

Using Revenue from Emissions Trading

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Resources for the Future

Emissions Trading Systems for Policy Practitioners
International Climate Action Partnership & European Commission

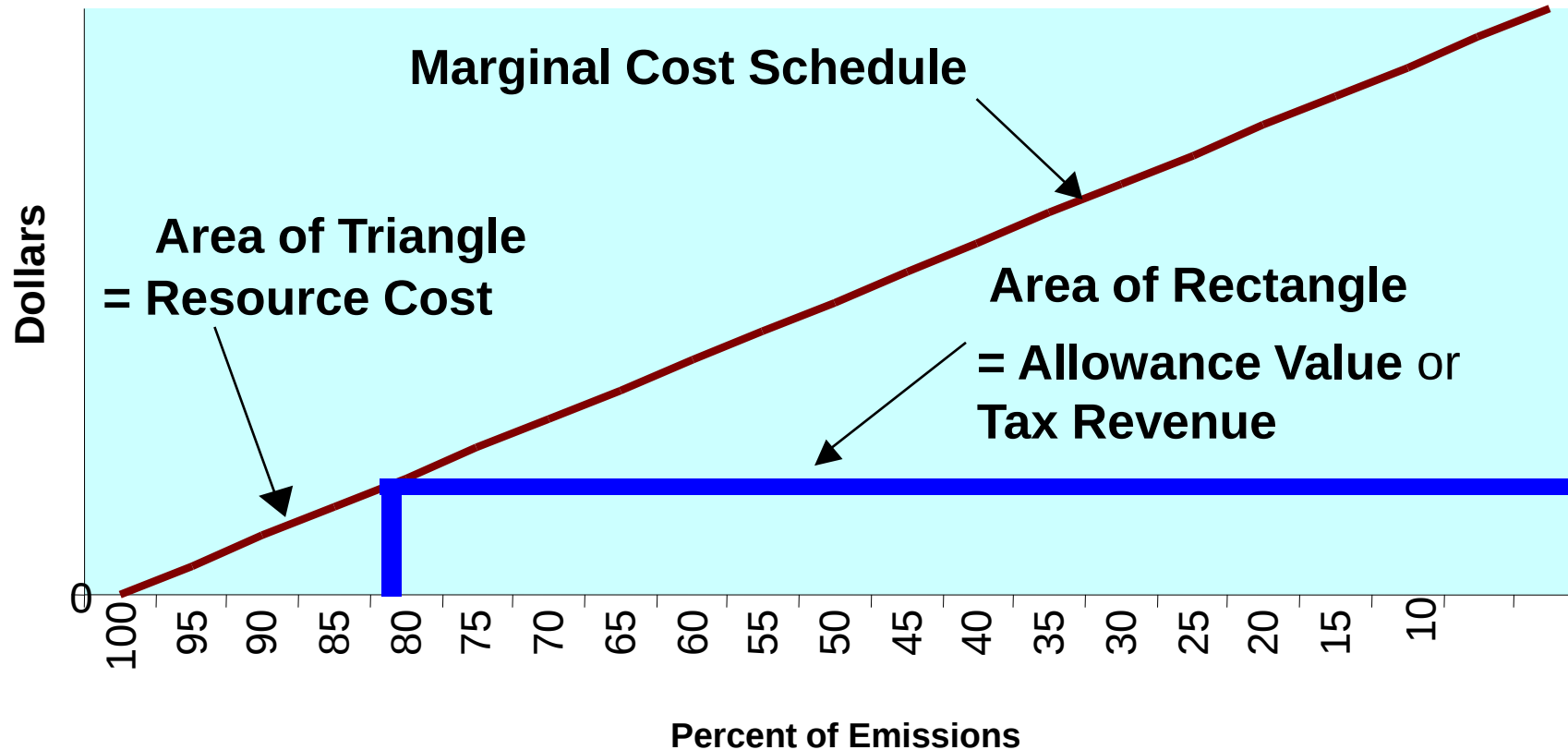
10 March 2021



Useful Principles

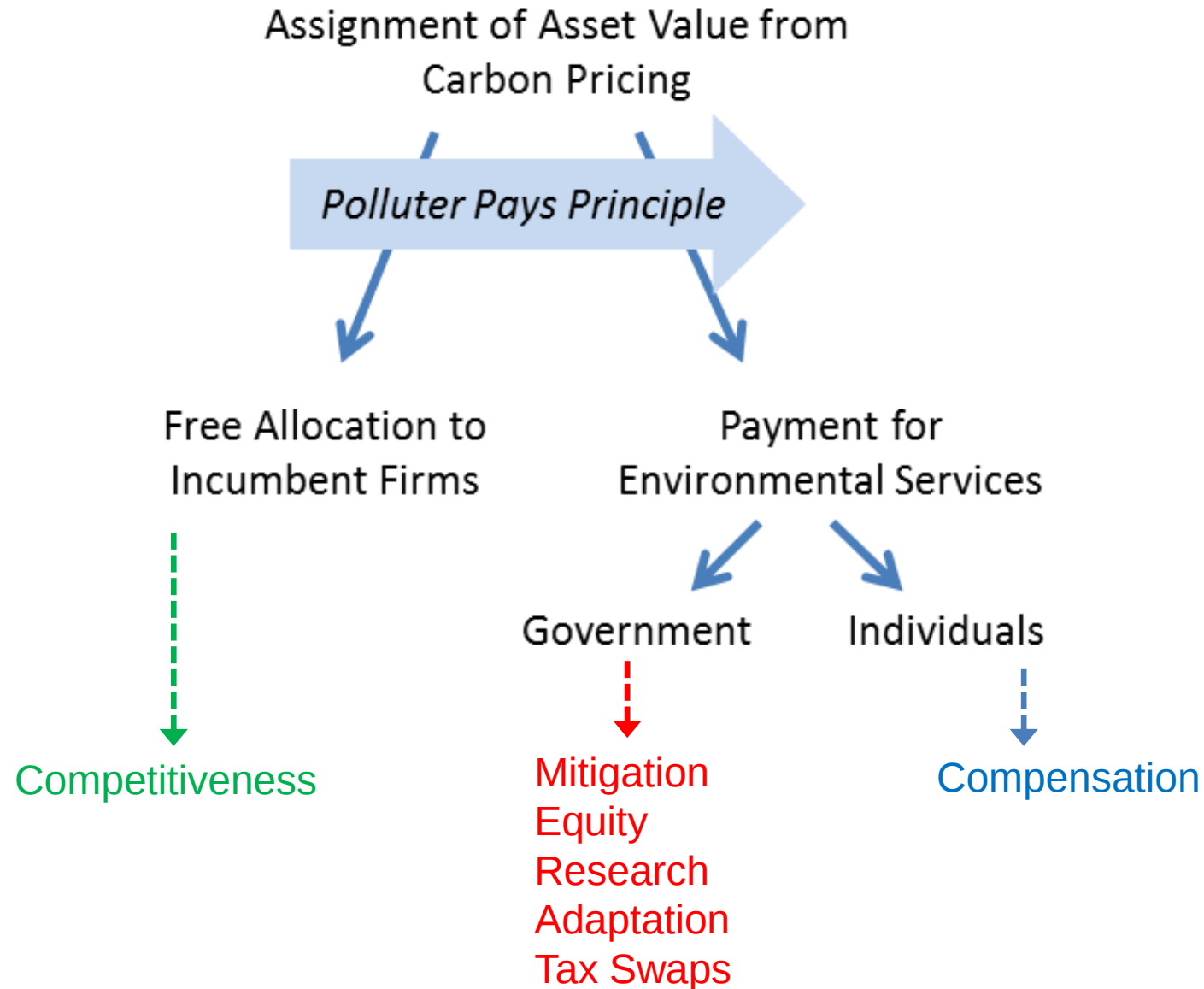
- Pricing is **economically efficient**:
it identifies least-cost means of
emissions reductions
- Key feature: instantiation of **asset value**
- Key question: how is that asset value
distributed in the economy?

