



Implementing the Cap System

Cap, Trade, and Invest

Clean and Prosperous Washington
Sacramento Workshop

Dallas Burtraw
Resources for the Future

October 21, 2021



Road Map

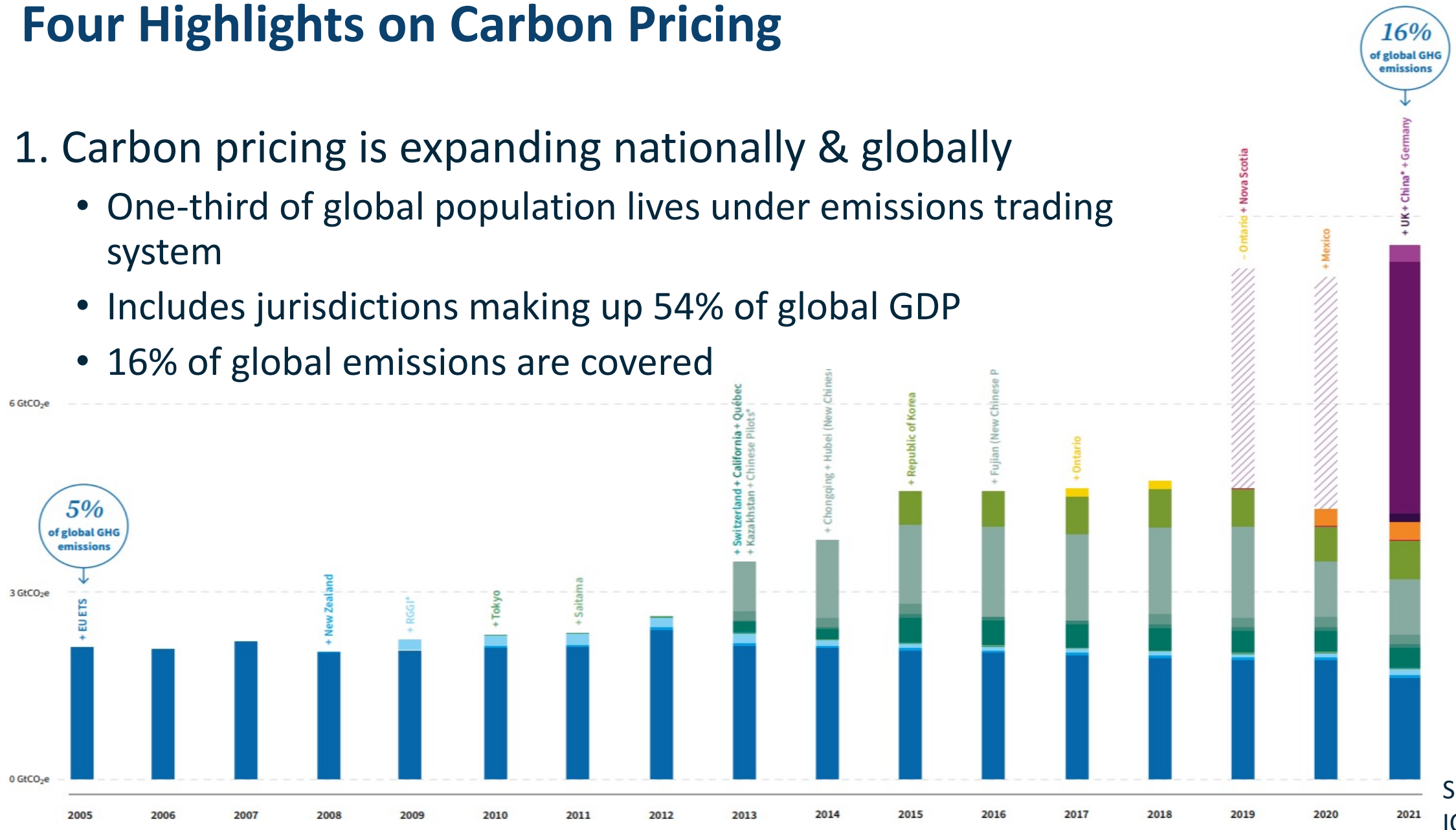
1. Four quick highlights about carbon markets
2. The role of auctions
3. Managing costs
 - Multi-year compliance periods, allowance reserves, price ceiling, banking, offsets, linkage
 - Oversupply



