Managing Allowance Prices with Different EU Member State Ambitions in Emissions

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Resources for the Future

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Carleton University, Ottawa
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Outline

1. Price histories in other trading programs and in the EU
2. Factors affecting price formation
3. Reform efforts in the EU
4. The North American approach

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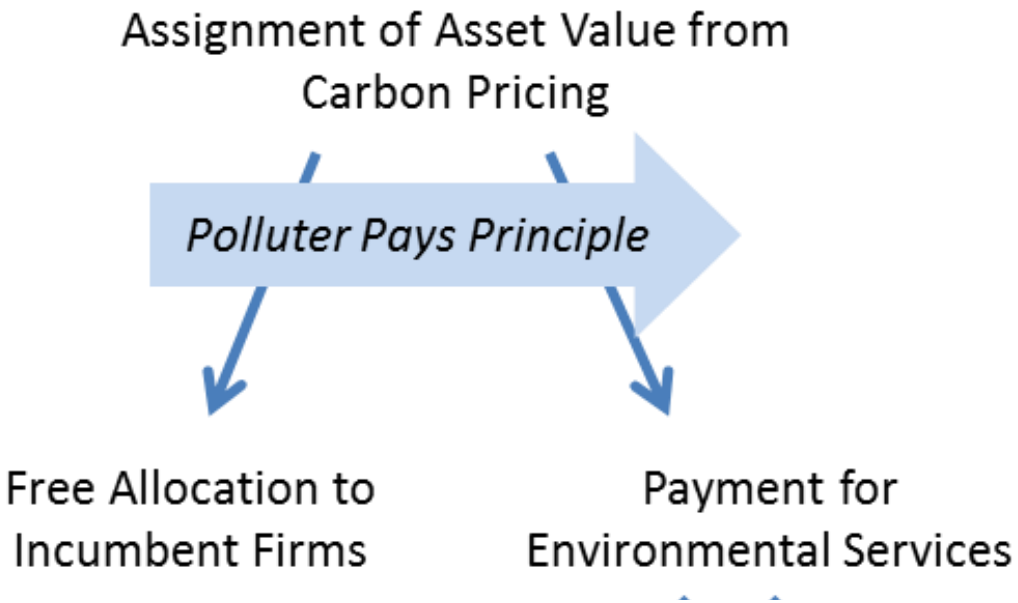
Evolution in atmosphere resource markets



History of allowance prices….

Recognizing gravity as the strong force in atmosphere emissions markets….

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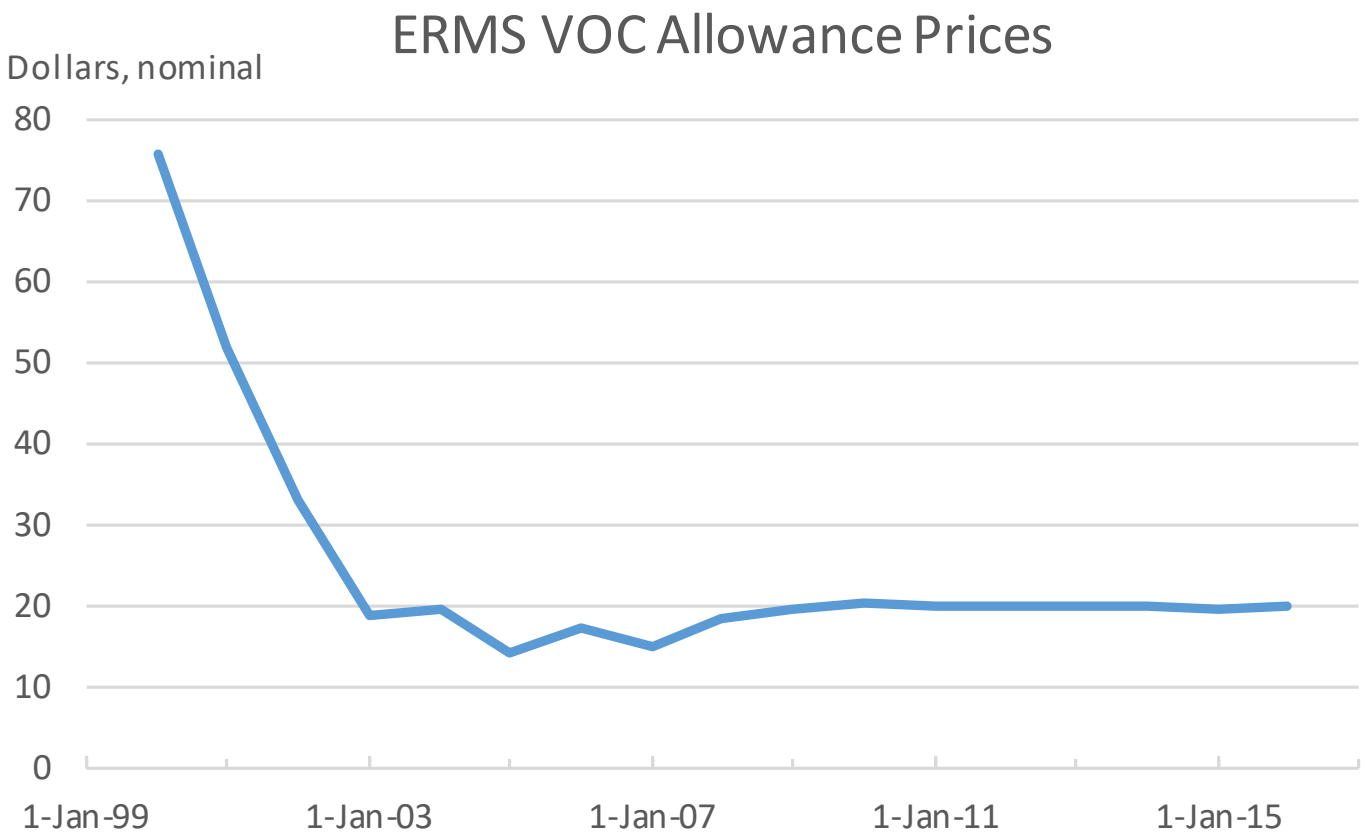
Illinois Emissions Reduction Market System VOC Allowance Prices



Note: Auction prices are used as market prices are not available.
Source: Illinois EPA.

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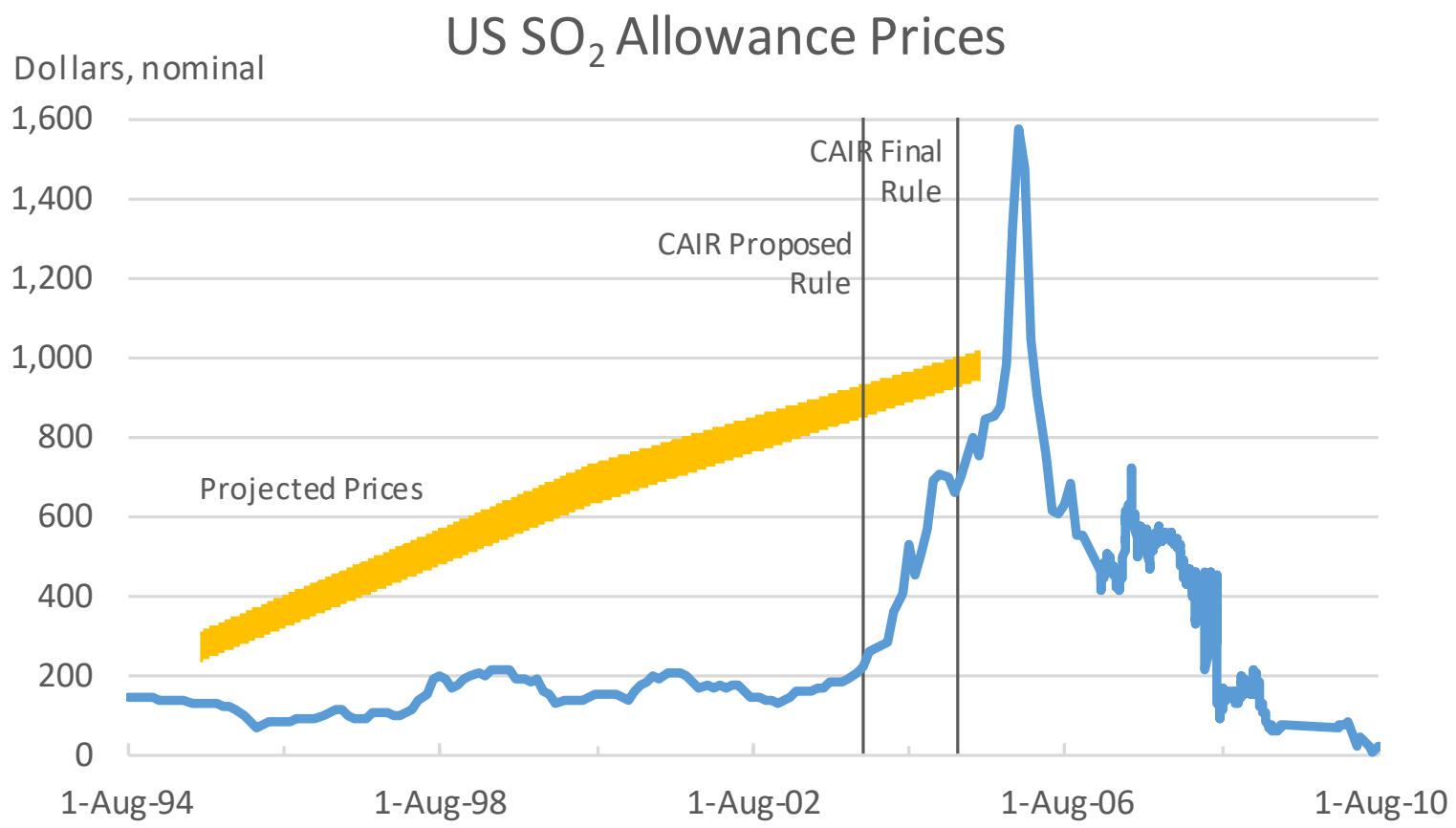
US SO_2 Allowance Prices



Sources: Cantor Fitzgerald; T. Huetteman.

