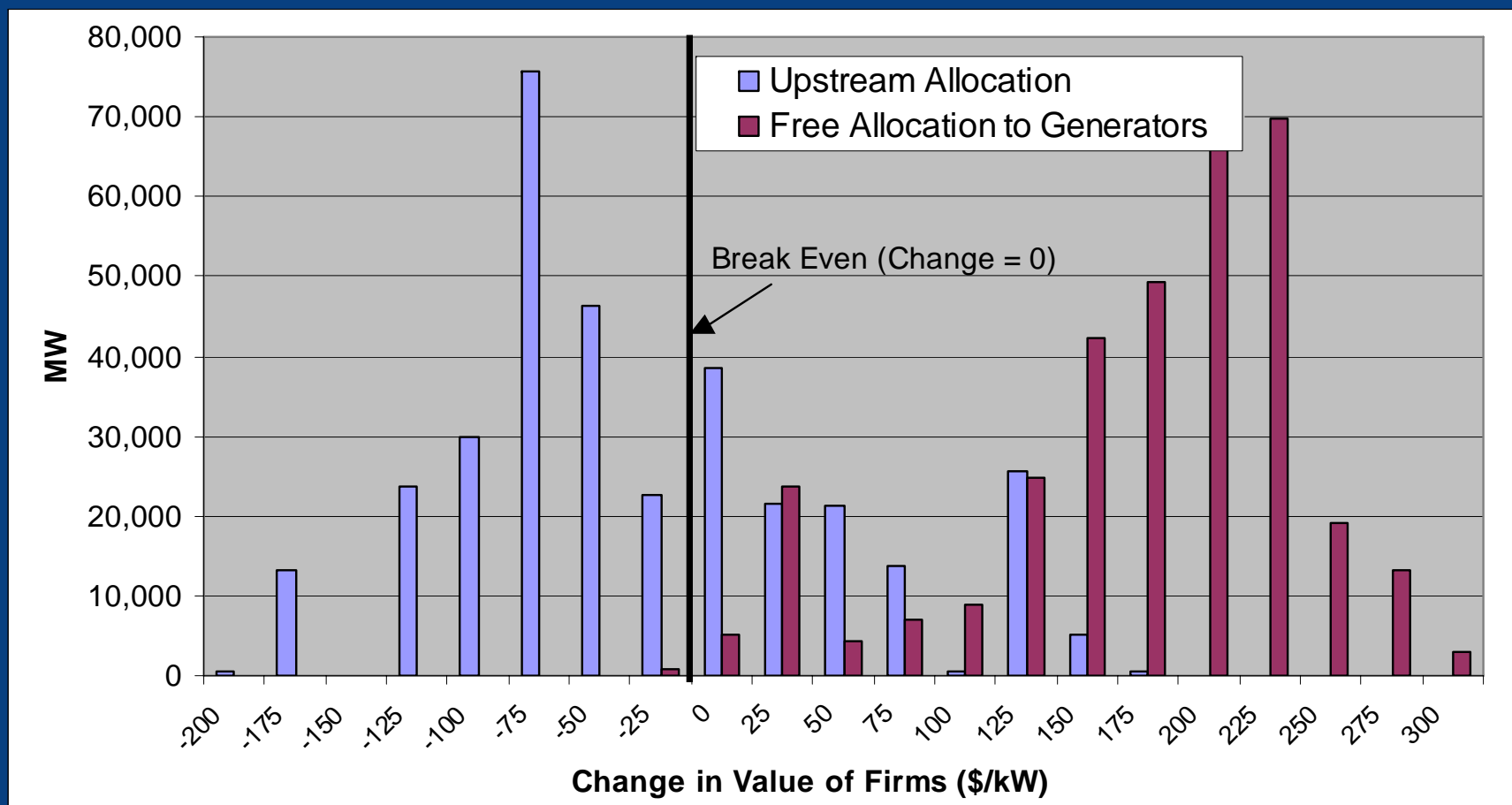
- But 100% free allocation can dramatically over-compensate affected firms at expense of consumers raising concerns about **equity** (“*windfall profits*”).
- Consumers bear 8 times the cost born by producers.