Four Highlights on Carbon Pricing

1. Carbon pricing is expanding nationally & globally

- One-third of global population lives under emissions trading system
- Includes jurisdictions making up 54% of global GDP
- 16% of global emissions are covered



Source:
ICAP

Four Highlights on Carbon Pricing (continued)

2. Prices have been modest to date.

- EU: \$64/ton
- California/Quebec: \$23/ton
- Regional Greenhouse Gas Initiative: \$9/ton
- Pan-Canada “backstop”: \$32 (rising to \$138 in 2030)

3. The policy discussion among economists and others has evolved away from an “either/or” perspective on pricing versus regulation

- These are increasingly viewed as *companion* policies
- Technology policies drive innovation and investment
- Sources outside the market are growing in importance over time
- Carbon pricing supports emissions limits, cost effectiveness, consumer behavior, implementation and scale, revenue for investments, infrastructure, and distributional goals

4. Several features of a well-designed carbon cap support accelerated investment and economic growth



The Role of Carbon Pricing within the Policy Portfolio

An unreported remark...

- In fall 2020, at a meeting in Potsdam about climate policy, the first thing Chancellor Merkel said is that she had come to recognize there is no substitute for talking about a carbon price when signaling the governments long term commitment to climate policy.

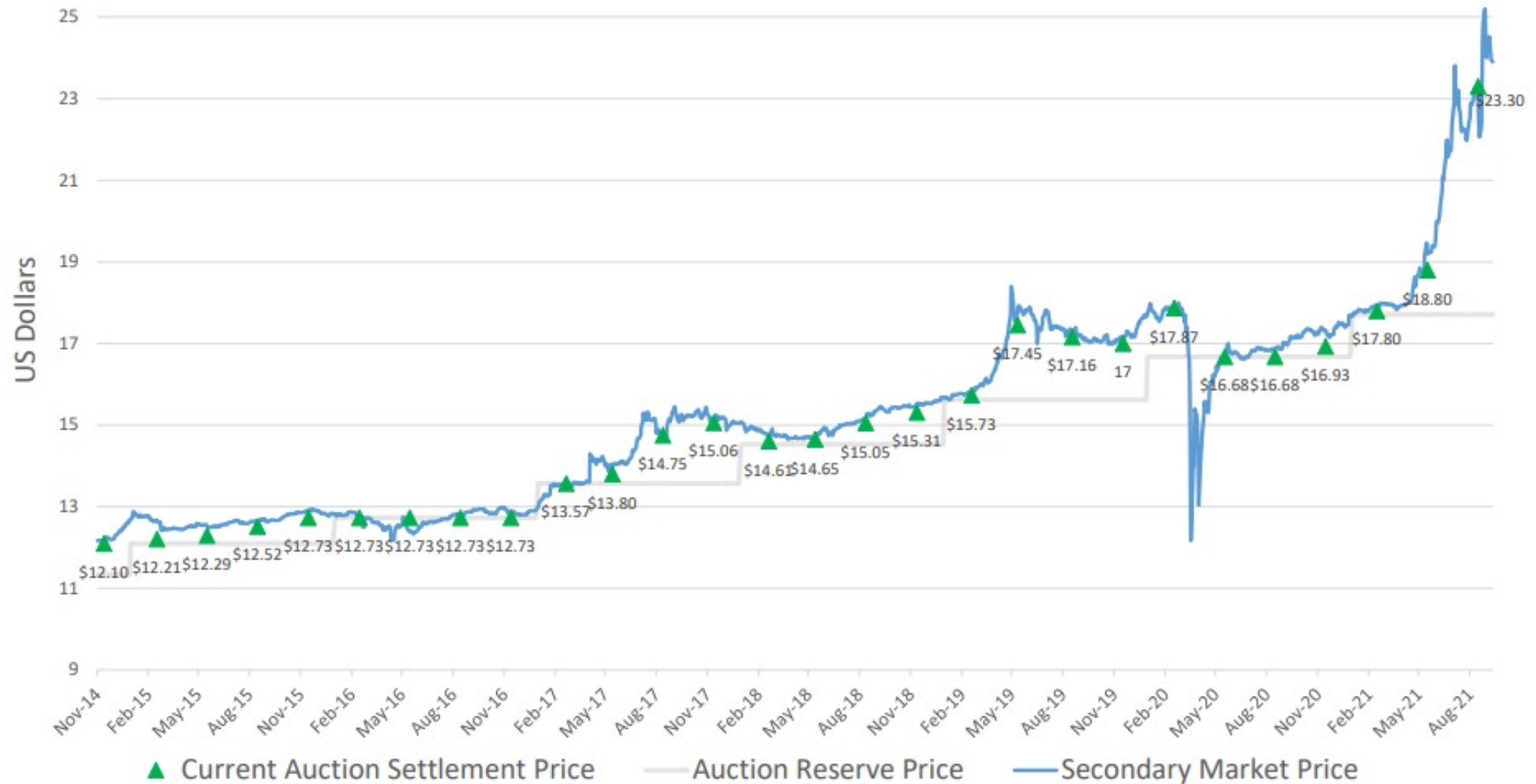


2. Auctions Have Transformed Environmental Markets

- ✓ Uniform price auctions with a reserve price(s)
 - Low transaction costs
 - Price discovery
 - Transparent and equal access to allowances
 - Raises revenue
- ✓ Allocation to protect competitive industries
- ✓ Allocation to protect consumers
 - ❖ *Even free allocation* can be organized through consignment auctions