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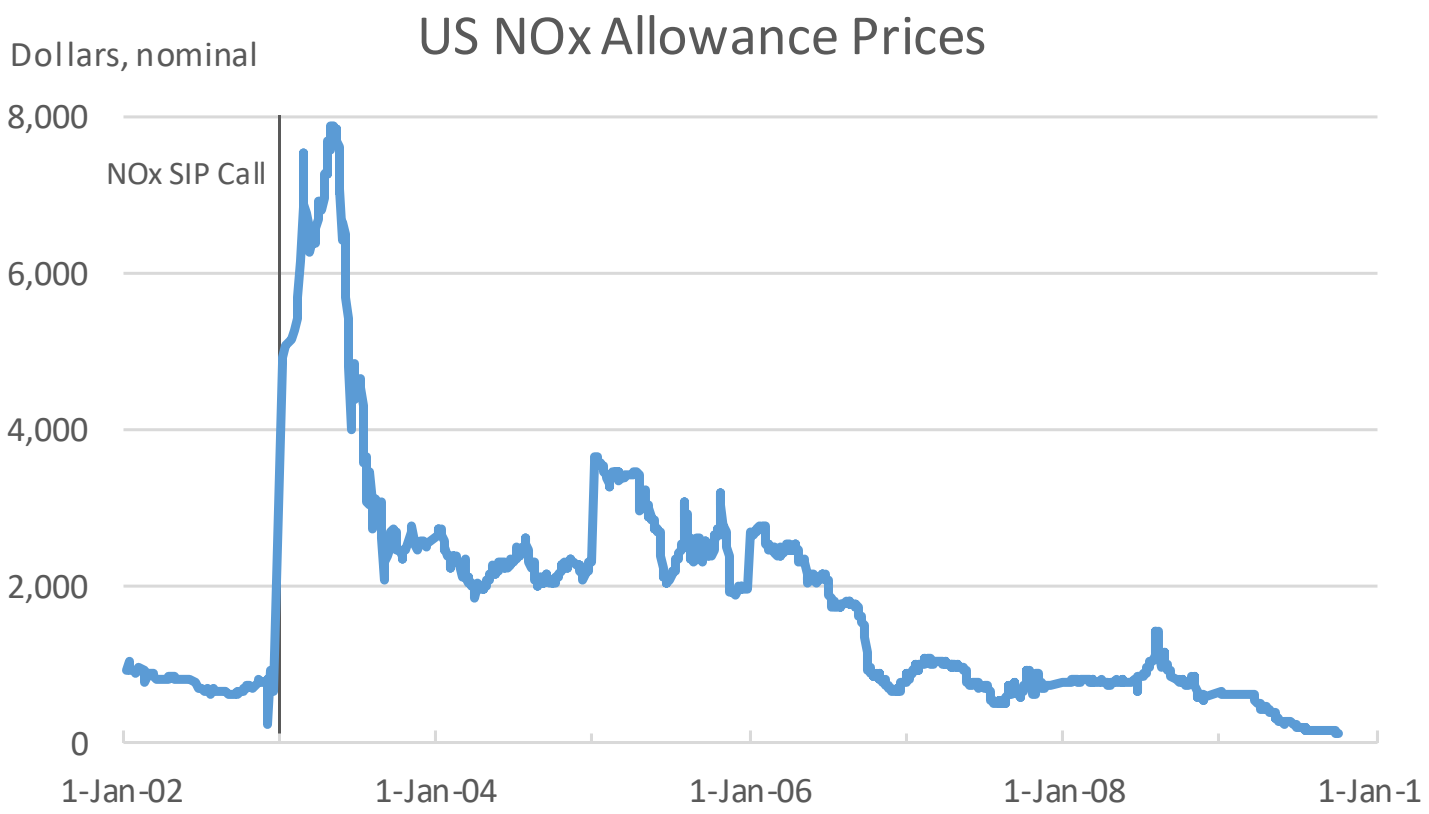
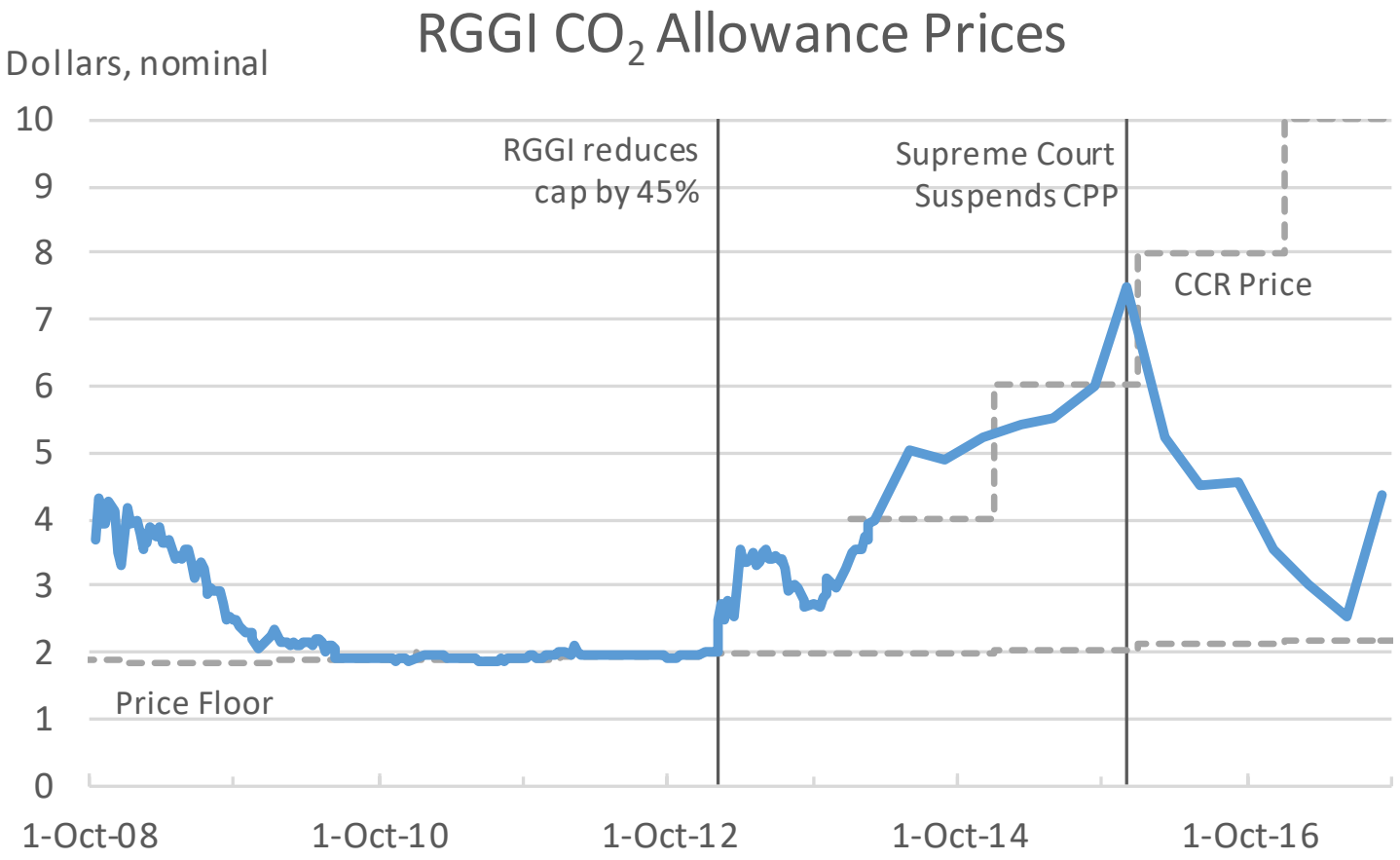
US NOx Allowance Prices



Source: G. Hart.

RGGI Carbon Allowance Prices



Note: Auction prices are used where market prices are not available.
Sources: Thomson Reuters; RGGI.

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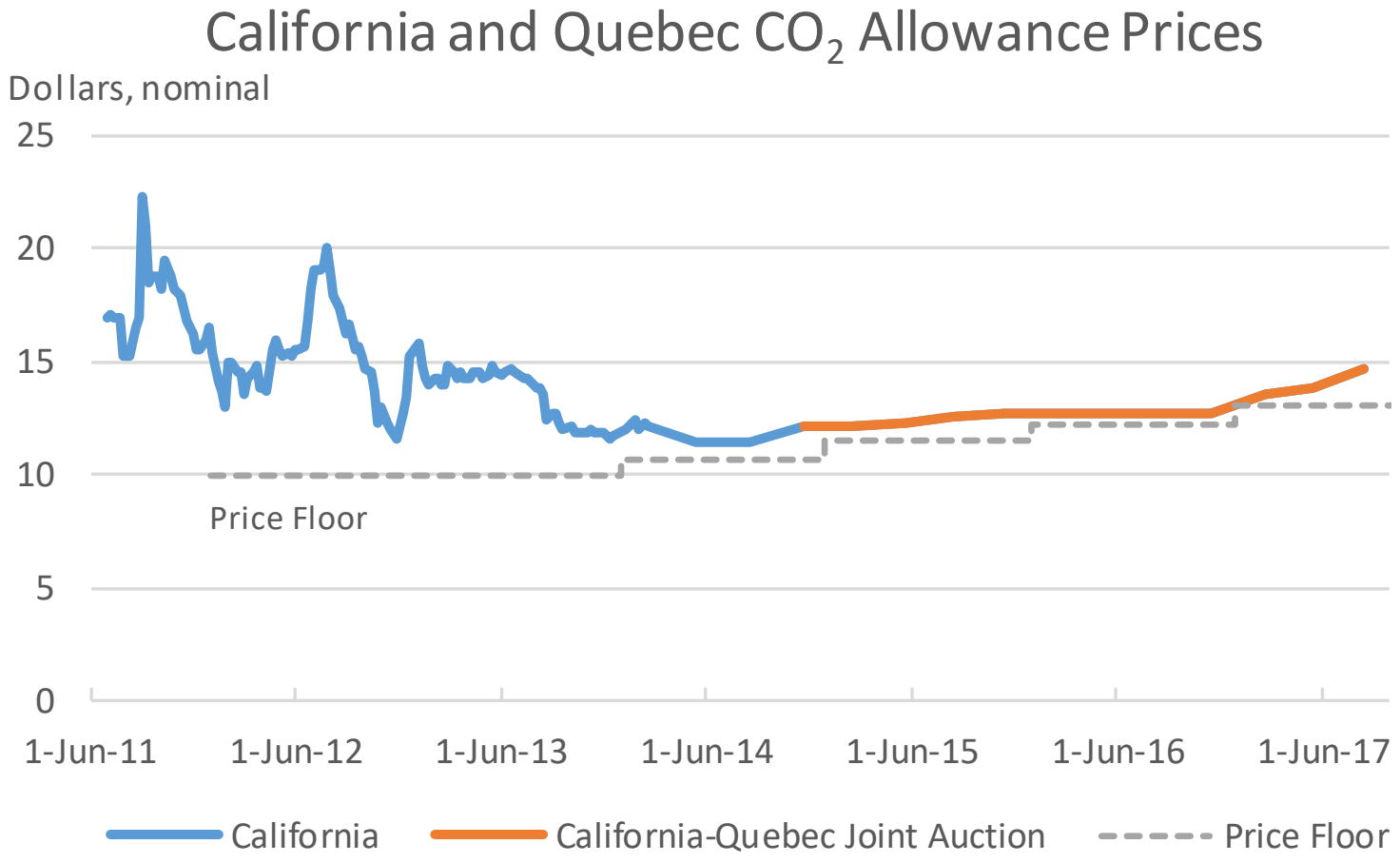
California and Quebec Carbon Allowance Prices