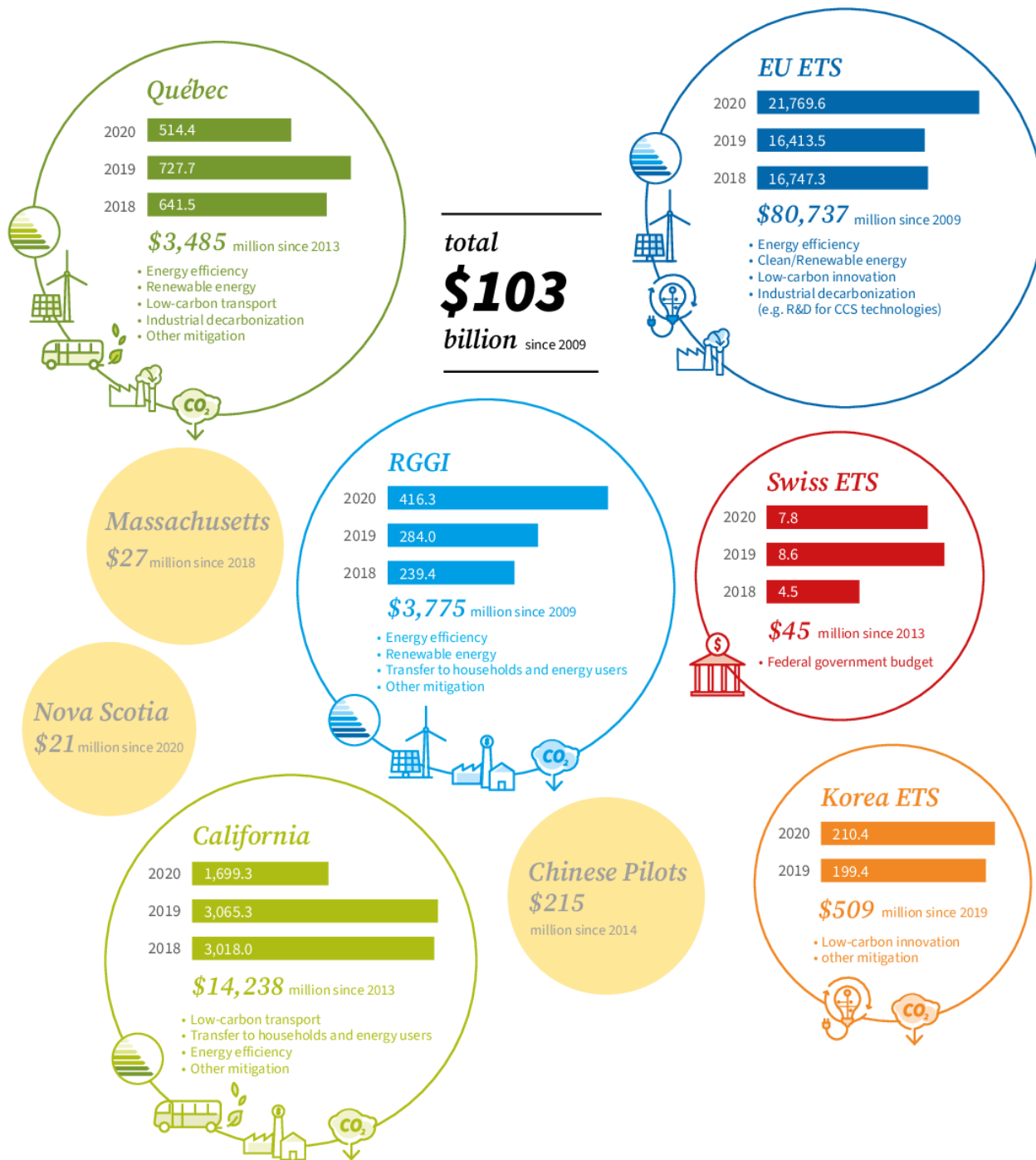
Asset Value under Tax *or* Cap and Trade