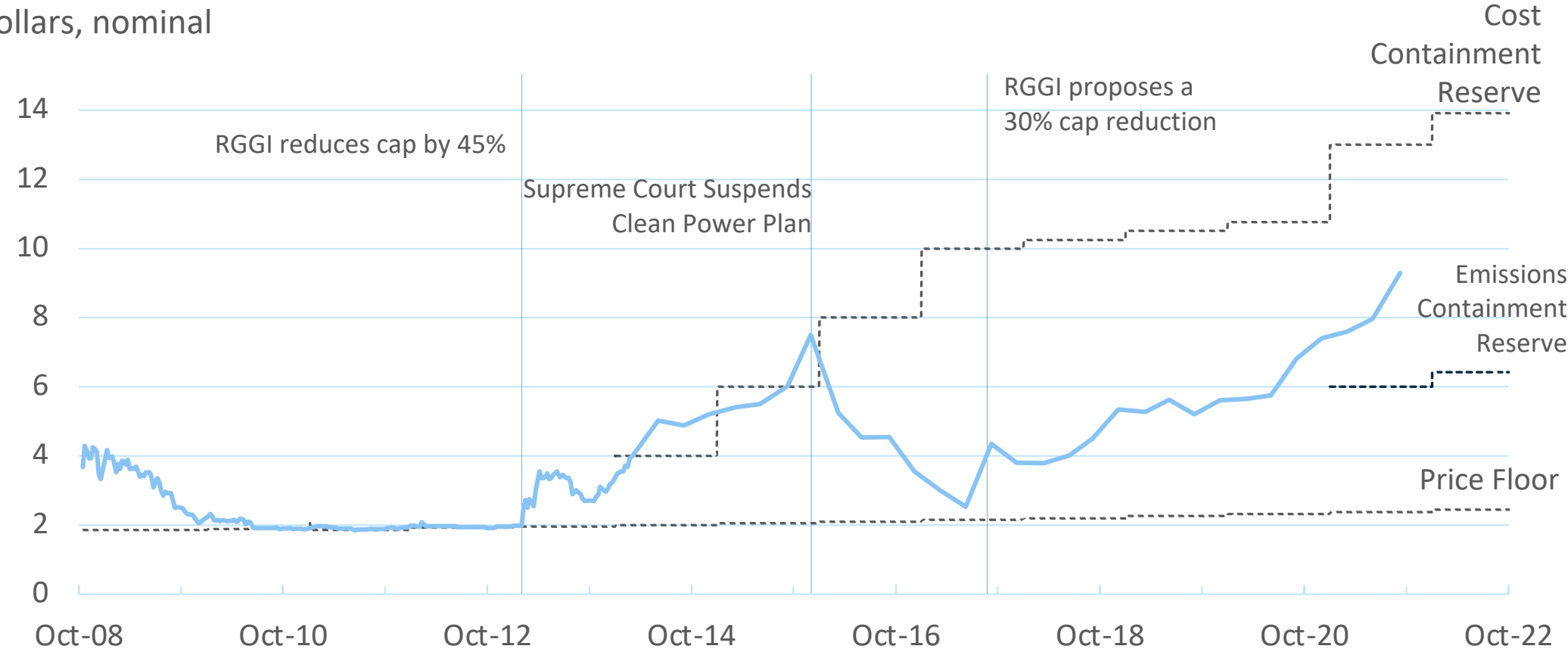


California and Quebec Allowance Prices



Regional Greenhouse Gas Initiative Prices

Dollars, nominal



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



Use of Proceeds

- ✓ Investments
- ✓ Dividends
- ✓ Protect industry

Examples:

- RGGI: Two-thirds of proceeds directed to energy efficiency, starting with largest commercial and industrial energy consumers
- EU: “Benchmarked” free allocation to preserve international competitiveness, while incentivizing investments and emissions reductions
- CA: >50% of investments benefitting overburdened communities;
Output-based free allocation to industry (like benchmarking)
- Canada: Output-based tradable performance standard for industry
- BC: Industry fund for investment and partial feebate (incentive rebate)

Auction proceeds have yielded \$103 billion since 2009

e.g., CA: \$17B, RGGI: \$4B, QE: \$3B, EU: \$81B, MA: \$27M, China: \$215M, Korea: \$509M

Remember that everything including free allocation has an opportunity cost



Dividends
have a role in
the California
program



What is the California Climate Credit?

A Message from the California Public Utilities Commission

This October* your electric bill will include a credit identified as the "California Climate Credit." Your household and millions of others throughout the state will receive this credit on your utility bills.

The California Climate Credit is part of California's efforts to fight climate change. This credit is from a state program that requires power plants, natural gas providers, and other large industries that emit greenhouse gases to buy carbon pollution permits. The credit on your bill is your share of the payments from the State's program.