Note: Auction prices are used where market prices are not available.
Sources: Thomson Reuters; California ARB; Quebec MDDELCC.

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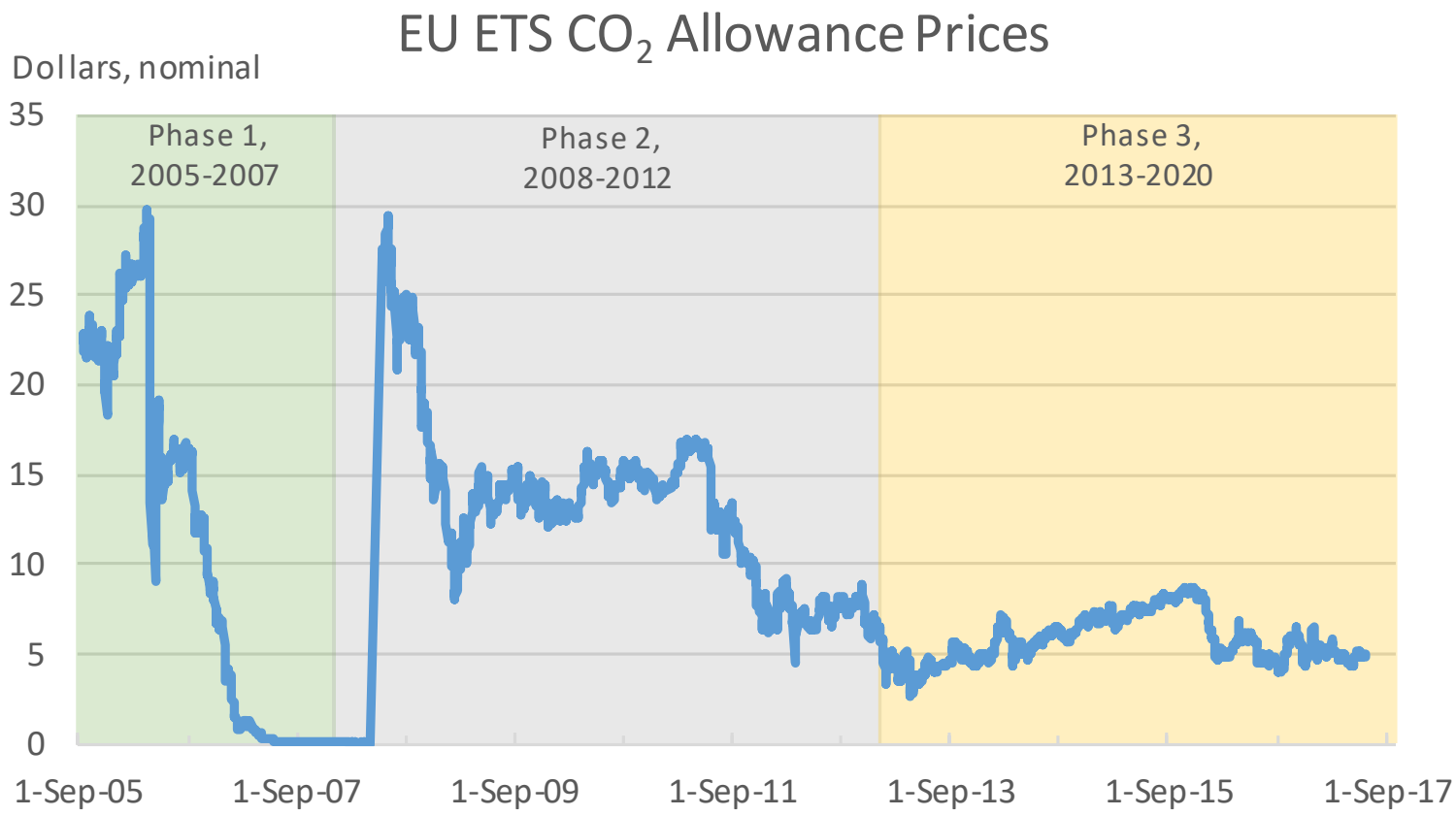
EU ETS: Intention

"*The EU emissions trading system (EU ETS) is a **cornerstone** of the EU's policy to combat climate change and its **key tool** for reducing greenhouse gas emissions cost-effectively. It is the world's first major carbon market and remains the biggest one.*"

- When the EU ETS was launched in 2005, the Commission was projecting allowance prices in the range of **€30/ton** CO2

EU Emissions Trading System Carbon Allowance Prices



Source: Thomson Reuters.

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History of allowance prices….

Recognizing *gravity* as a strong force in atmosphere emissions markets. Why?

- Over-allocation – political economy, who is in the room?
- Incentives work to find ways to lower costs
- Companion policies, serving additional concerns:
  - air quality, job creation, economic development strategy, and good old fashioned fighting for rents.
- Sub-jurisdictional efforts, and the powerful force of federalism
- Program related spending

