

Turning Tons into Negawatthours: CO₂ Caps, Allowance Auctions and Energy Efficiency

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Resources for the Future
First Wednesday Seminar
“Curbing Electricity Demand: Who, How and Why?”
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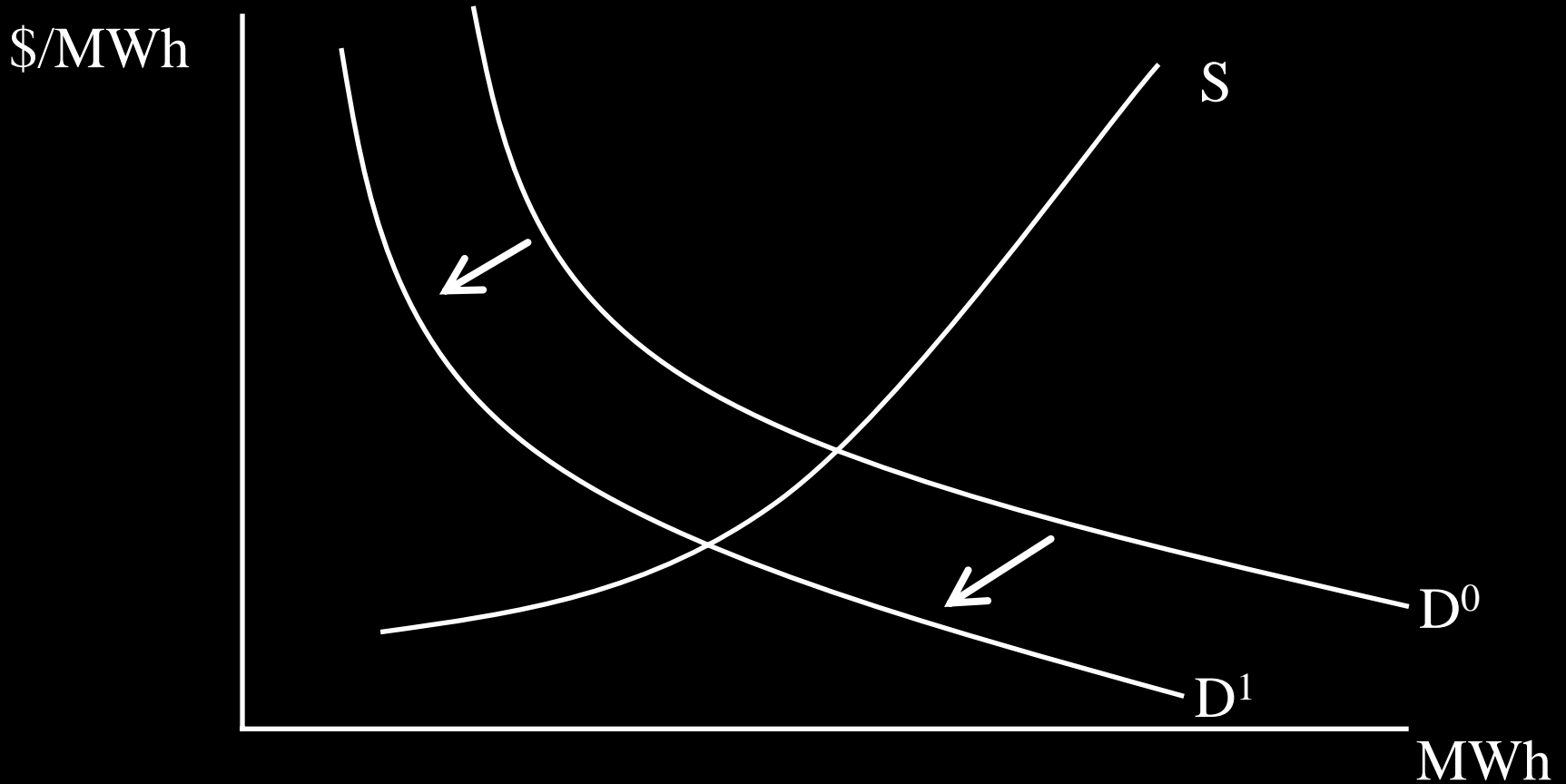
Allowance auctions are coming!

- In RGGI, they are just around the corner...
 - First RGGI auction is expected to take place in September
- EU ETS will have 100% auctioning in electricity sector beginning in 2013
- Auctions are phased in in the Lieberman Warner Bill
 - Roughly 25% auction initially growing to over 70% ultimately
- Most proposals envision investing some portion of the auction revenue in energy efficiency.
- What will be the consequences?