2. Promote Technology

3. Protect Competition

- All these goals could also be achieved with auction revenue.

Distribution of Costs to Electricity Generating Firms in Competitive Regions under Original NCEP/Bingaman Proposal



NPV of CO₂ Emission Allowances = \$141 billion

Losses at Industry Level (-\$9b)

Losing Facilities (-\$50b)

Winning Facilities (+\$41b)

Losing Firms (-\$14b)

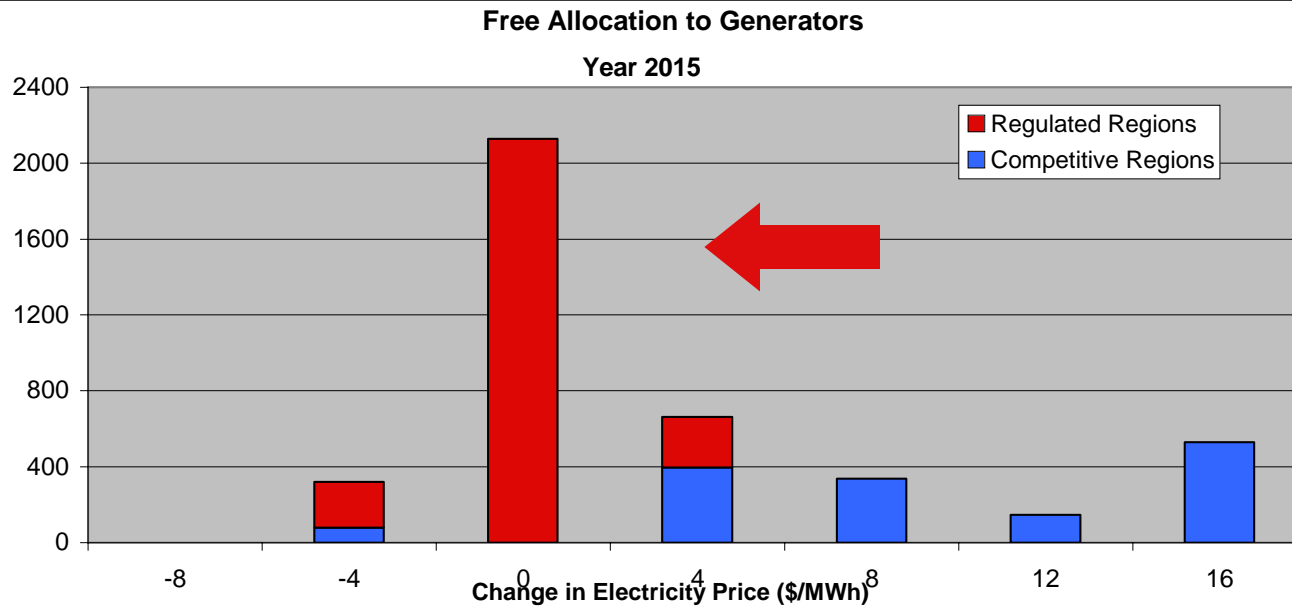
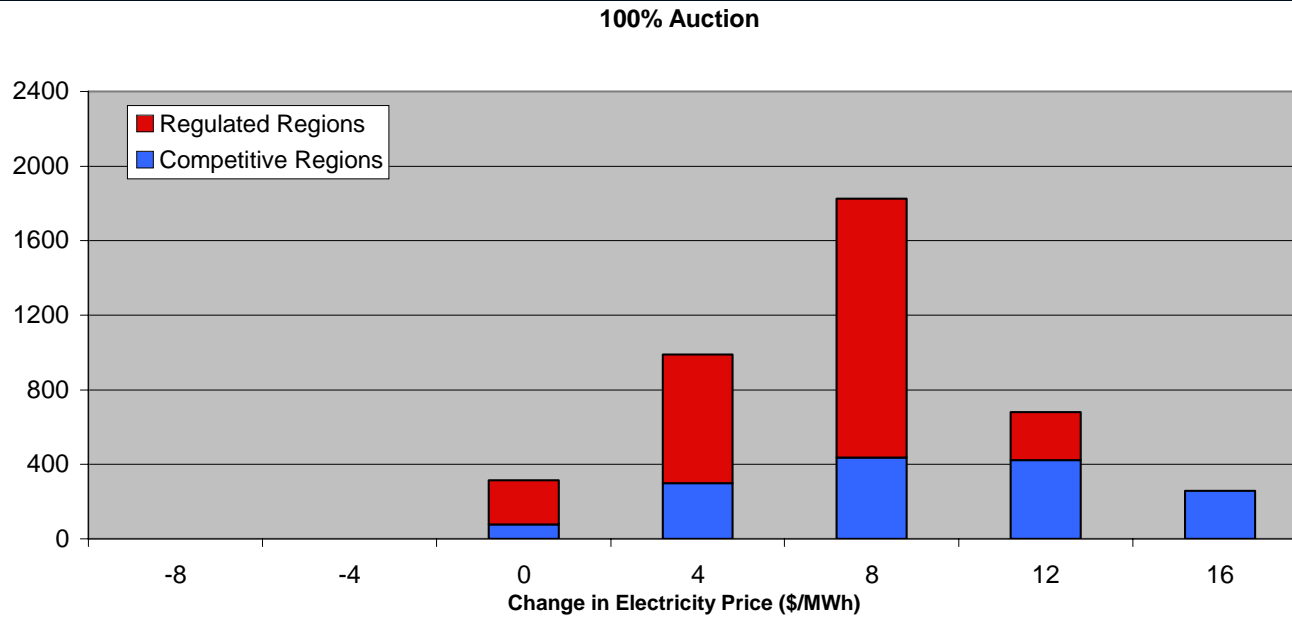
Breakeven