At 20% Abatement:
Value of Permits/Tax Revenue = 8 times Resource Cost

The Evolution of Atmosphere Resource Markets





Carbon Pricing Auction Revenue \$103 billion since 2009

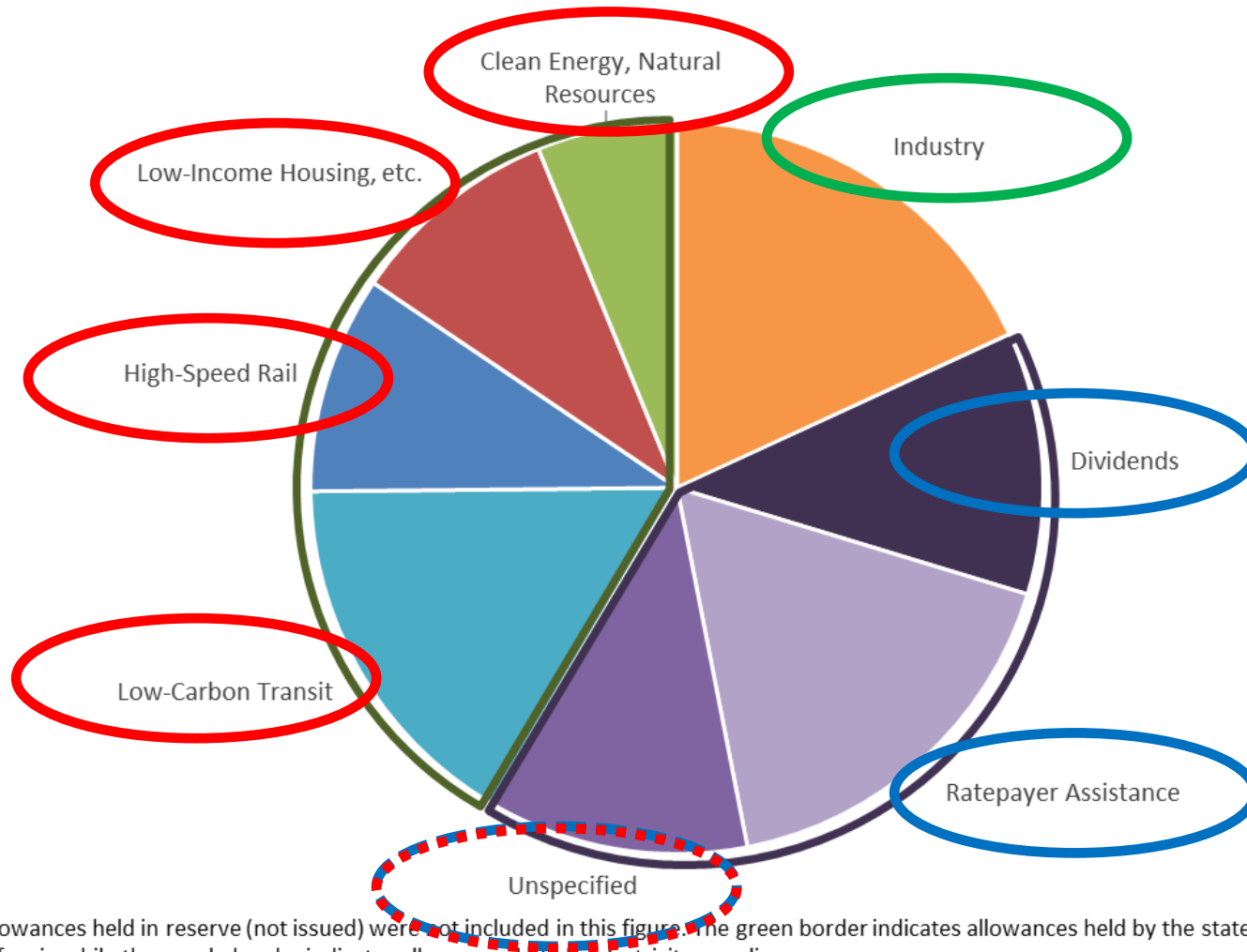
- ✓ Québec \$3.5 billion
- ✓ EU \$80.7 billion
- ✓ RGGI \$3.8 billion
- ✓ California \$14.2 billion
- ✓ Switzerland \$45 million
- ✓ Korea \$509 million
- ✓ China \$215 million
- ✓ Nova Scotia \$21 million
- ✓ Massachusetts \$27 million

International Carbon Action Partnership (ICAP).
*Emissions Trading Worldwide:
 Status Report 2021.*
 Berlin: ICAP (forthcoming)

An Illustration: California



Use of Allowance Value, CA



Competitiveness (~16%)

