Approaches to Adjusting Allowance Supply in California's Cap-and-Trade Program

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Resources for the Future

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Evaluating Allowance Supply

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Three questions regarding allowance supply

1. What is the size of the bank?
   - How is the bank defined? I assume it is the total number of allowances in private and public accounts exceeding current compliance obligations.
   - Is this information transparent?
   - How is the bank anticipated to change over time?
2. Is the bank too large (or potentially, too small)?
   - Is the bank sufficient to mitigate the potential exercise of market power, absorb variation in market conditions (demand, hydro, loss of a nuclear plant, etc.)?
   - Does the bank enhance or impede innovation?
   - Does the bank enhance or impede ambition emissions reduction goals?
3. If so, what should be done?

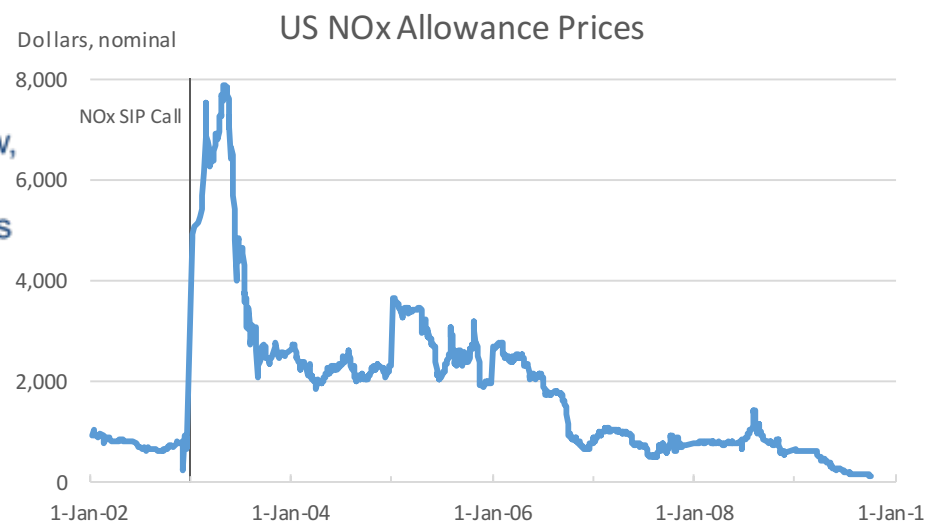
What might cause low prices and a large bank?

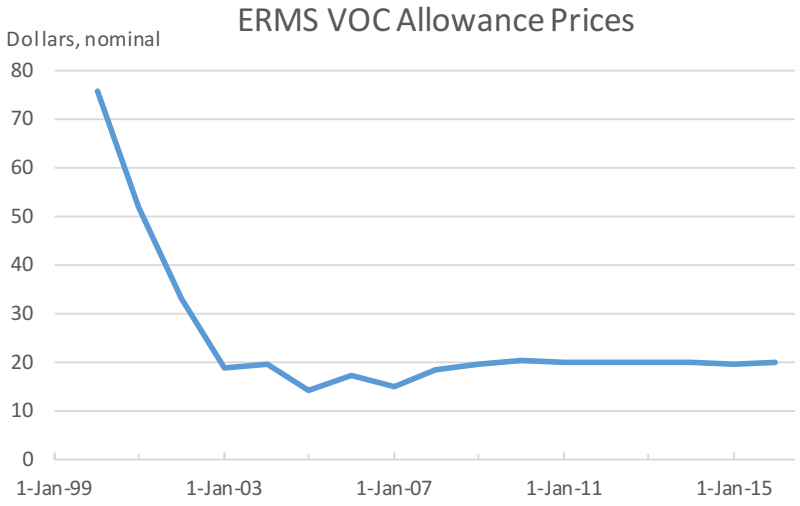
1. Inadequate ambition
2. Regulatory risk (low prices with a *small* bank)
3. Companion policies
   - Carbon prices play a partial but growing role over time
4. Program-related spending
5. Sub/super jurisdiction policies
6. Secular changes in resource availability, energy demand
7. Technological innovation