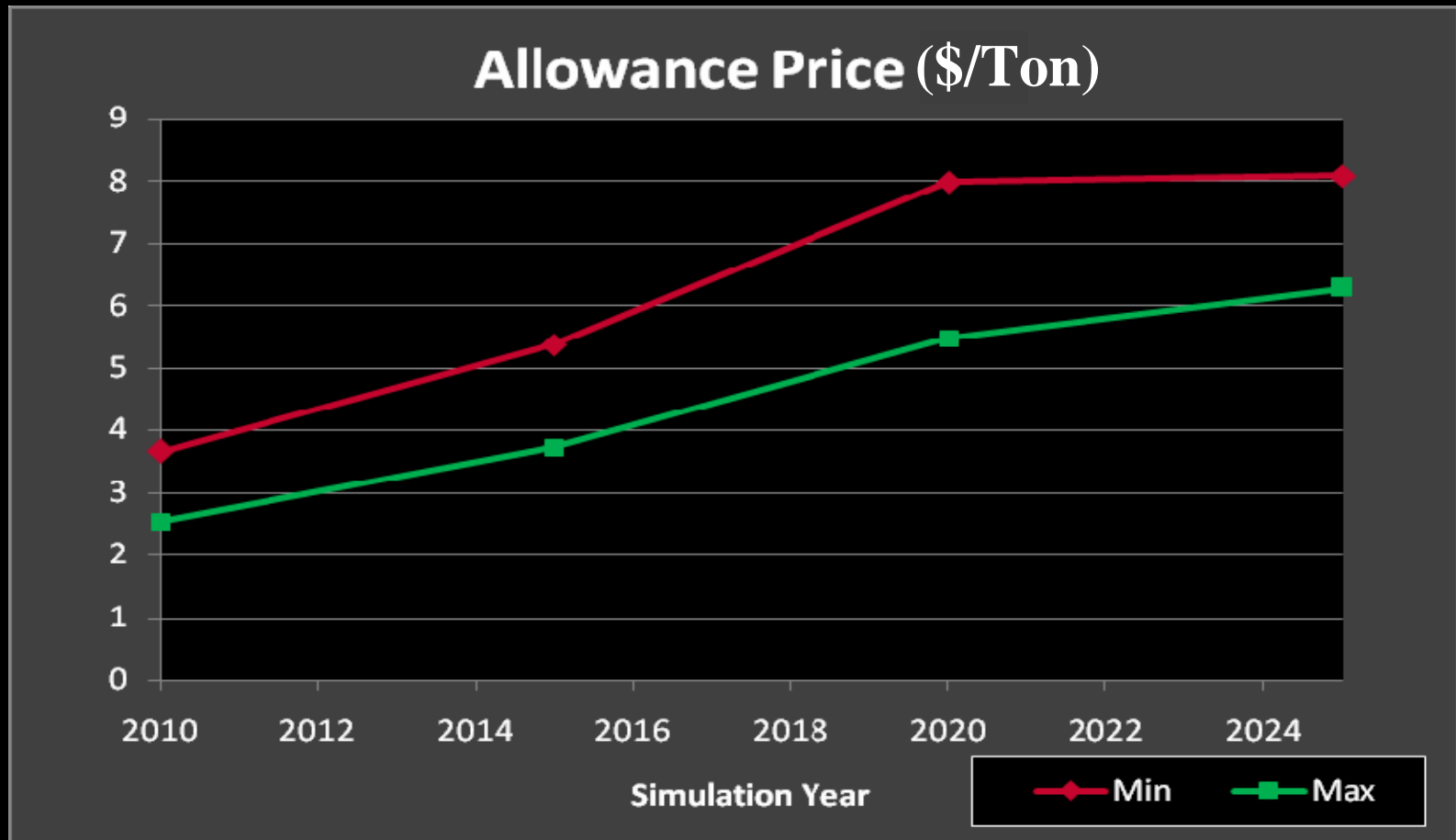
No Additional CO₂ Reductions from Electricity Sector due to the Cap

- Cap is both ceiling and a floor on emissions levels
 - Reductions coming from reduced electricity use will be made up elsewhere in system
 - If allowances aren't retired, emissions will not fall below the cap.
- Exception could occur if auction \$ used to reduce end-use demand for other forms of energy
 - However, in RGGI, the MOU recognizes reductions in end use consumption of natural gas and oil as potential CO₂ offsets
 - If claimed as offsets under RGGI program, these non-electric efficiency investments lead to no additional CO₂ reductions.