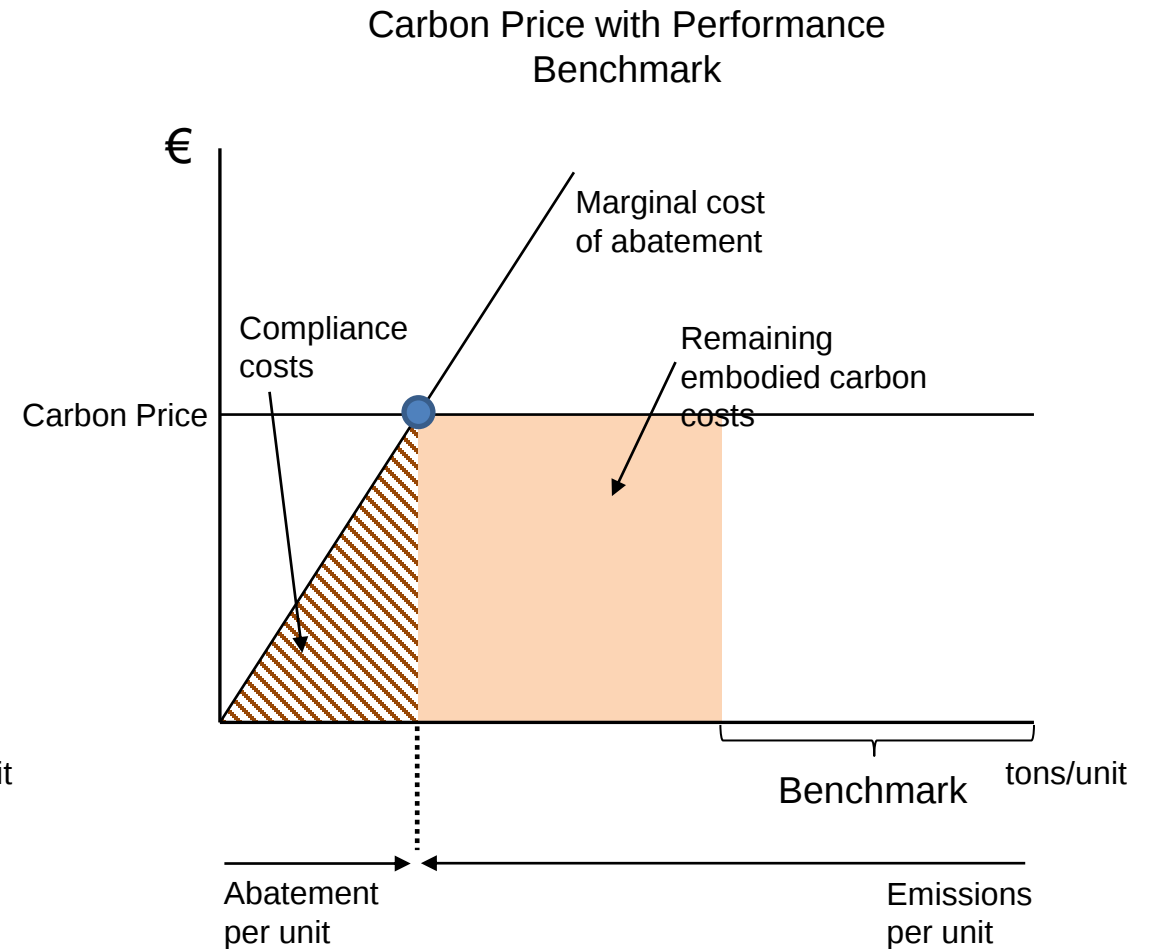
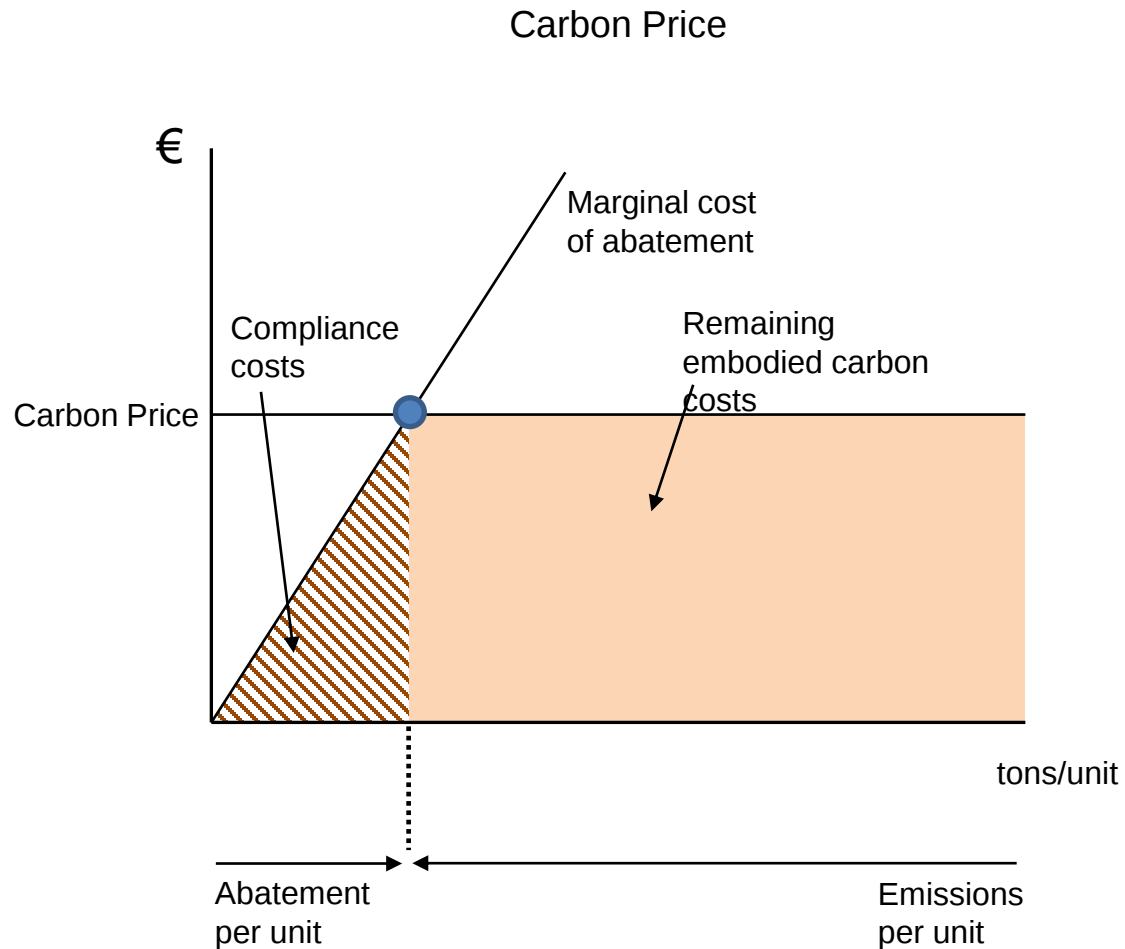
Mitigation
Equity
Research
Adaptation (~45%)

Compensation (~30%)

(Shares are approximate and vary across time)

*Allowances held in reserve (not issued) were not included in this figure. The green border indicates allowances held by the state of California while the purple border indicates allowances held by electricity suppliers

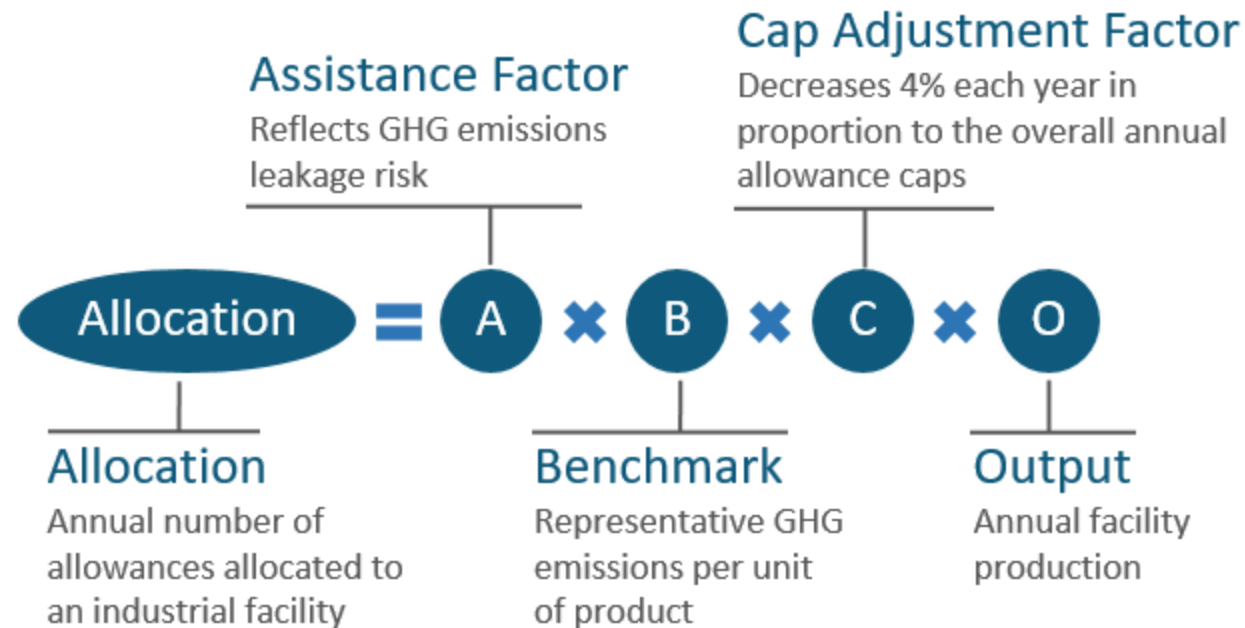
1. Competitiveness: Cap and Trade with Benchmark Allocation