The Climate Credit is one of many programs resulting from landmark legislation called the Global Warming Solutions Act of 2006. Together, these programs are cutting pollution, creating jobs, and investing in cleaner energy and transportation. Your Climate Credit is designed to help you join in these efforts. Visit www.EnergyUpgradeCA.org/the-movement to learn



3. Managing Costs

- ✓ Multi-year compliance periods
- ✓ Allowance price containment reserves and price ceiling
 - Price containment reserves \$41.40 and \$53.20 in 2021
 - Price ceiling \$65
- ✓ Banking with holding limits
 - Promotes early action
 - Creates constituency supporting the program
 - Reduces costs and eases planning for industry
 - Mitigates market uncertainty



3. Managing Costs (continued)

- ✓ Offsets: U.S. forests, ozone depleting substances, livestock, mine methane capture, rice cultivation, urban forest
 - Huge potential (1/4 of GHGs are outside fossil fuel related CO₂)
 - Achieves related environmental benefits and builds constituency
 - The challenge is measurement
 - Better inside or outside the market?
- ✓ Linkage
 - Reduces costs, mitigates market uncertainty
 - Mitigates leakage
 - Addresses the coordination challenge of climate policy across jurisdictions
 - A challenge can be financial flows
- ✓ Supply adjustments: administrative and/or automatic



The Biggest Practical Challenge has been *Low Prices*

- Over-allocation: political economy, who is in the room?
- Companion policies, addressing additional concerns:
 - air quality, job creation, economic development strategies
- Programs designed for investment to reduce emissions
- Sub-jurisdictional efforts
- Incentives work to find ways to lower costs!