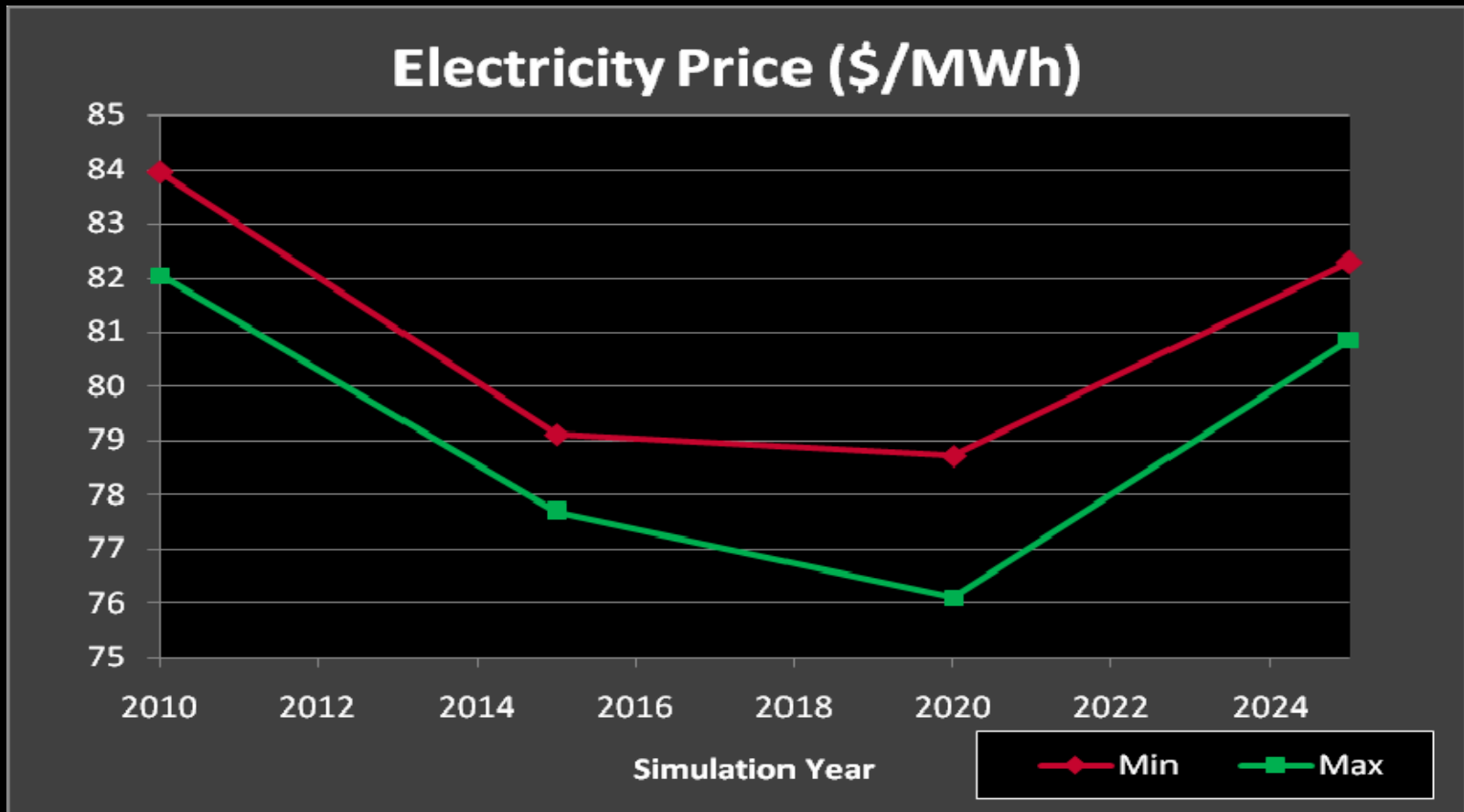
Investment in Efficiency Reduces Electricity Demand



Investment in Efficiency will Reduce CO₂ Allowance Price: Evidence from Modeling RGGI