Source: Adapted from Fischer (2019).

Assistance Factor Assumes Constant Leakage Risk

Allocation in California is product based



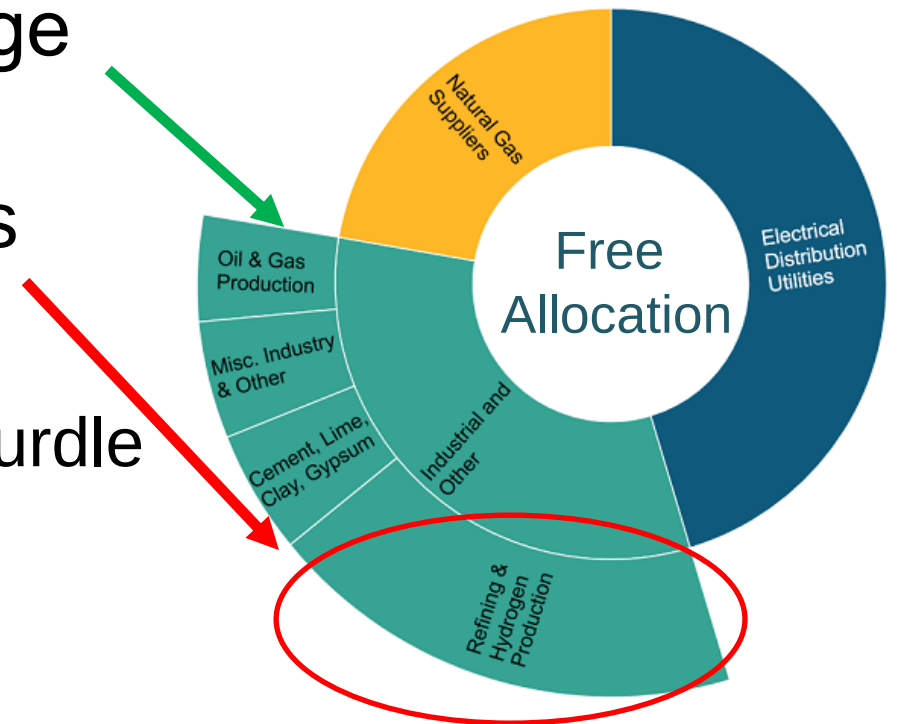
Free Allocation to Industry Has Costs

Example:

About half of total allowance value in California is free allocation- Industry's share (green) is to mitigate leakage

Opportunity cost: free allocation to refineries

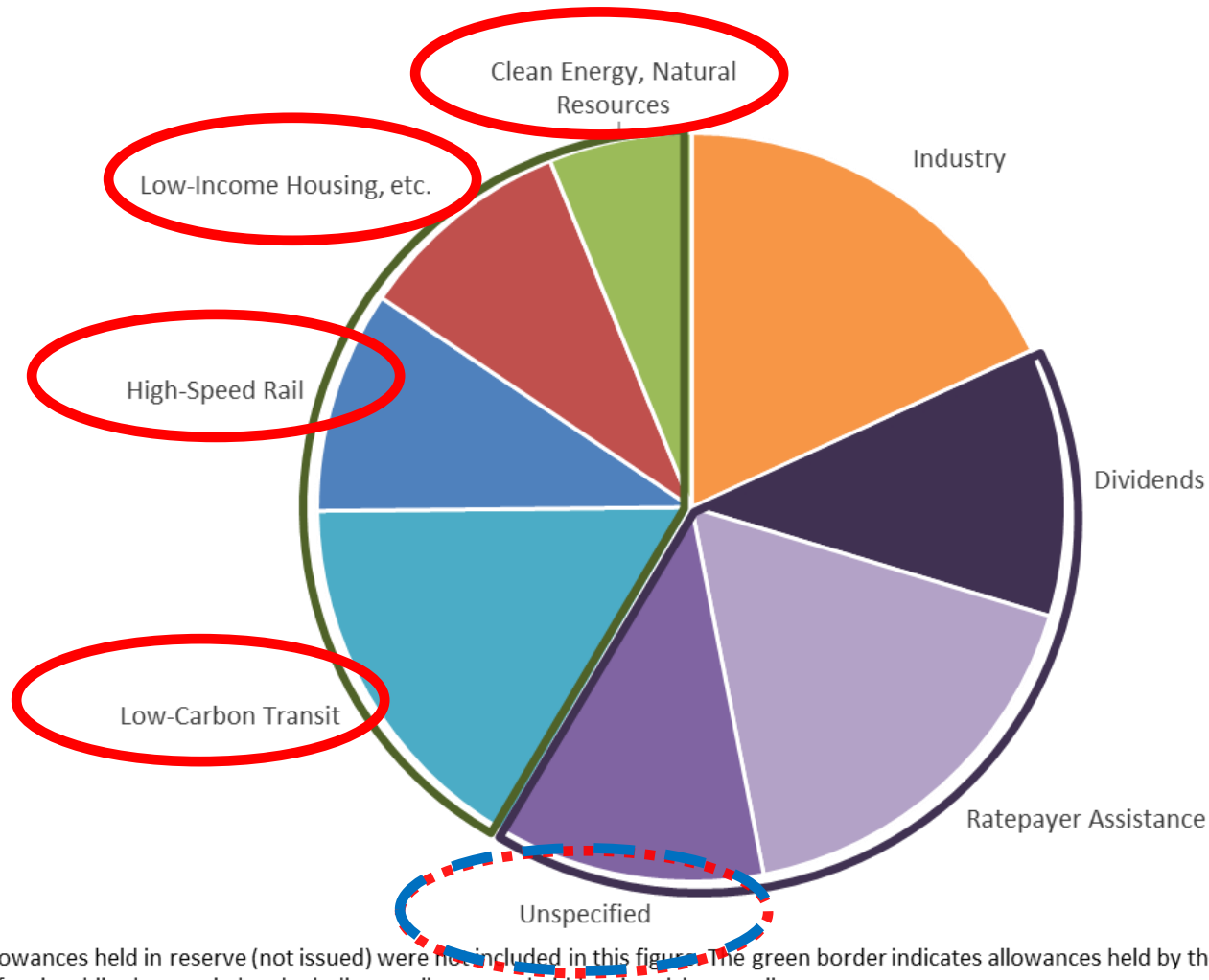
- 2010 EAAC report identified potential leakage at allowance prices > \$25-50/ton (today \$30-\$60/ton) because of investment hurdle
- Concern: fuels might be refined out of state
- Allowance prices only up to \$17/ton
- Annual allocation tops \$500 million in value
 - Windfall?