➢ But, a fixed supply of allowances may create a *waterbed* effect

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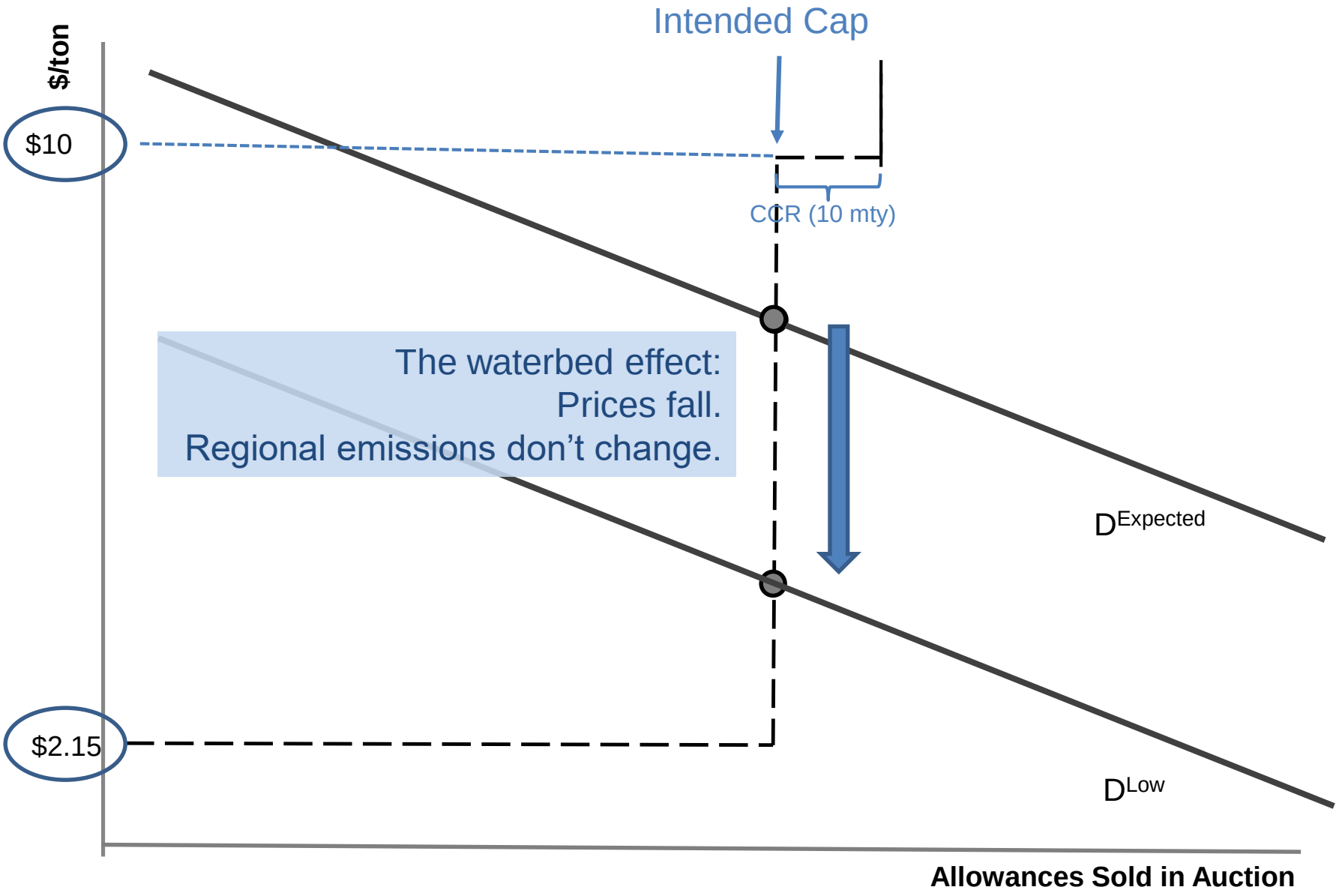
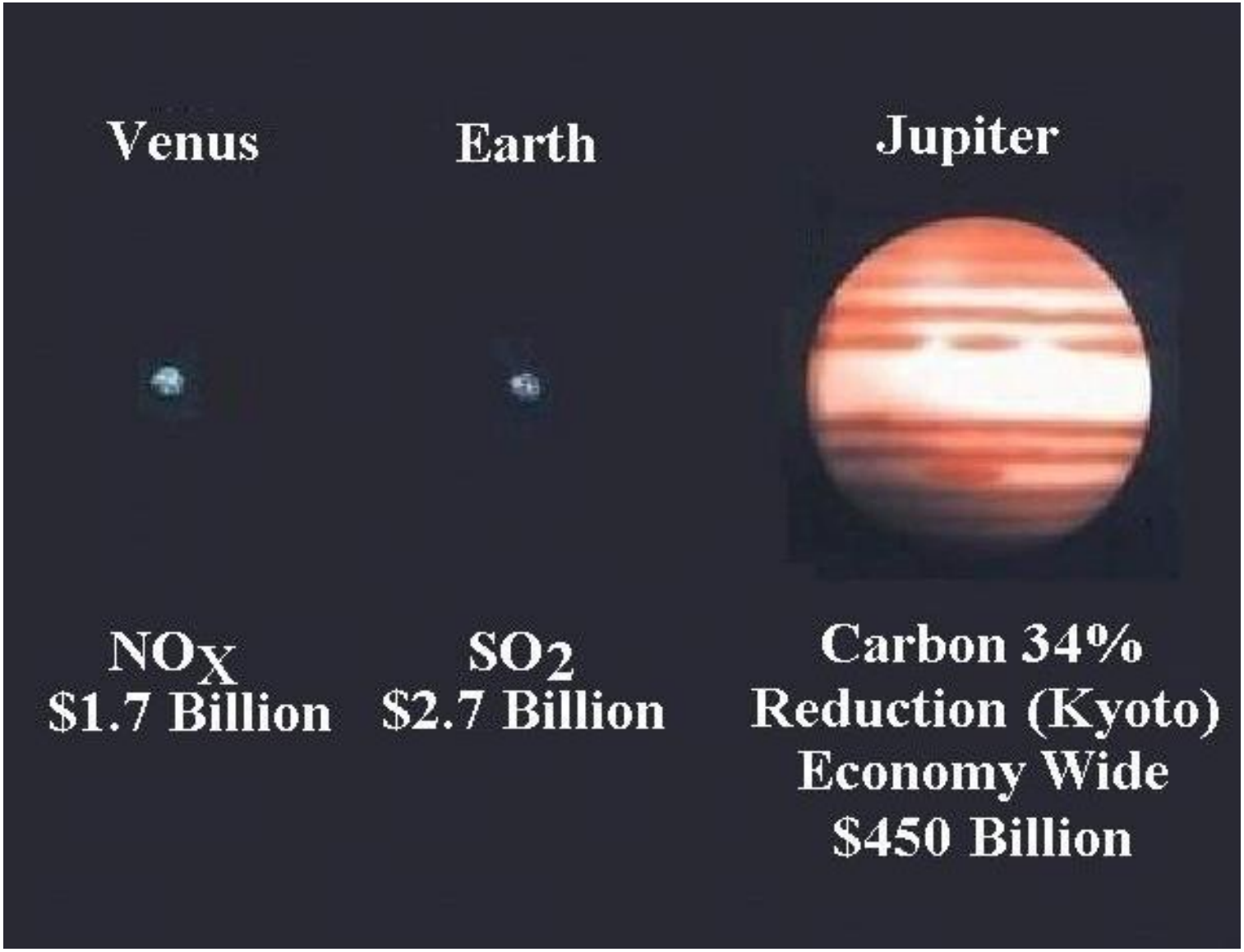
A Supply Schedule: RGGI Example



Economy-wide CO_2 pricing would constitute the largest distribution of a federally-enforced property right since the 19th century American west.



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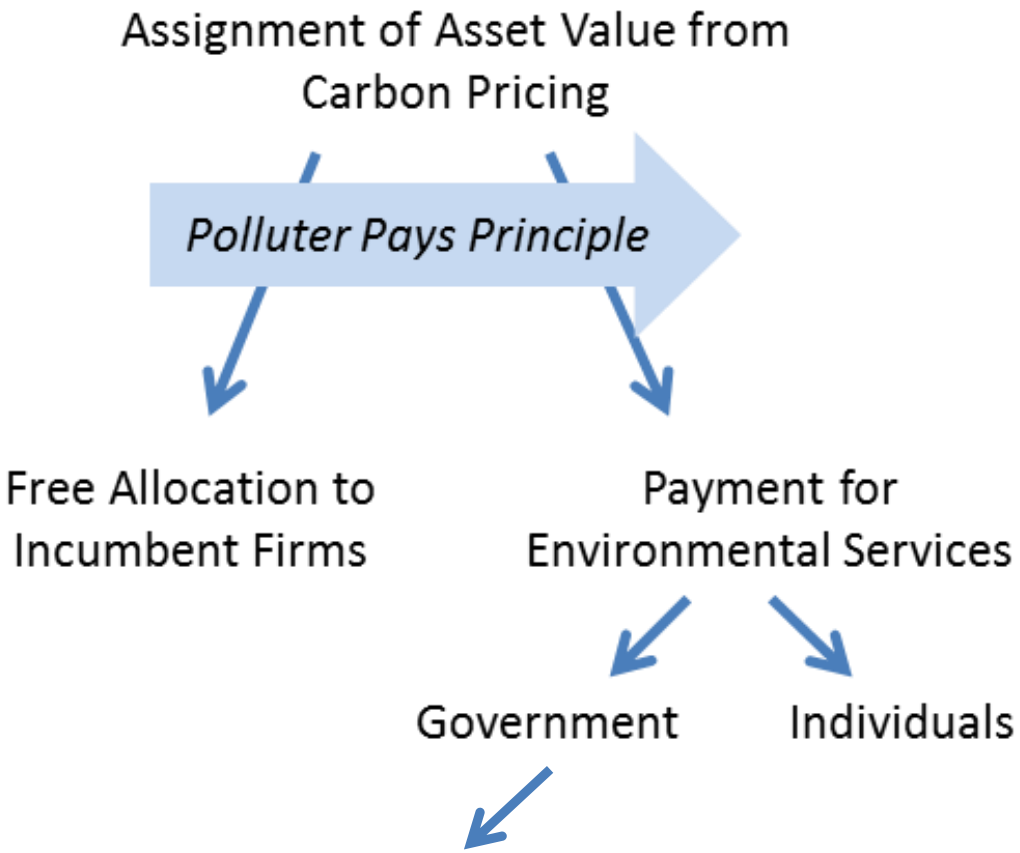
Evolution in atmosphere resource markets



- Public finance goals – tax swaps (not observed) ➢ Efficiency
- Compensation & Environmental Justice ➢ Equity
- Combating leakage
- Program related spending ➢ Efficacy

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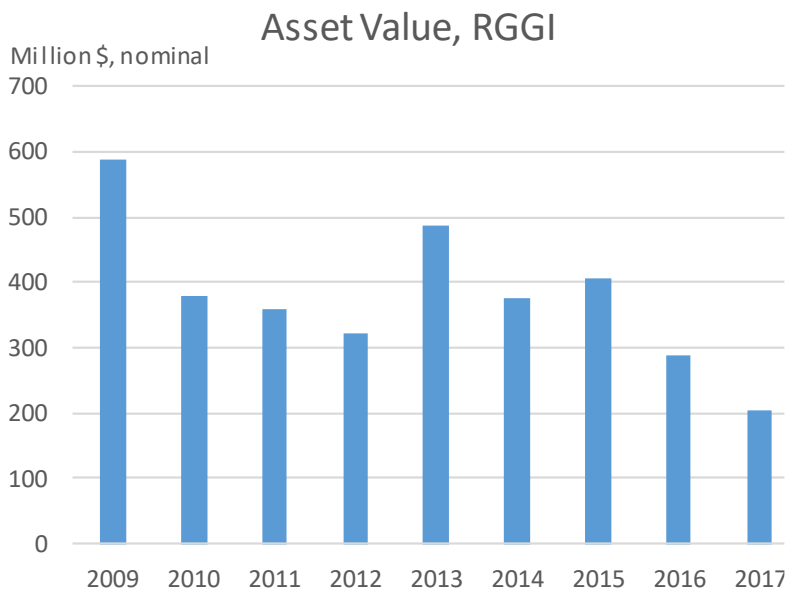
RGGI Distribution of Asset Value



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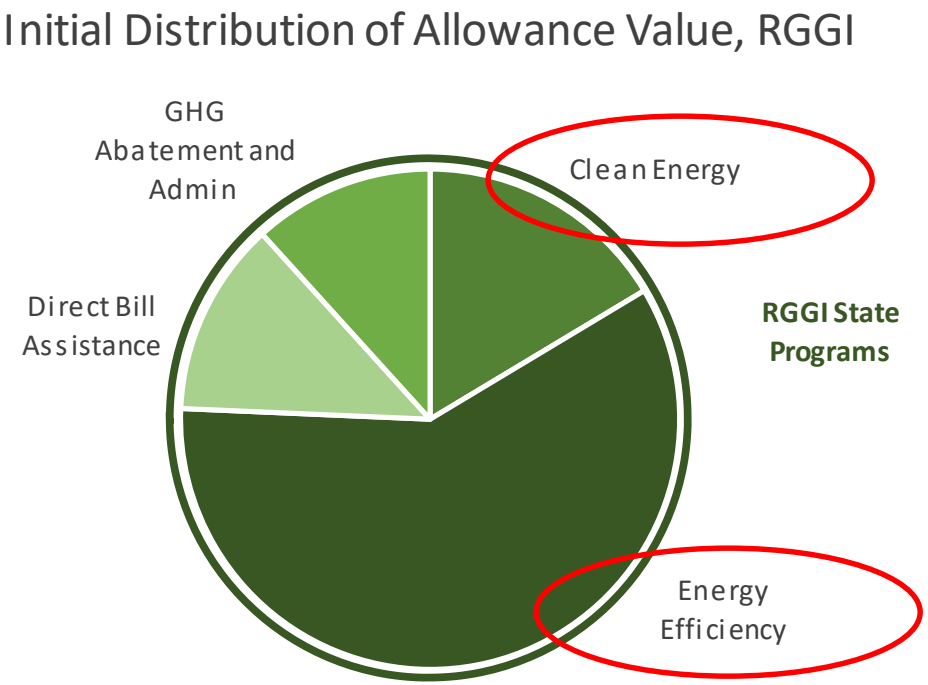