Winning Firms (+\$5b)



Change in Market Value of Individual Assets (billion dollars)

McCain-Lieberman Example: Electricity Price Effects of Allowance Allocation Depends on Electricity Regulation

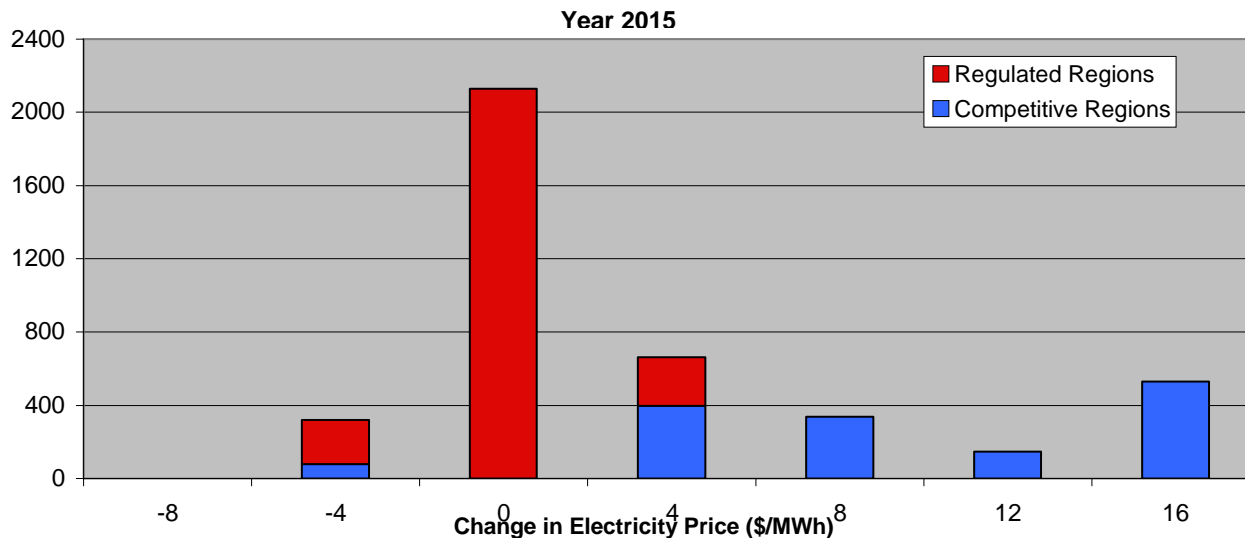


Auction

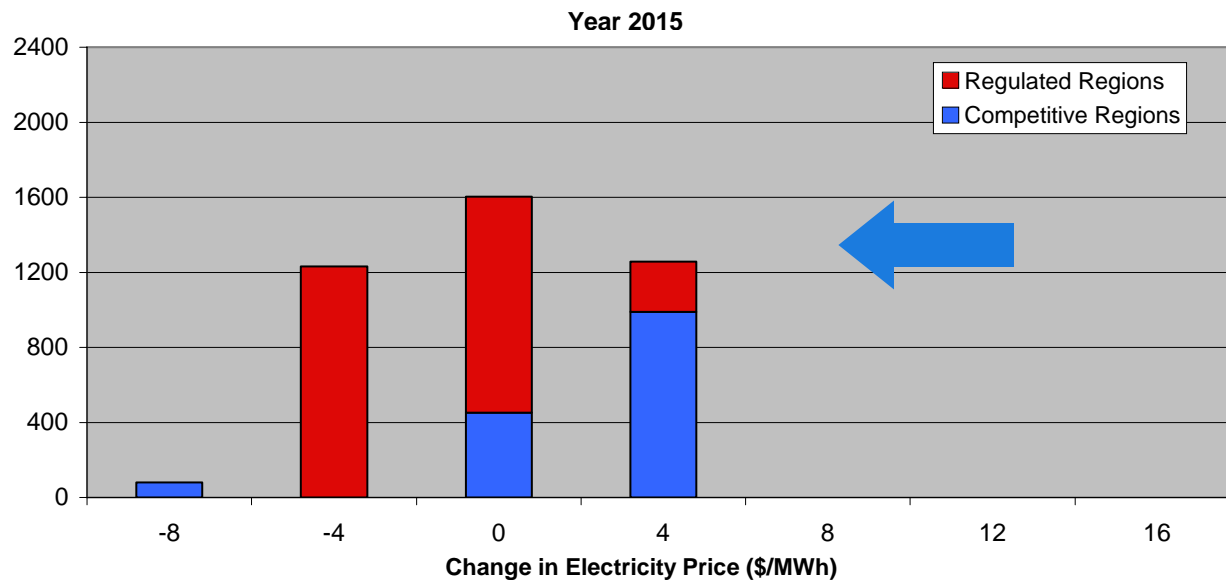
Free Allocation to Generators Based on Emissions

M-L Example: Allocation to Load Recovers Symmetry, Provides Windfall to Electricity Consumers

Free Allocation to Generators



Allocation to Load By Emissions



Free Allocation to Generators Based on Emissions

Allowance Price Increases by 15% With Subsidy to Electricity Consumption

Free Allocation to Load Based on Emissions

Alternatives: Consumption, Population have some regional differences

Free Distribution to Electricity Consumers Can Have a Significant Efficiency Cost Also!

- Sudden change in electricity price is politically unsupportable and economically disruptive...
- ...But permanent allocation to load constitutes a **windfall to consumers** through a subsidy of electricity prices
- The parochial assignment of value or subsidy of prices to one sector of the economy will:
 - ✓ Lead to different marginal costs and levels of effort across economy
 - ✓ Greatly increase social cost of climate policy

➔ Candidate: Allocation to Load
as Transition to Auction