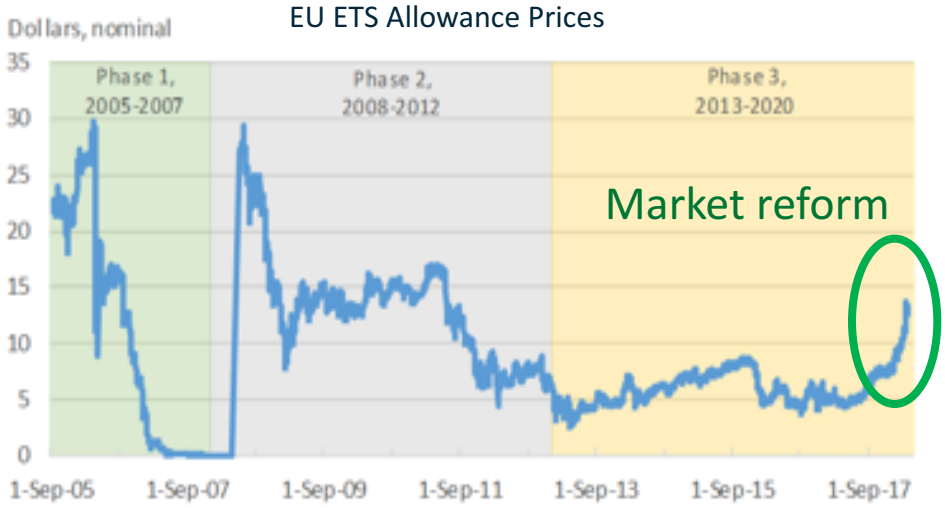
Note, low prices are not guaranteed. As Borenstein et al. show, CA prices could be low or high in the future

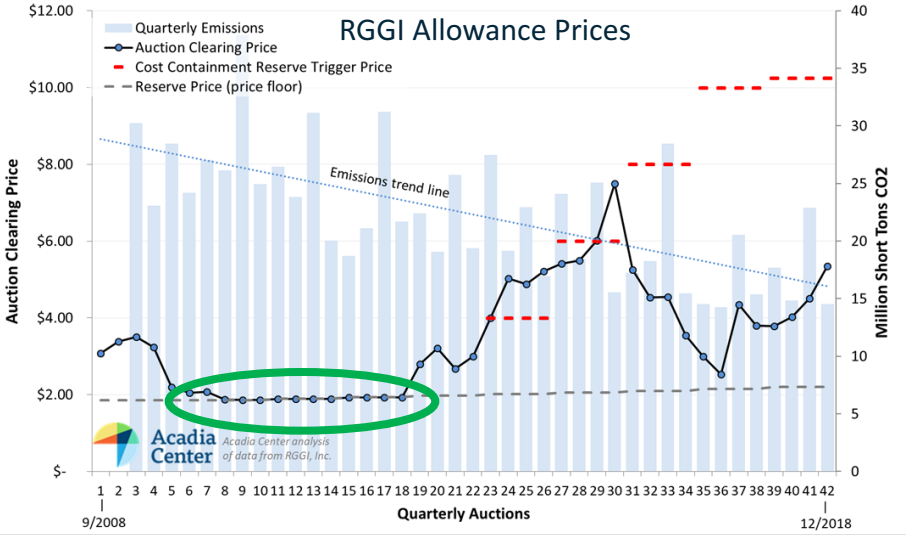
Nonetheless, in previous atmosphere resource markets, long-term prices have always fallen below expectations

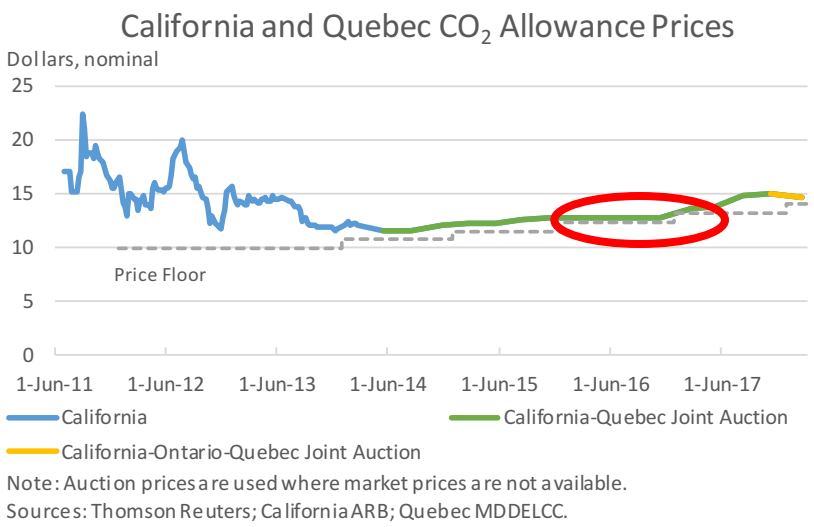
Allowance prices have tended to fall below expectations in cap-and-trade programs