*This figure shows distribution of allowances for 2012-2014. State set-aside allowances and allowances unsold at auction are not included.
Source: Hibbard, et al., 2015

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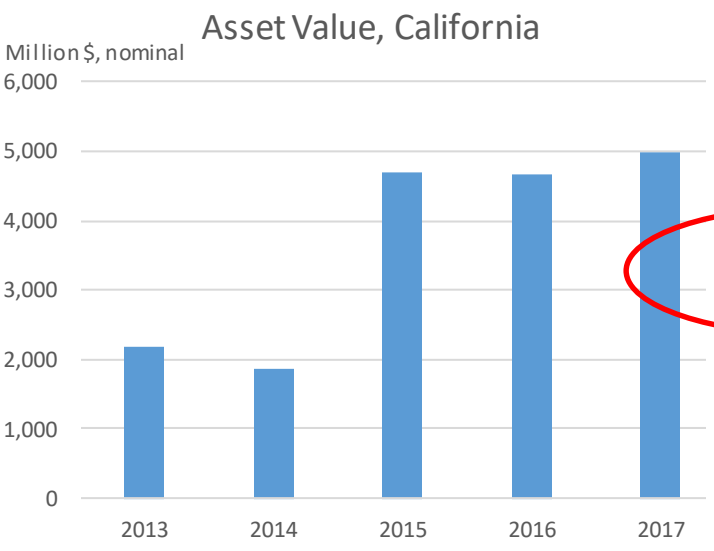
California Distribution of Asset Value



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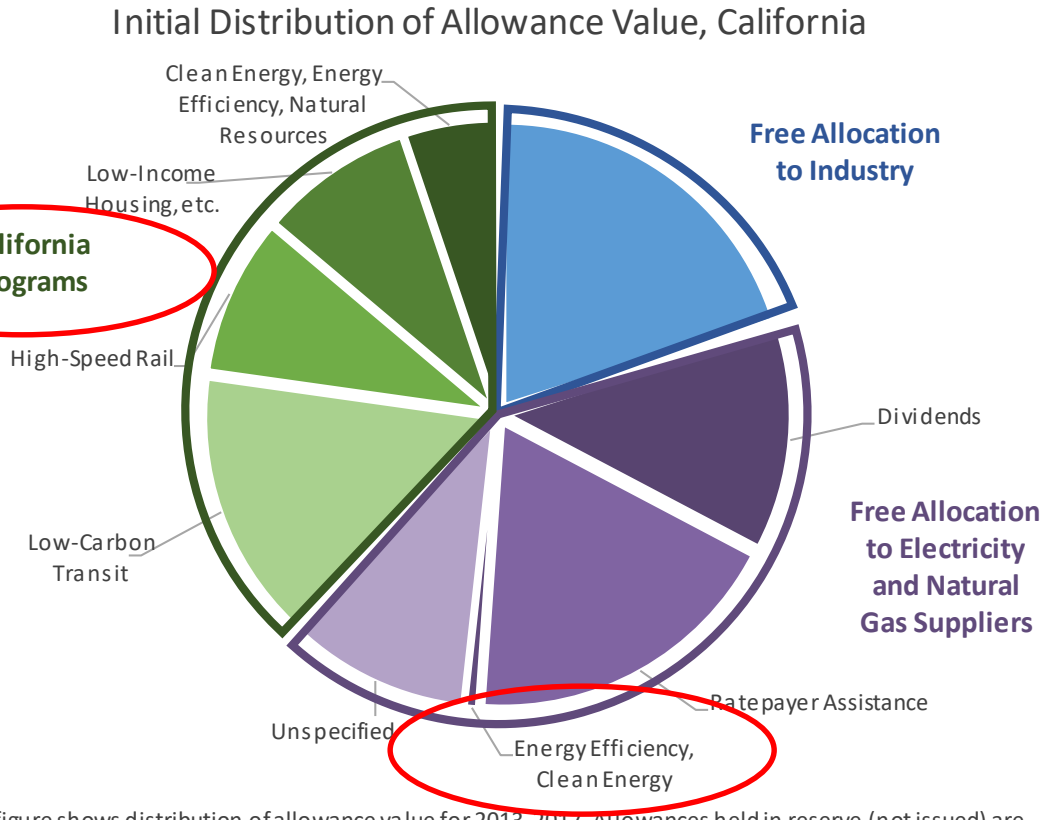

*This figure shows distribution of allowance value for 2013-2017. Allowances held in reserve (not issued) are not included.
Source: California ARB

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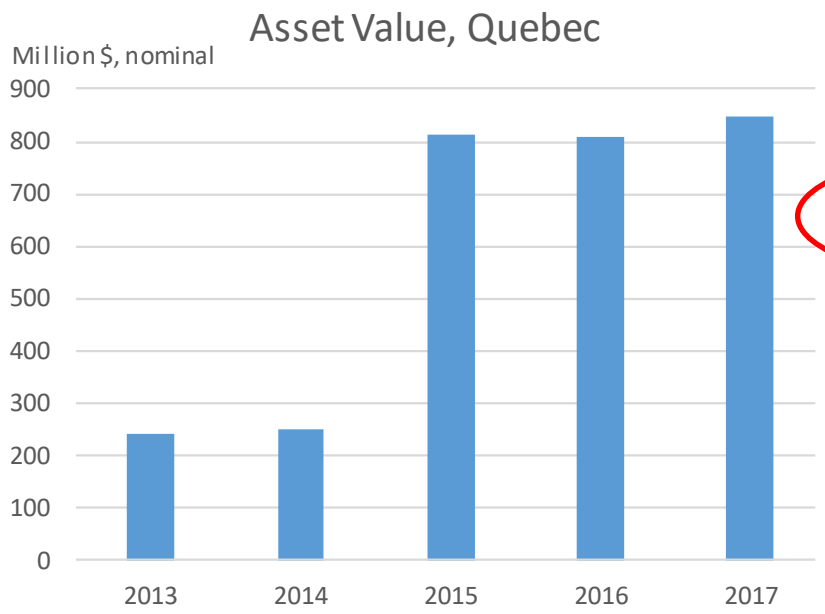
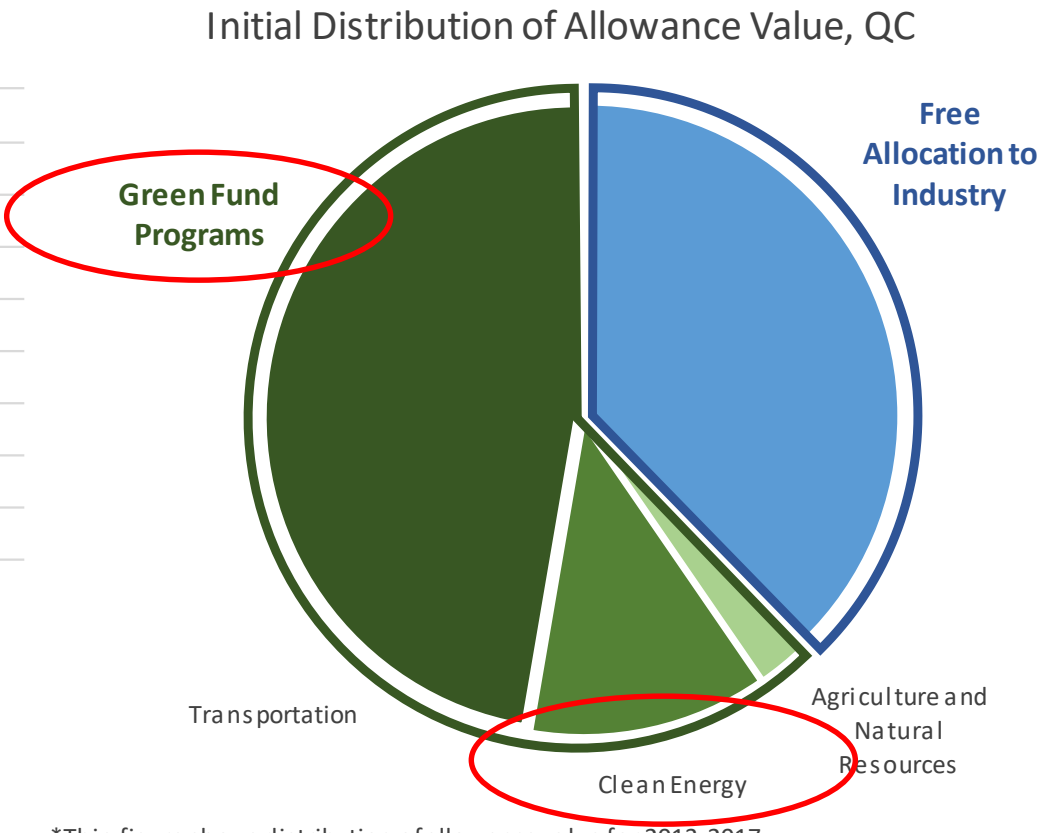
Quebec Distribution of Asset Value

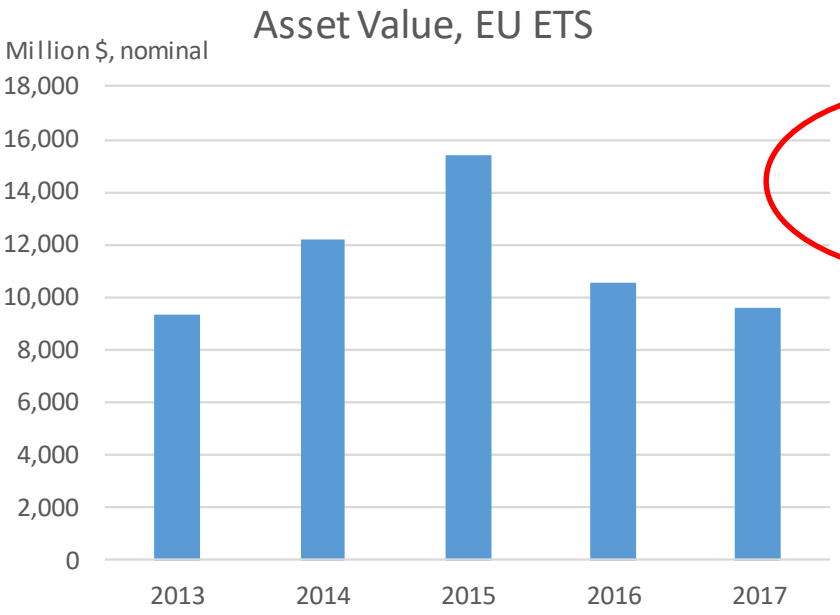


Note: Auction prices are used where market prices are not available.
Sources: Quebec MDDELCC.