... Falling prices erode the payoff to early actors and the price signal for further investments

✓ California has an auction reserve price floor



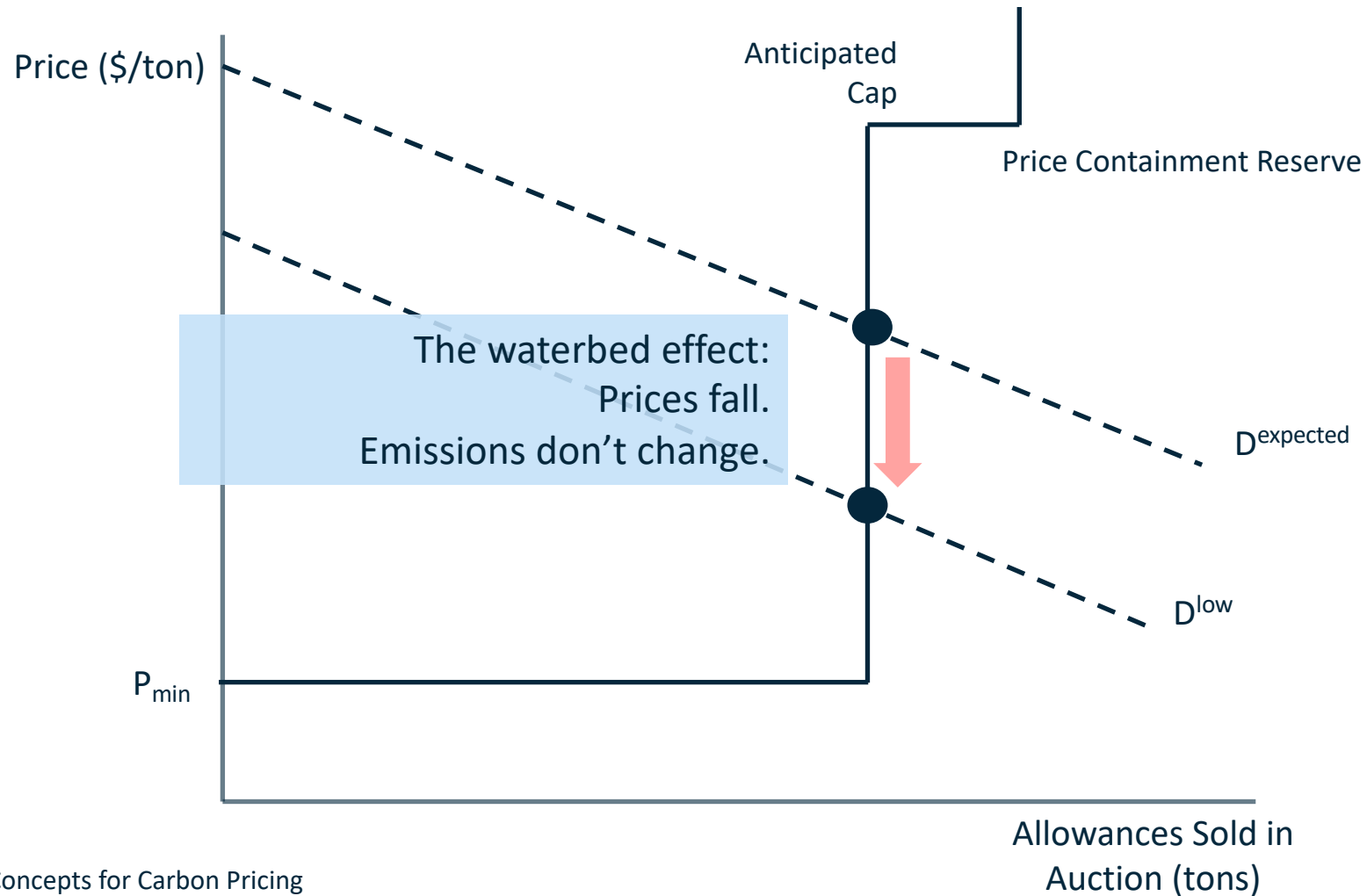
Dilemma: *Additionality* under an Emissions Cap

Cap and trade: Emissions reductions from companion policies lead to **the waterbed effect**