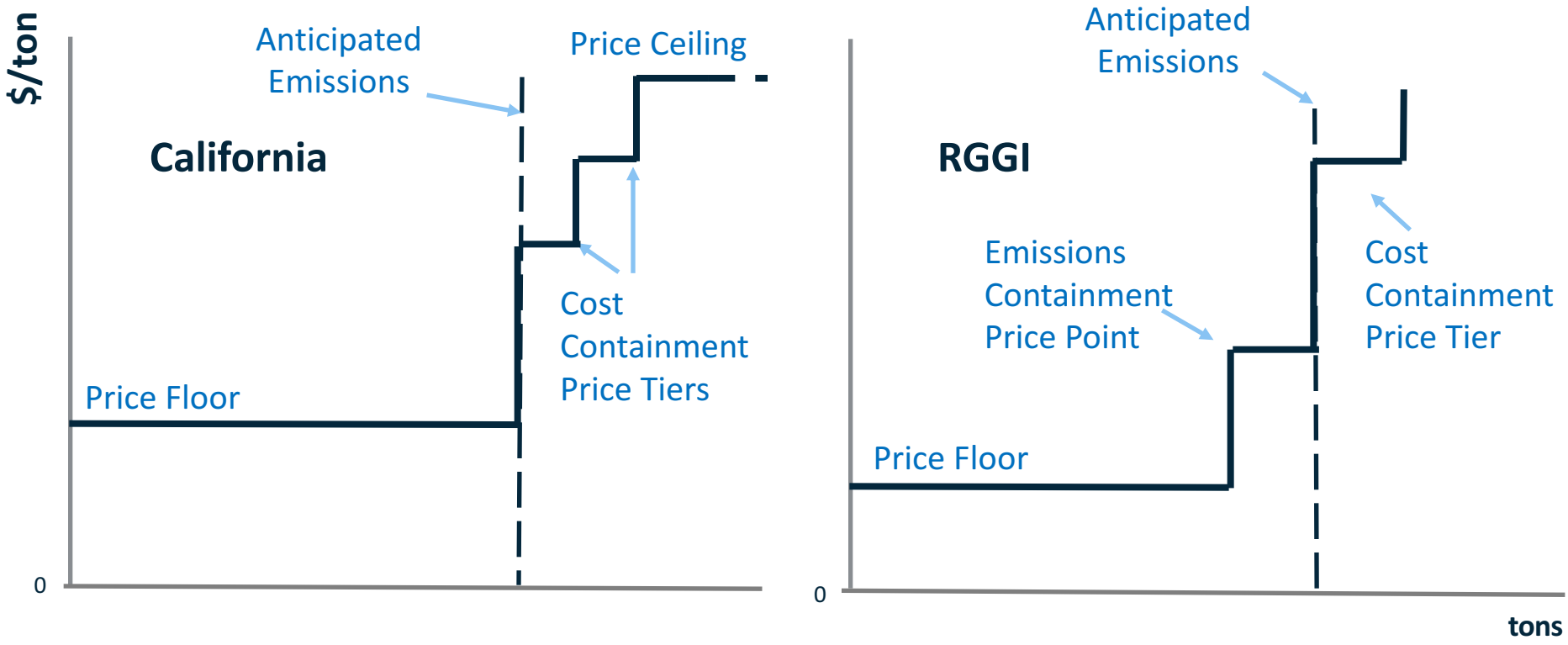




Note: Auction prices are used where market prices are not available.
Sources: Thomson Reuters; California ARB; Quebec MDDELCC.

The North American programs have implemented price floors

Supply Schedules in North American Carbon Markets



- Allowance markets no longer have fixed allowance supplies

Given the emissions cap, shouldn't low prices or a big bank be a good thing?

- The waterbed effect reduces prices and erodes the integrity of individual action
- Low prices undermine innovation, investment
- Low prices undermine market confidence, inviting reliance on companion policies
- A large bank could erode emissions reductions that are achieved in the next decade

When is it time to administer a remedy?