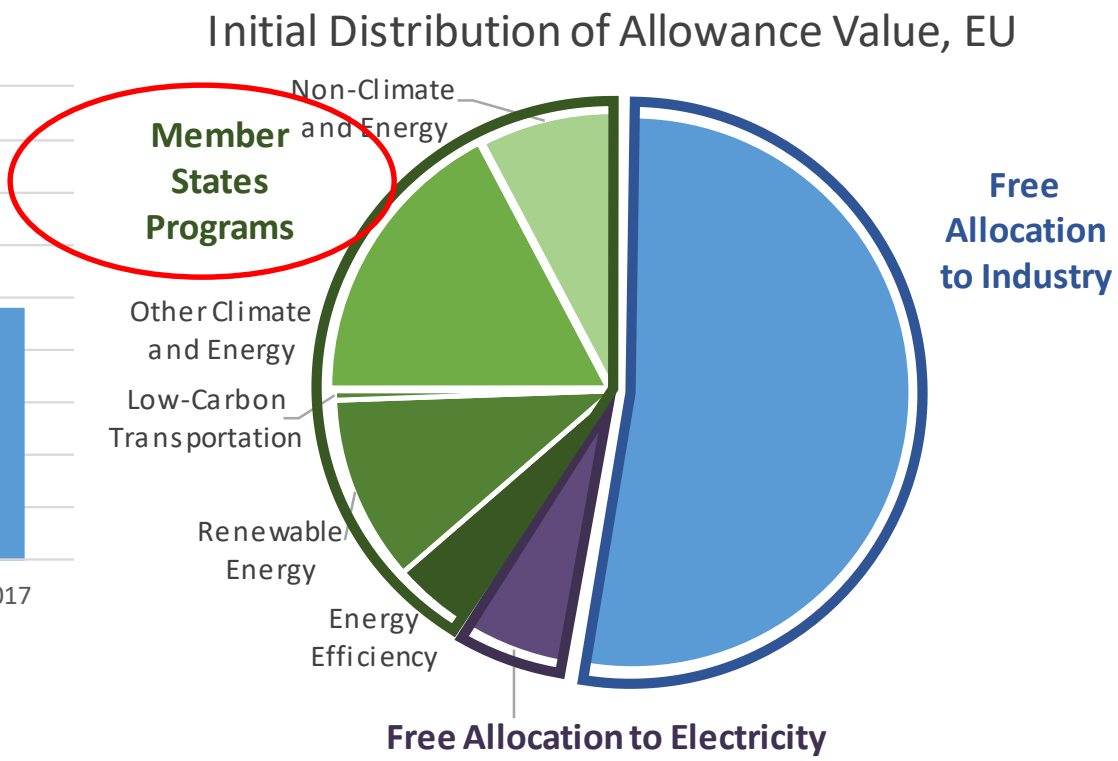


*This figure shows distribution of allowance value for 2013-2017.
Source: Quebec MDDELCC

EU ETS Distribution of Asset Value



Source: Thomson Reuters.



*This figure shows distribution of allowances for 2015.
Source: Löfgren et al. (2015, 2017)

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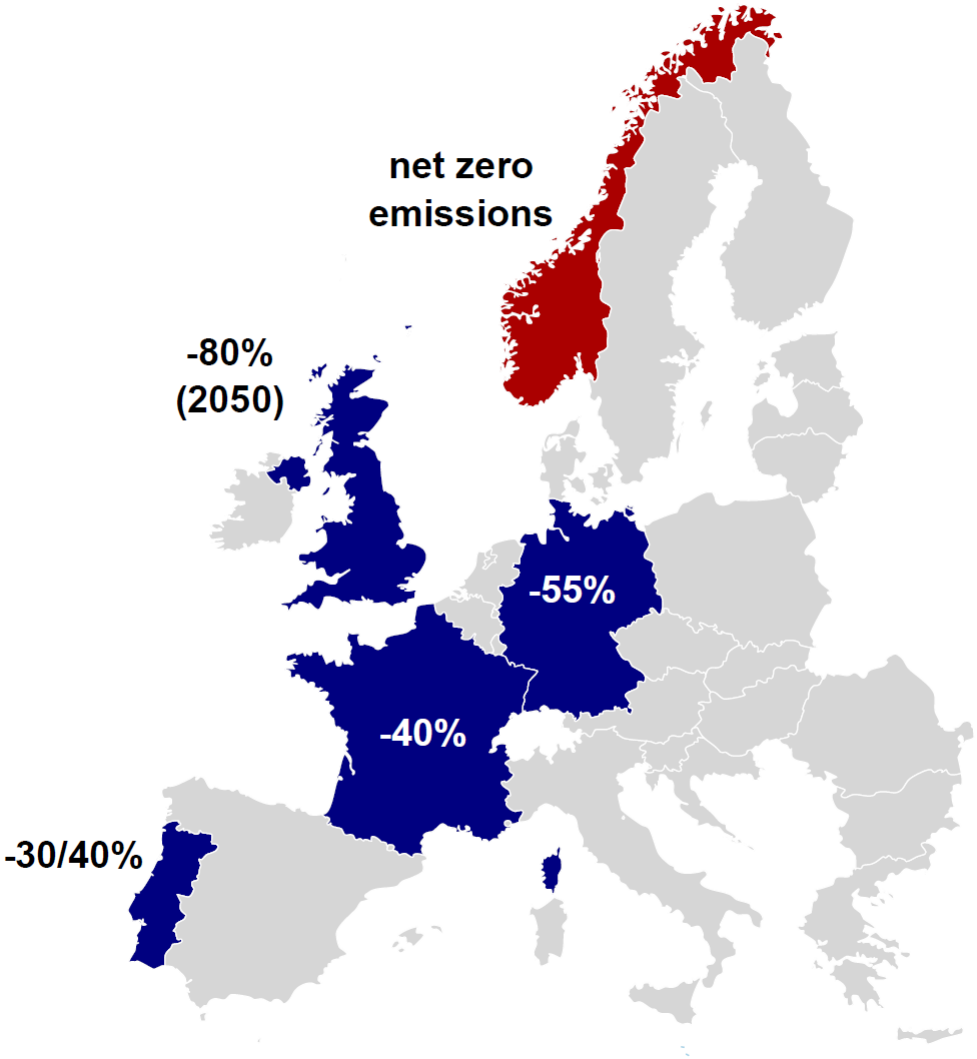
Post-2020 (2030+) climate targets in EU states

EU: -40%



Source:
National factsheets on the State of the Energy Union / Climatechangenews.com

Missing:
Sweden: net zero (2045)

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Coal phase-out plans in EU member states

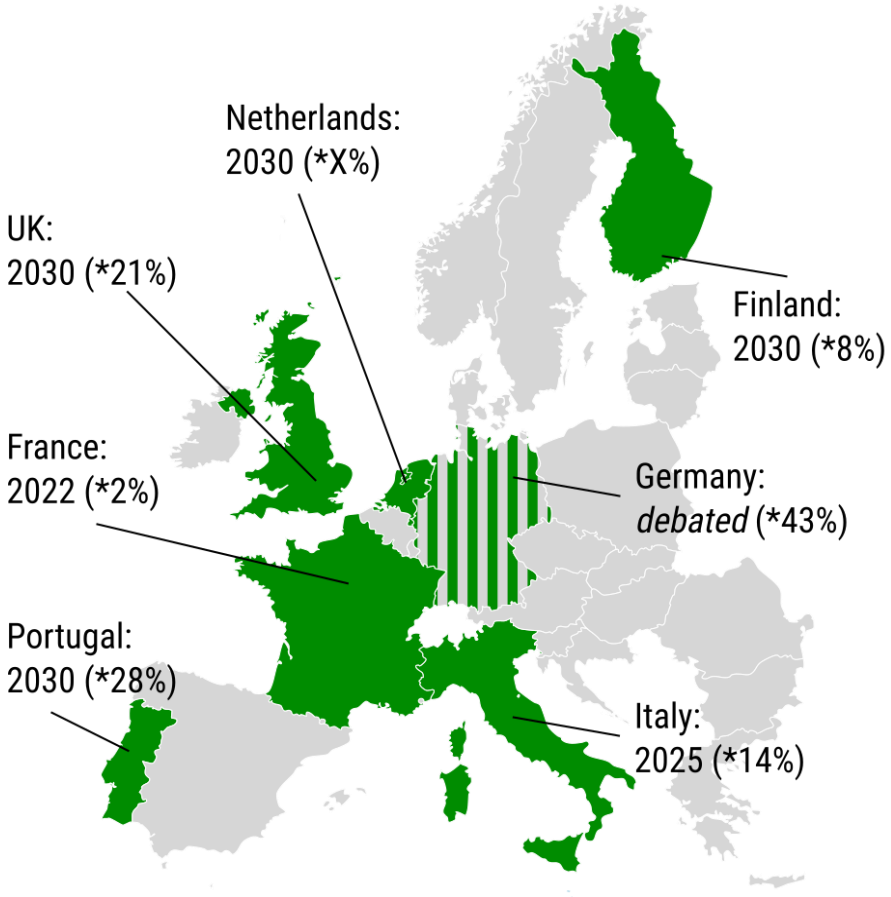

Illustration based on information from Politico & Eurostat

*share of coal in electricity production

The Kopernikus Project ENavi & Michael Pahle

Pledge to build no new plants from 2020 on by producers in all member states except Poland & Greece (Eurelectric)

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EU ETS Reform Efforts

- Accumulation of a substantial bank of allowances sparked several concerns.
  - Fundamentally, is the price sufficient to incent innovation?
  - Is the program a block to mitigation efforts through the waterbed effect?
  - Regulatory risk: Why invest if the program might be overturned?
- The European Commission has conducted repeated administrative reviews with various outcomes including:
  - (Modestly) strengthening the cap over time
  - Backloading of allowances, delaying issuance of new allowances
  - Market Stability Reserve, linking issuance of new allowances to the size of the bank

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Current EU Market Stability Reserve

- 900 million backloaded allowances from 2014-2016 and unallocated allowances will be transferred to the reserve
- Allowances held from or released to auction based on Total Number of Allowances in Circulation
  - TNAC = Supply – (Demand (including cancelled allowances) + allowances in the MSR)
  - 12% added to reserve if TNAC > 833 million
  - Released from reserve if circulation < 400 million

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2018 Reform

This week the European Parliament approved a more substantial effort, after two years of negotiation. (Now to member states for approval.)