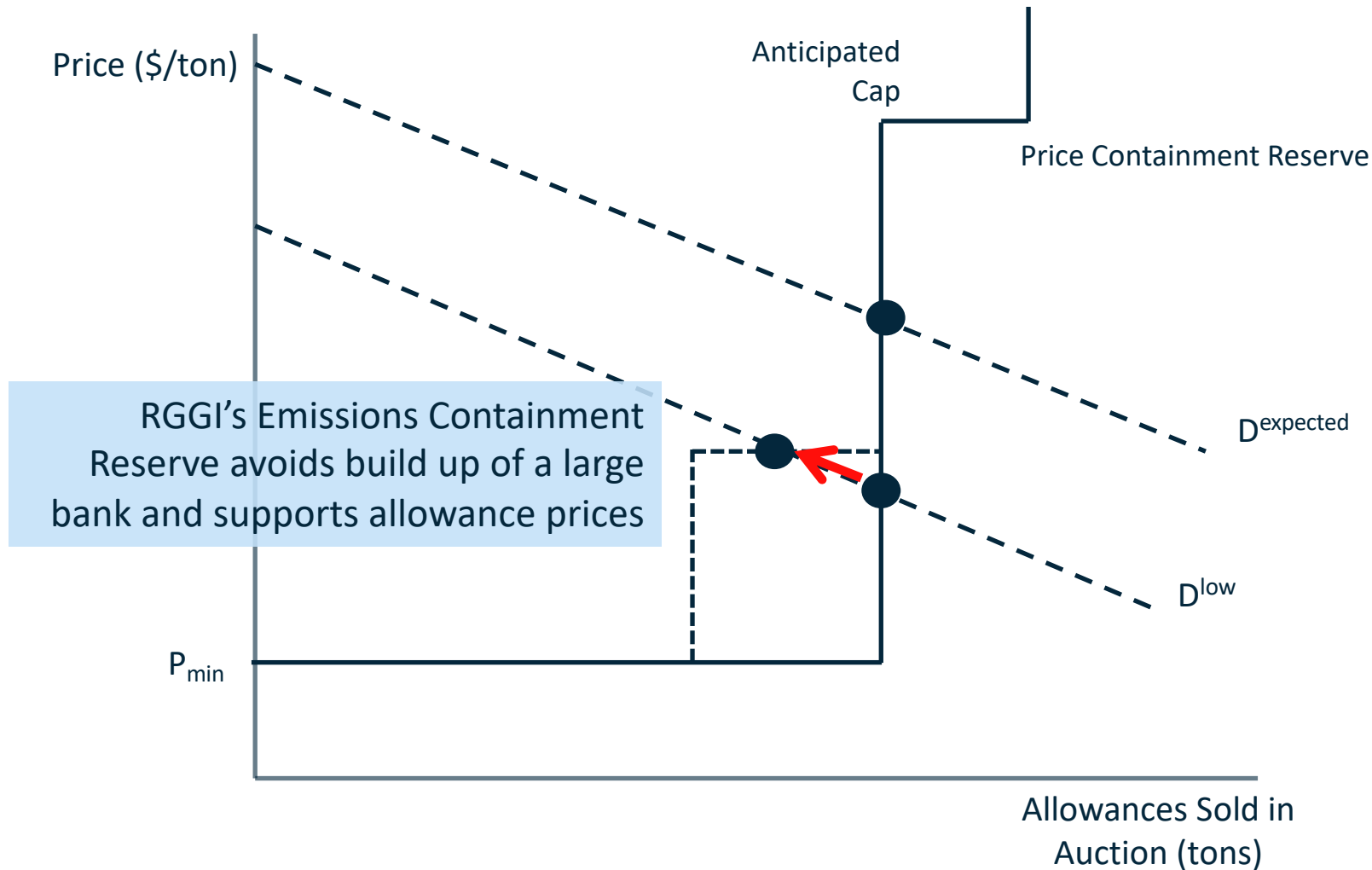
- An emissions cap is an **emissions floor**, leading to 100% leakage of individual efforts (at least in the short term)
- Prices fall, and emissions go up somewhere else, or the allowance bank grows large!
- Large banks have been addressed through adjustments to allowance supply
 - ✓ Administrative review
 - ✓ Automatic adjustment