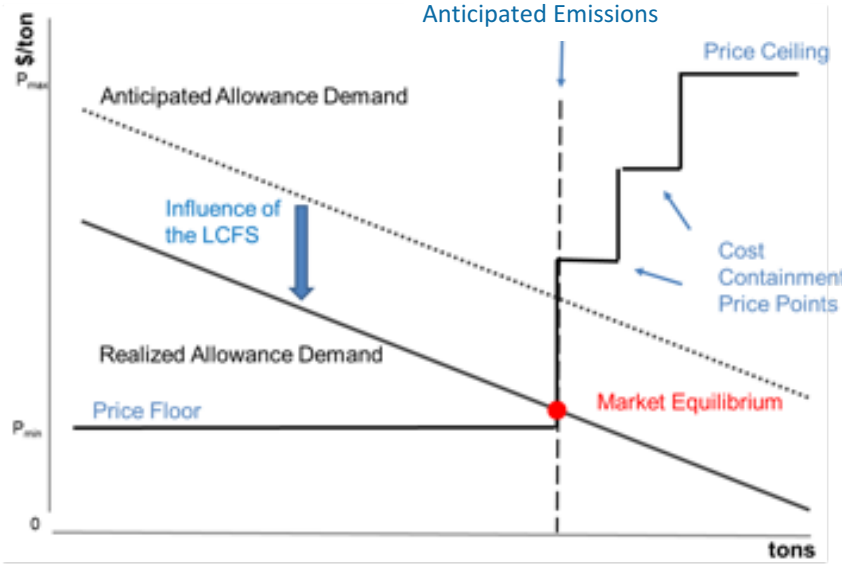
- California has implemented program adjustments as part of scheduled program reviews, an option that always remains available
- However, ongoing administrative adjustments involve difficult decision processes
- A rule-based adjustment to allowance supply (e.g. the price floor) has the advantage of greater predictability and program stability

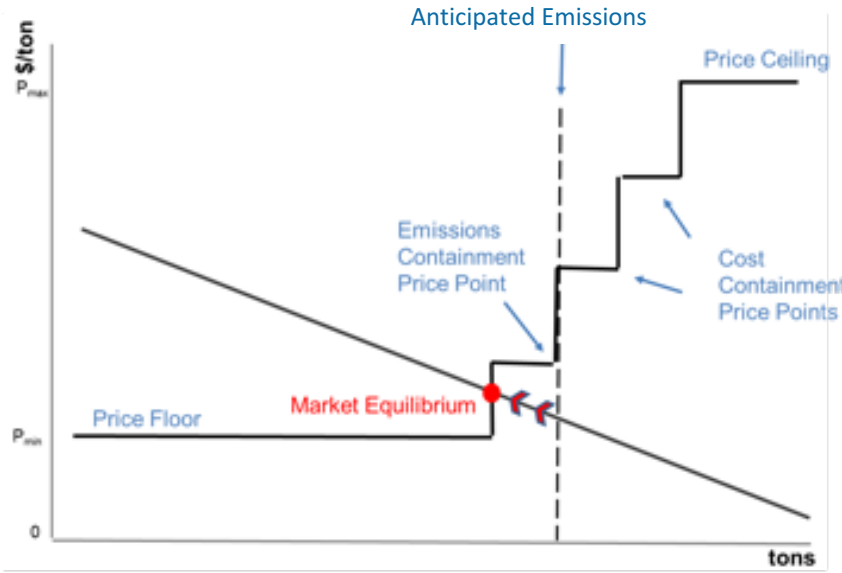
Potential remedies to adjust allowance supply

- Adjustments to the cap
- Adjustments to the flow of unsold allowances at the price floor back into the market and/or into the allowance price containment reserve
- Vintage differentiate allowances, for example, by applying a discount rate on banked allowances
- Increase the price floor
- Use allowances as an alternative compliance instrument (with appropriate currency adjustment) in the LCFS
- Introduce additional price-triggered supply adjustments like the emissions containment reserve

Like the price floor, an emissions containment reserve preserves the additionality of emissions reductions from companion policies over a range of allowance prices

- As an example, ICF (2017) finds the 20% LCFS target could reduce projected allowance prices by half, helping “ease compliance in the cap-and-trade program.”
- However, until prices reach the price floor, there is no reduction in aggregate emissions





The emission containment reserve shares the contribution of the LCFS between emissions reductions and lower prices

Potential unanticipated consequences of adjustments

- CA's allowance surplus may attract new linking partners
- A change in allowance supply will affect currently linked markets
- Reduced allowance supply will increase the value of banked allowances with benefits to allowance holders
  - This can be addressed with vintage-differentiation
- Administrative adjustment may increase regulatory risk
  - Rule based approaches may lessen this perception
- Sudden price increase may surprise business, households
  - Rule based approaches may lessen this surprise element
- Change in revenue for government programs
  - The outcome depends on elasticities. In modeling, we found the emissions containment reserve would increase revenue for RGGI.

Possible elements of a best strategy

- A rule-based approach such as an emissions containment reserve
- Announcement in advance of implementation
- Vintage differentiated compliance value distinguishing allowances issued before and after the program reform

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