- Emission reduction target of 40% under 1990 levels.
- 57% of allowances to be auctioned.
- Doubled the annual withdrawal rate for allowances going into the Market Stability Reserve.
- Tighten supply by cancelling allowances if the MSR exceeds the previous year auction quantity.
- Allow voluntary cancellations by member states to address the waterbed effect.

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North American Program Design has Price Controls

- Widespread use of auctions (including consignment)
- Reserve prices in those auctions provides a price floor (and soft and hard ceilings)
- RGGI's new design introduces an emissions containment reserve

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Auction reserve prices

- Set a minimum price below which allowances will not be sold
- Reduce the variance in allowance prices
- Increase their expected value

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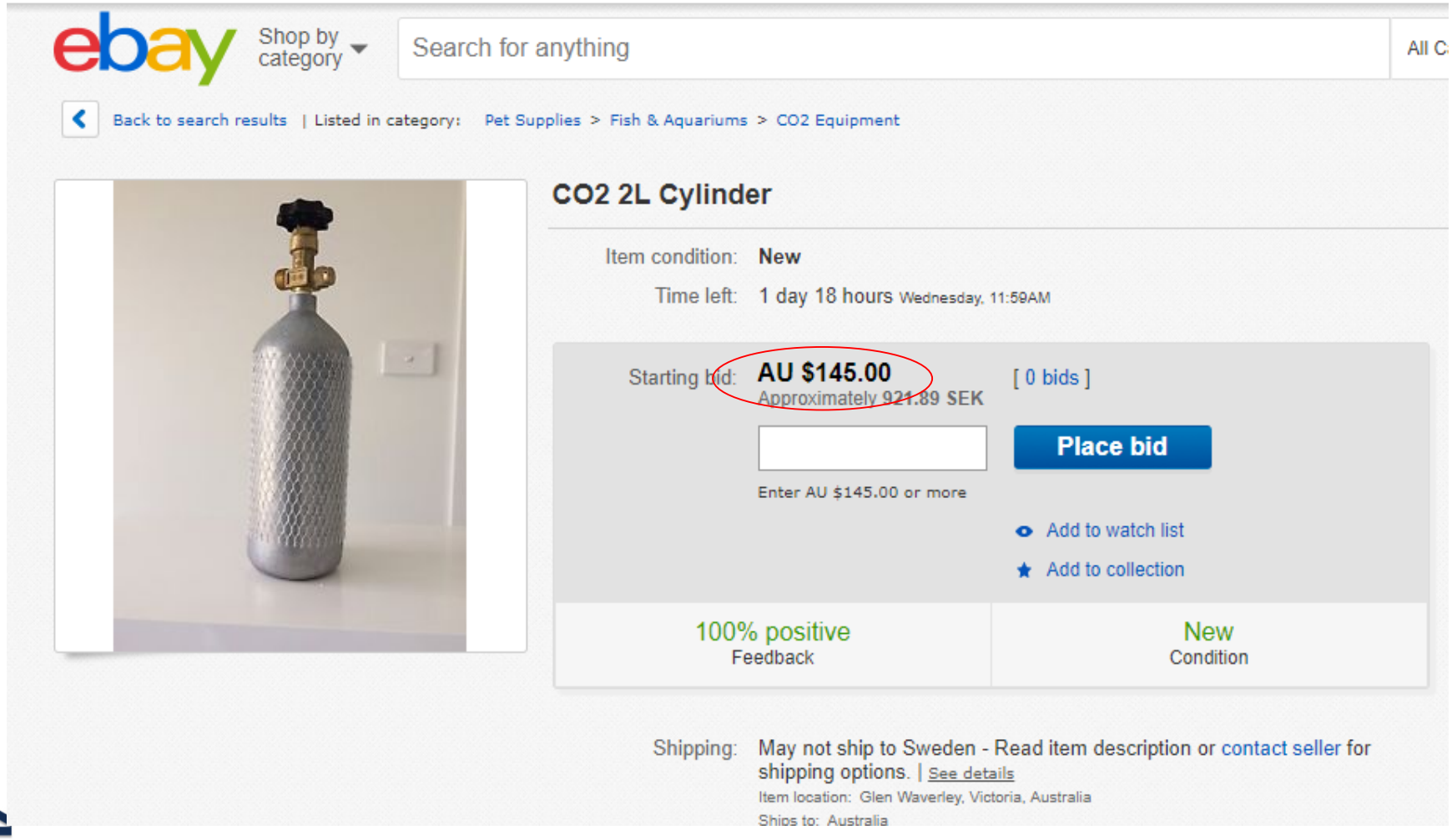
Auction reserve prices are common



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Is a minimum price viable in the EU?

Opponents to a reserve price have argued

1. It would interfere with economic operations in the market that is otherwise efficient
   - The price would be set administratively rather than by markets
   - The reserve price might be "too high" in case of a breakthrough technology

2. It would set the price or be tantamount to a tax, which would trigger the unanimity rule among members states.

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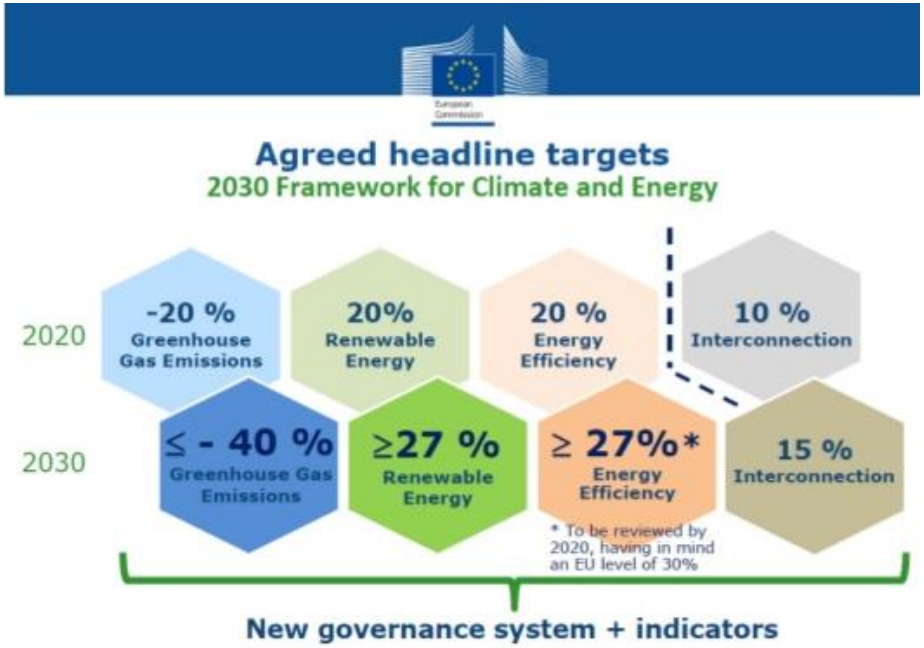
The premise of EU ETS efficiency (1)

- Efficient market equalizes abatement costs across sources

FAILURE

- Overlapping policies require higher-cost abatement activities, driving down the price



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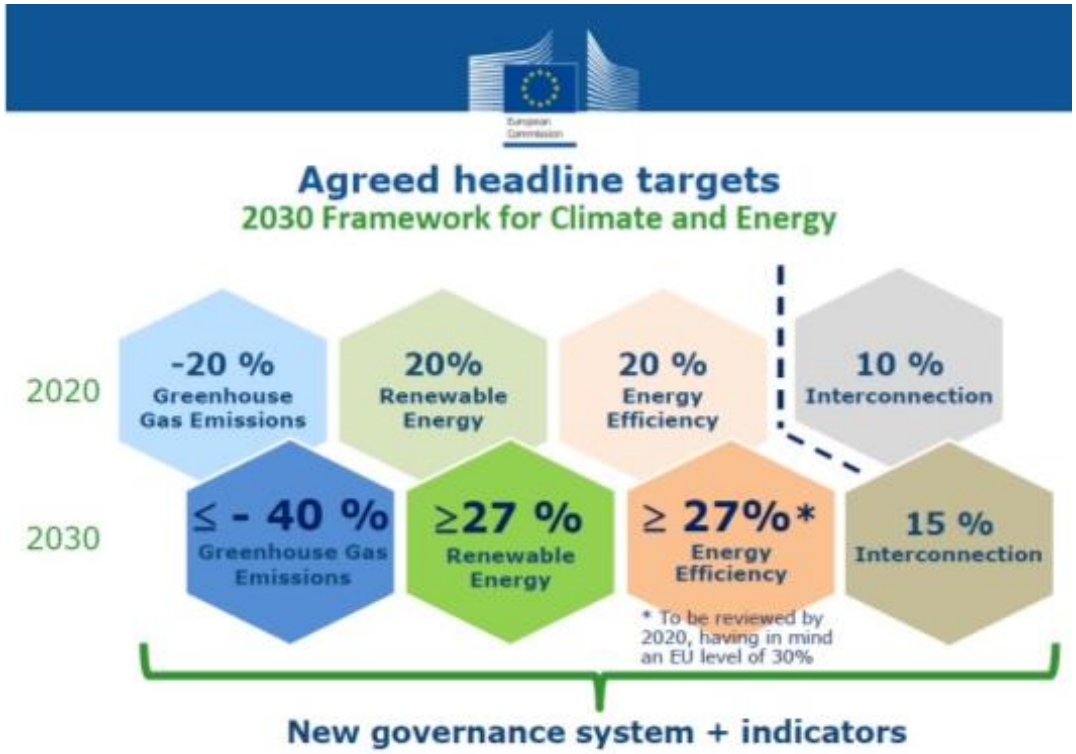
The premise of EU ETS efficiency (2)