2. Using Allowance Value to Advance Policy



Use of Allowance Value, CA



Mitigation: Spending allowance value to reduce emissions already covered by the cap

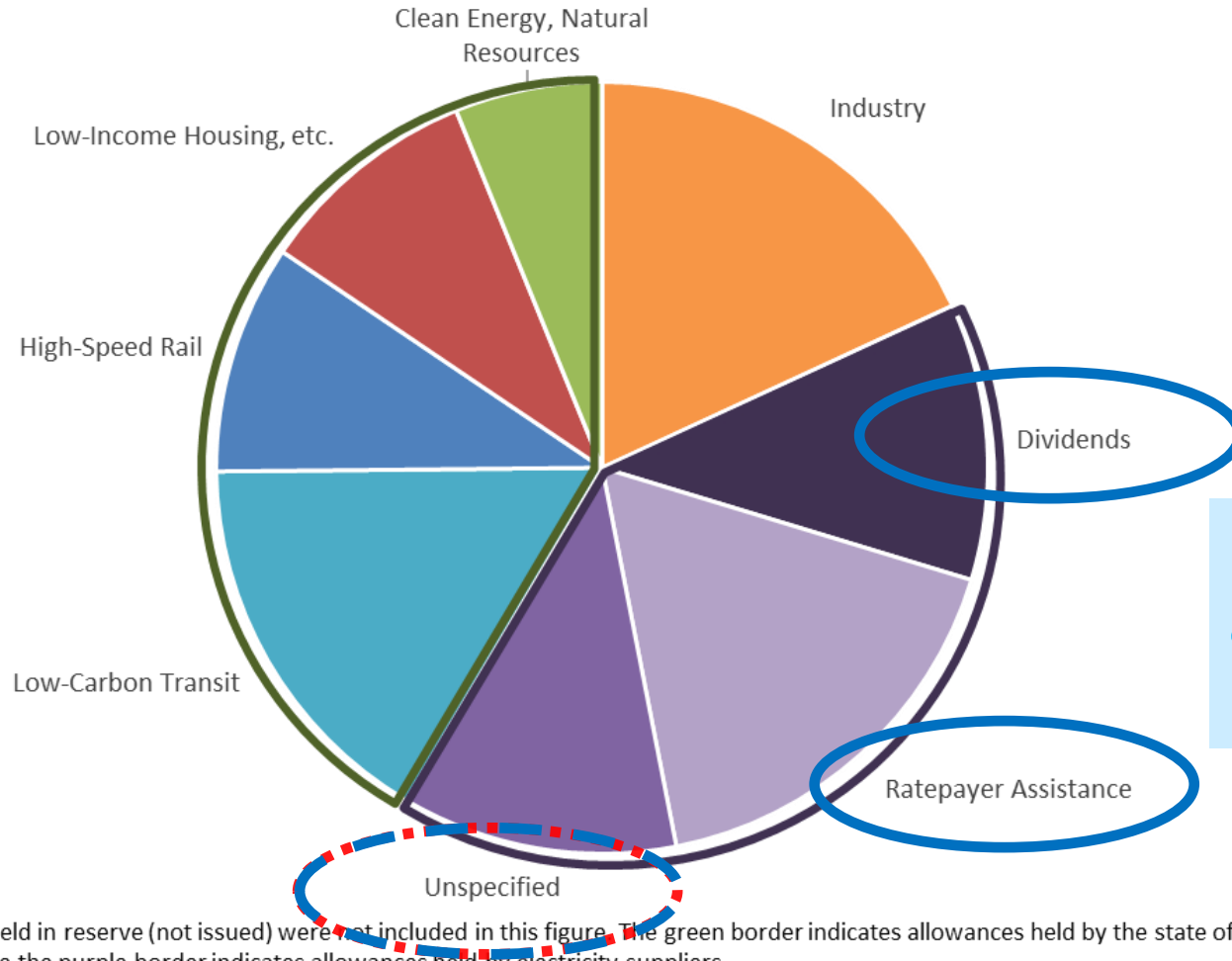
Equity: 55% of auction revenue (about 30% of total allowance value) benefits low-income communities