Investment in Efficiency Reduces Average Electricity Price in RGGI



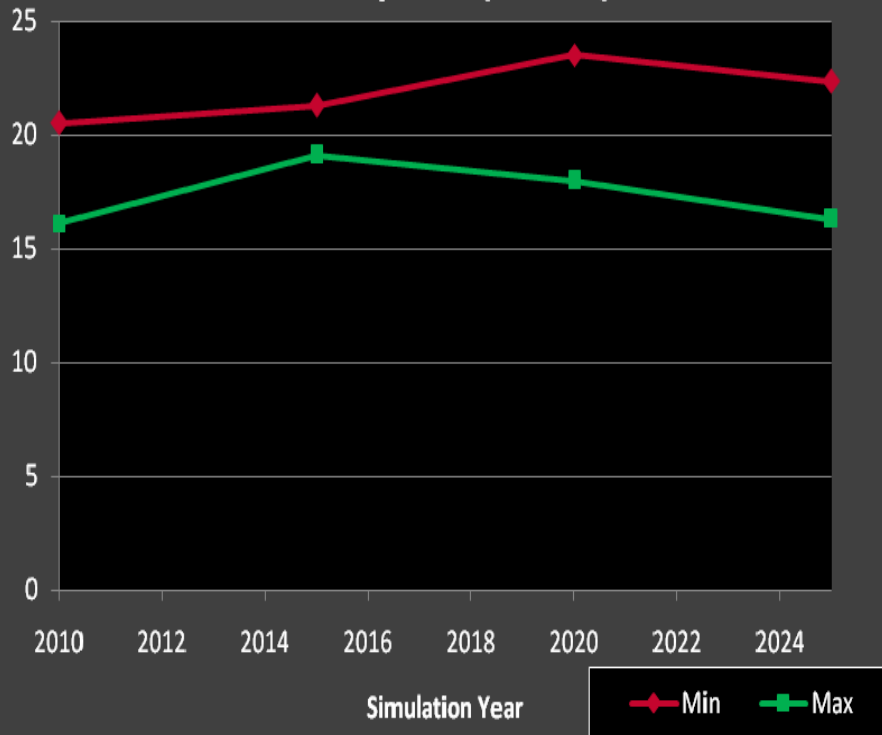
Lower prices apply to both participants and non-participants in efficiency programs.

Investment in efficiency in RGGI could lower power imports and affect leakage

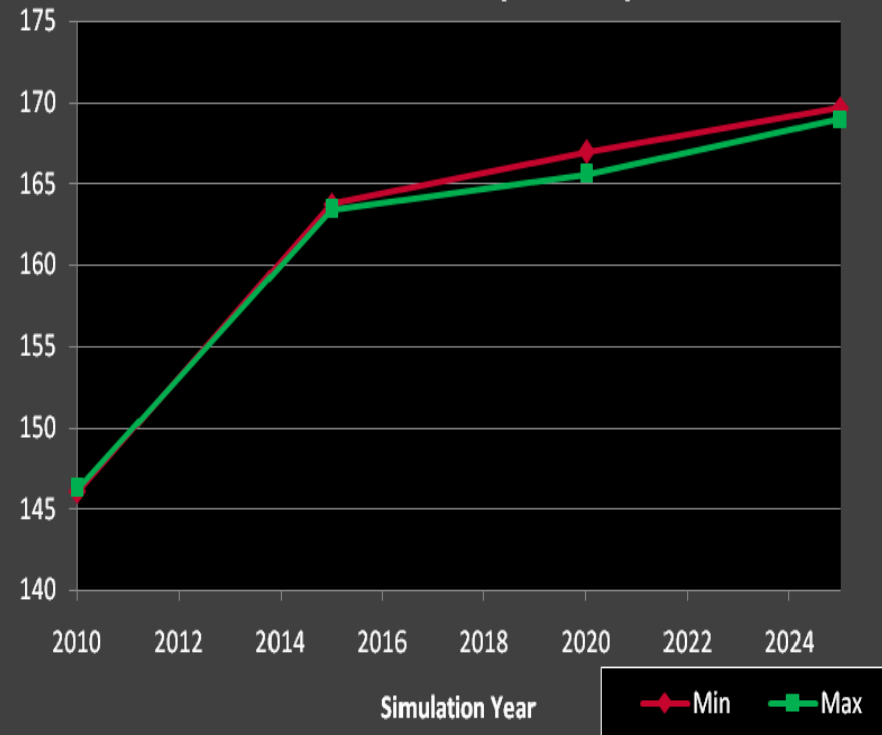
- Regional nature of RGGI means RGGI coming into existence could encourage greater imports from neighboring states.
- Price lowering effect of efficiency spending could reduce this effect.
- However, this low price effect could also spillover and increase demand and emissions in neighboring states.

Effects of Efficiency Spending on Power Imports into RGGI and CO₂ Emissions in PA

Net Imports (BkWh)



PA Emissions (Mtons)



Caveats, Conclusions and Continuing Research

- Effective efficiency spending is essential to these findings.
- What makes for effective efficiency programs is the subject of another talk.
- Ongoing study funded by MDE and headed by the Center for Integrative Environmental Research (CIER) at University of MD (joint with RFF, JHU, U C Merced and Towson University researchers) is looking at this question and the effects of efficiency spending under RGGI on electricity markets in Maryland.
 - Stay tuned for forthcoming results!
- Whatever Maryland does with its auction \$, the level of the RGGI CO₂ allowance price and thus amount of auction \$ available to Maryland will depend importantly on how much the other RGGI states invest in energy efficiency.

Thank you for your attention.