- Price revelation: the market reveals the costs of meeting the target

FAILURE

- Overlapping policies raise abatement costs while driving down allowance prices



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The premise of EU ETS efficiency (3)

- Market should send consistent price signal to reduce emissions, incentivize low-carbon investment

- Prices are well below notions of the SCC or pathways to decarbonization

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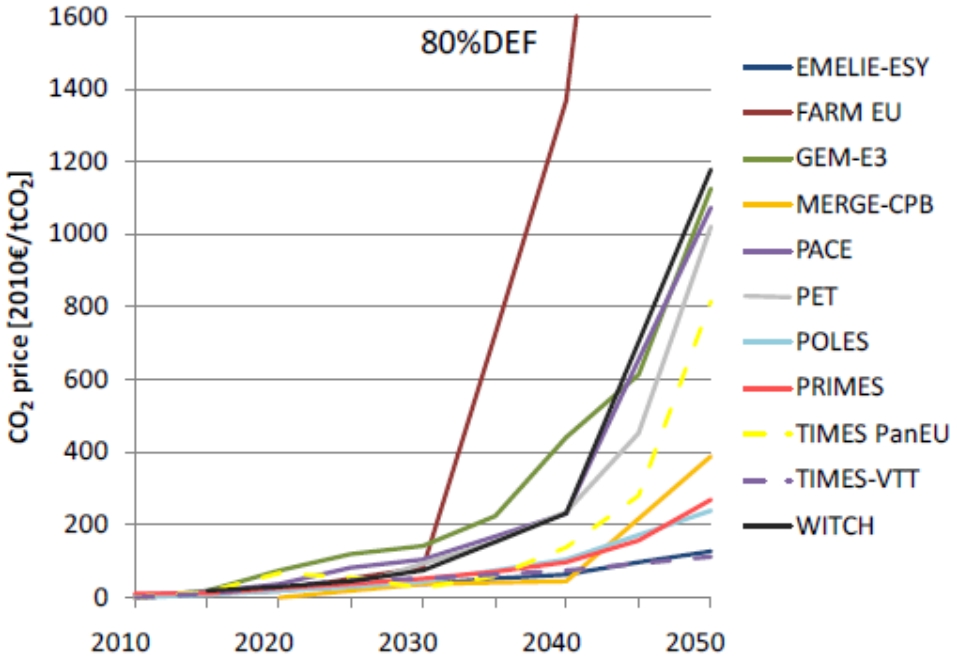
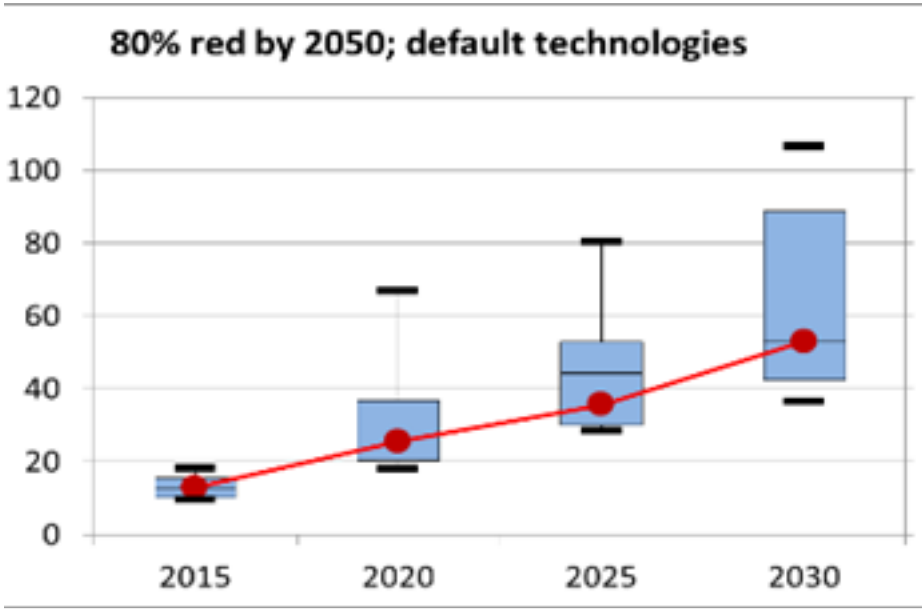
Prices needed to meet Roadmap 2050





Knopf et al. 2013, Edenhofer et al. 2017

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The premise of EU ETS efficiency (3)

- Market should send consistent price signal to reduce emissions, incentivize low-carbon investment

- Prices are well below notions of the SCC or pathways to decarbonization
- Requires cap to be set efficiently in the first place

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The premise that an auction reserve price might be a tax

- Legal analysis was not commissioned
- Our analysis rejects this premise (Fischer et al.)
  - The EU ETS did not require unanimity when it was introduced, and the same should hold for any envisaged amendments aimed at strengthening the overall structure of the system.
  - Reverse price mechanism can therefore be either

    (1) adopted by an amendment of the Auctioning Regulation, which is based on the EU ETS Directive, or

    (2) through an amendment of the EU ETS Directive directly.

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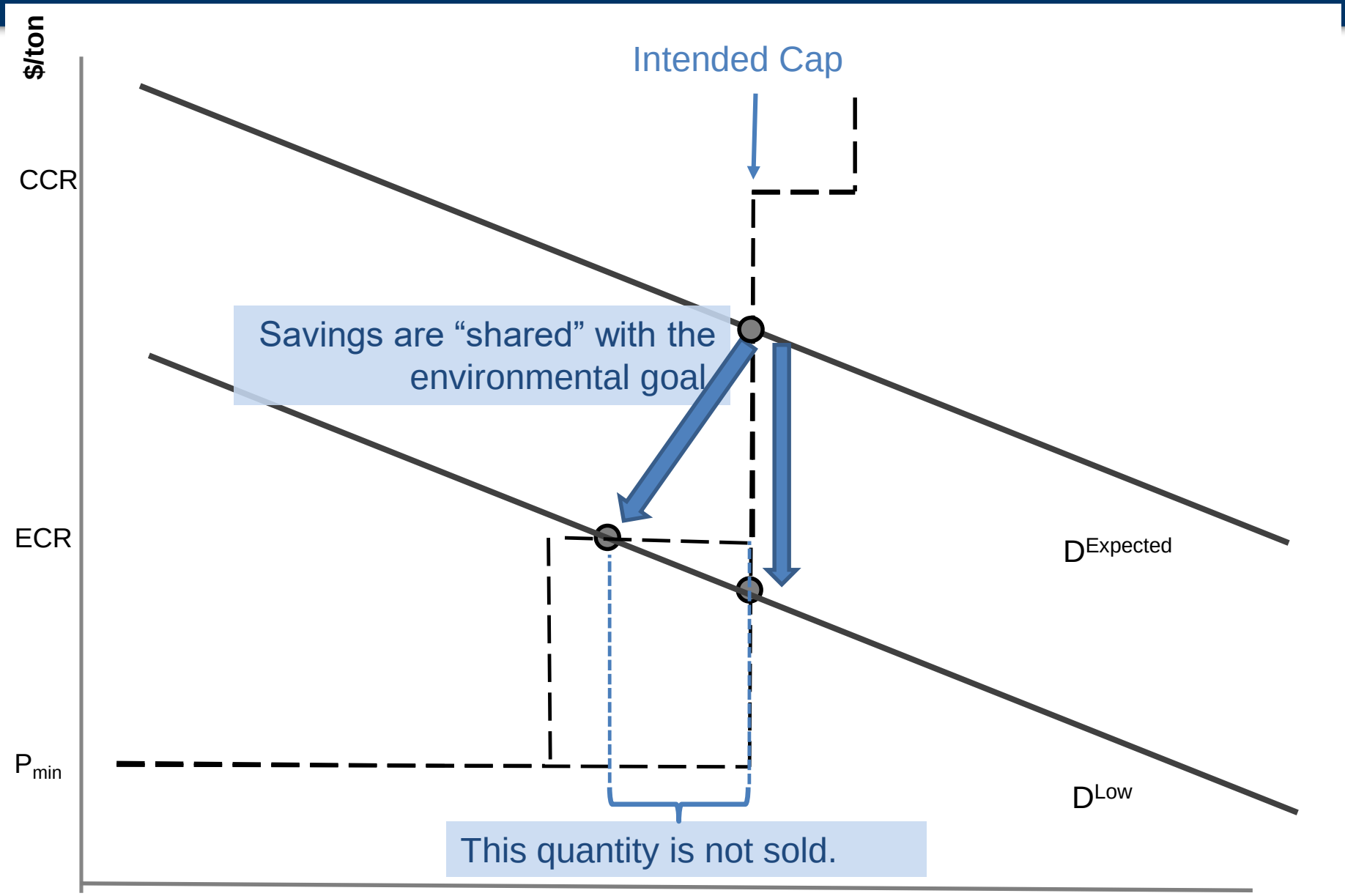
RGGI's price floor innovation. Now an "adaptive cap."



RGGI's new design is a big deal

It further infuses economic ideas into environmental policy (Quantities *with* Prices!)

Relevance to the discussion of price supports in the EU setting?

As RGGI is effectively a program that "links" nine states there is implied transfer to the two states that will not implement the price step

Further relevance for implied transfers in the EU?

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Conclusion

- There is strong downward pressure on prices in trading programs.
- The emissions *cap* is an emissions *floor* unless the waterbed effect is addressed explicitly in program design.
- The EU approach has differed from the North American approach, and seems less effective so far.
- Both approaches have improved over time. The new RGGI innovation may offer an enduring model.

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