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3. Compensation



Use of Allowance Value, CA

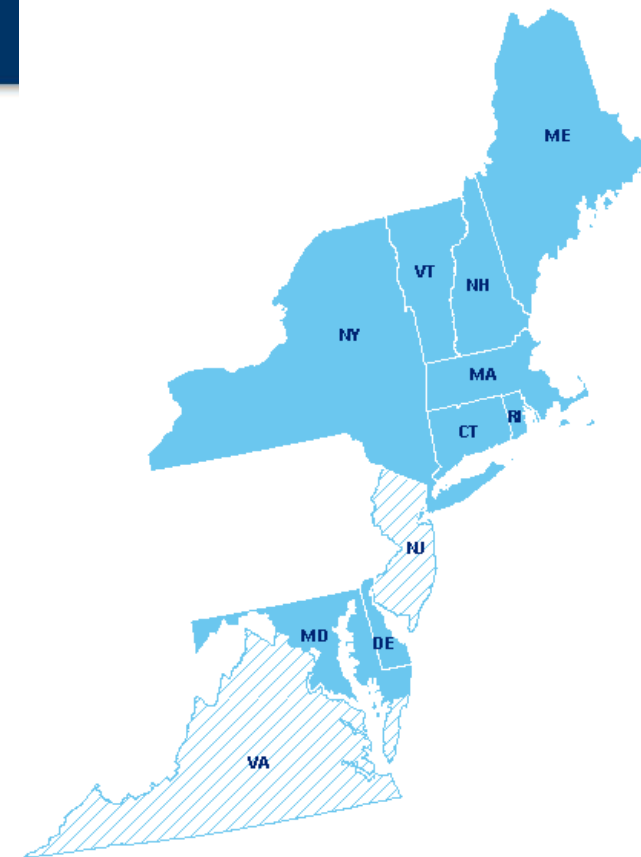
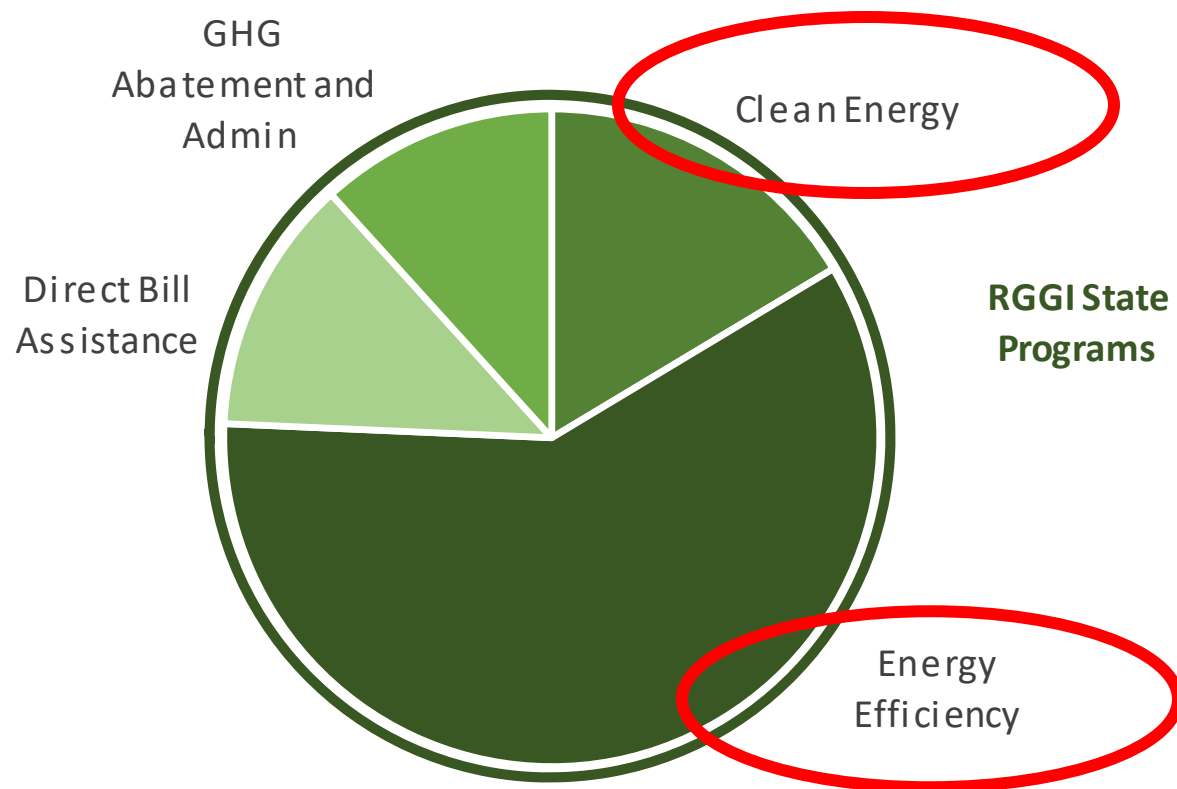


Dividends and ratepayer assistance for electricity and natural gas sectors

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Using Allowance Value in RGGI

Initial Distribution of Allowance Value, RGGI



Spending allowance value to reduce emissions already covered by the cap (>66%)

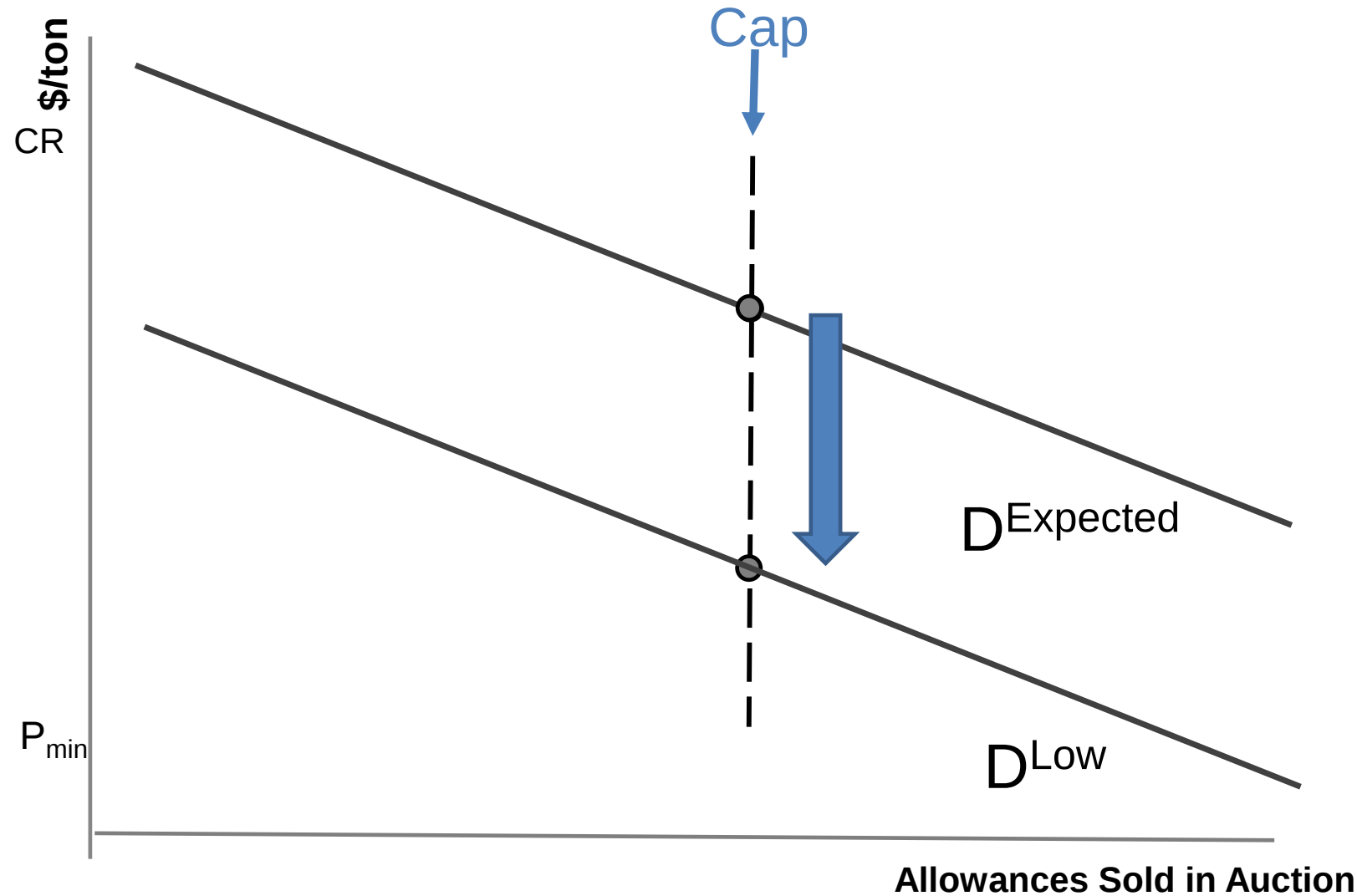
*This figure shows distribution of allowances for 2012-2014. State set-aside allowances and allowances unsold at auction are not included.