A Supply Schedule for Emissions Allowances



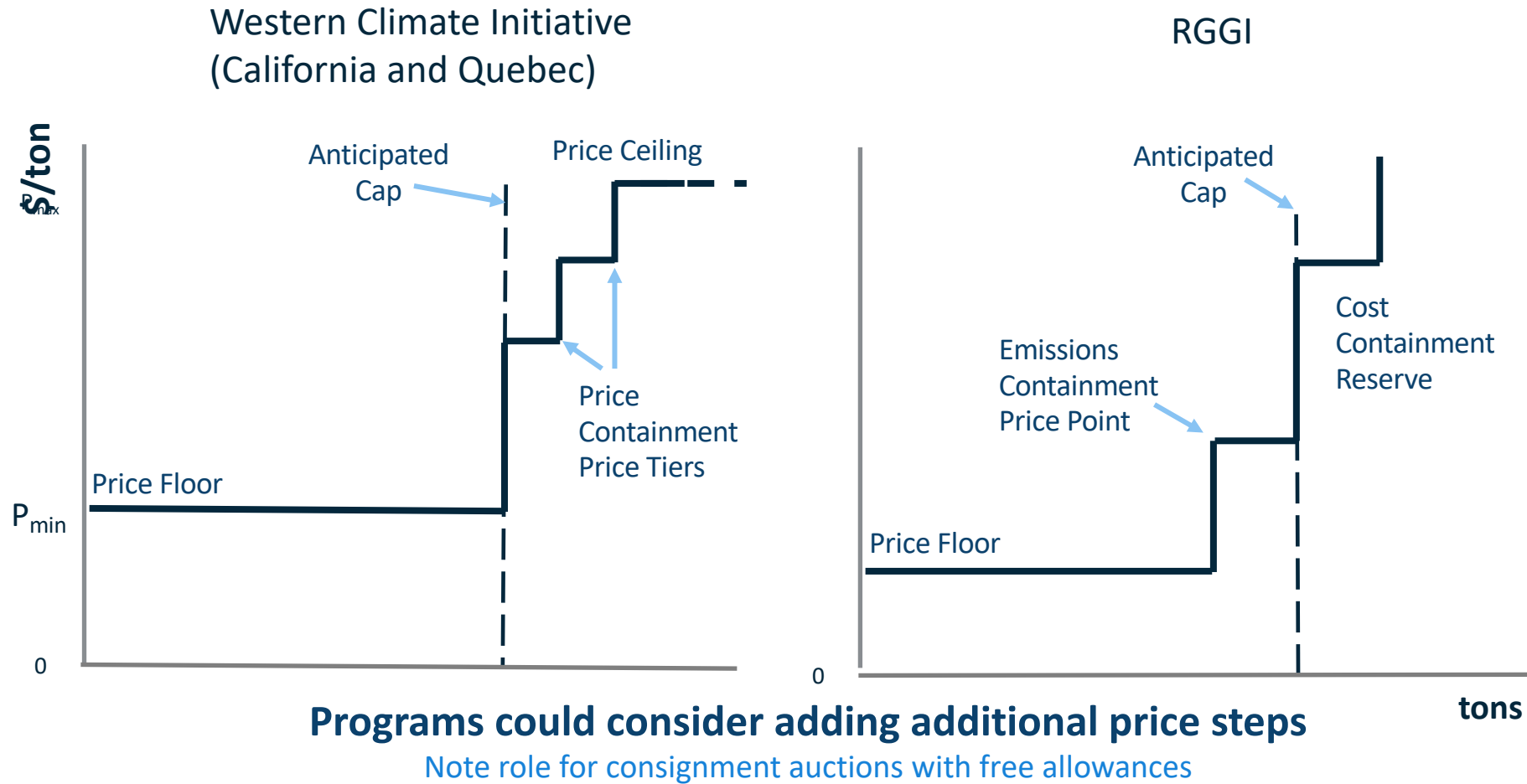
Automatic Adjustment: A Supply Schedule with a Price Step



Generally in commodity markets supply responds to the market price



The New Model for Carbon Trading Programs Has Multiple Price Steps



Summary

1. The policy dialogue has moved beyond *either-or* perspectives on carbon pricing and companion regulatory policies
2. Multi-year compliance, allowance reserves, price ceiling, banking, offsets, & linkage mitigate high prices
3. But prices have been modest. Low prices and oversupply have been the practical concern for carbon markets
4. Supply adjustments may be necessary. Automatic adjustment using auctions with price steps play a central role in successful carbon markets



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