Source: Hibbard, et al., 2015

Companion Policies

- Companion policies serve many purposes (Pahle et al. 2018)
 - Broaden burden sharing
 - Reduce leakage
 - Build constituencies and institutions
 - May reduce stranded assets
 - May address path dependence
 - Address market failures
- Allowance revenue is often linked to these policies
 - *Stable allowance revenue becomes important*

If No Price Floor Then Prices Change; Emissions Do Not



Dilemma: Falling Prices in Carbon Markets

Several factors contribute to widely observed falling prices in trading programs

- Over-allocation of allowances
- Declining natural gas prices and electricity demand
- Federal and state programs provide incentives for renewables
- Economic incentives lead to discoveries!
- Program investments in energy efficiency and renewable energy help reduce emissions, and reduce prices



But, falling prices...

- Erode the price signal for further investments (waterbed effect)
- Create variability in auction revenues

A Price Floor Stabilizes Allowance Value & Auction Revenue

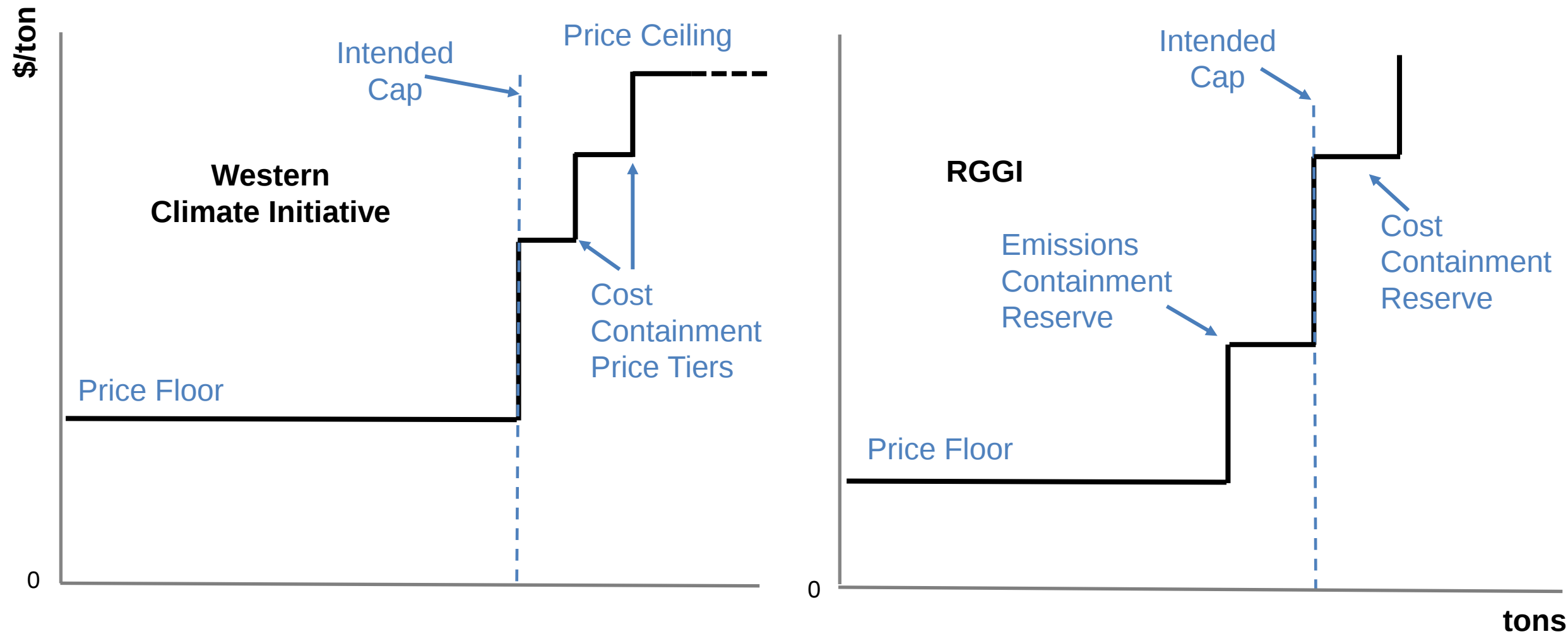
North American markets have a price floor implemented as an **auction reserve price** (like eBay!)

- California illustrates a price floor can work with free allocation to utilities as part of a consignment auction.
- Bids below a floor price are not accepted. If some allowances do not sell, the constrained supply supports the price in the market.

RGGI has an additional feature called an Emissions Containment Reserve

The EU has adopted an alternative mechanism called a Market Stability Reserve

Price-Responsive Supply Schedules in N. American Carbon Trading Programs



A price floor/steps stabilizes allowance value & auction revenue



Thank you.

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