
California's Carbon Market: Choices and Challenges

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Outline

- California's carbon market one year in
- The economic theory of cap-and-trade
 - And why it (mostly) doesn't fit carbon markets
- Things to look for going forward
- Key Takeaway: Price Collars are Really Important in Carbon Markets!

The Carbon Market: One year in

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The Carbon Market: One year in

One Year Later, Carbon Auctions Thriving in California

By [KATIE HSIA-KIUNG](#) | Published: NOVEMBER 18, 2013

Part of this confidence stems from the auction results themselves. In the [last auction](#), all 2016 vintage allowances offered were purchased, signaling belief in the future of the carbon market, as these allowances cannot be used before 2016. In addition, California companies have become more comfortable participating in the carbon market. This is reflected in the healthy volumes traded daily on the secondary market and the increased stability of prices over the past few months.

The Carbon Market: One year in

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Calif. carbon allowances for 2013 continue to lose ground

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By Amanda Luhavalja

California Allowance Prices

CARBON PRICE



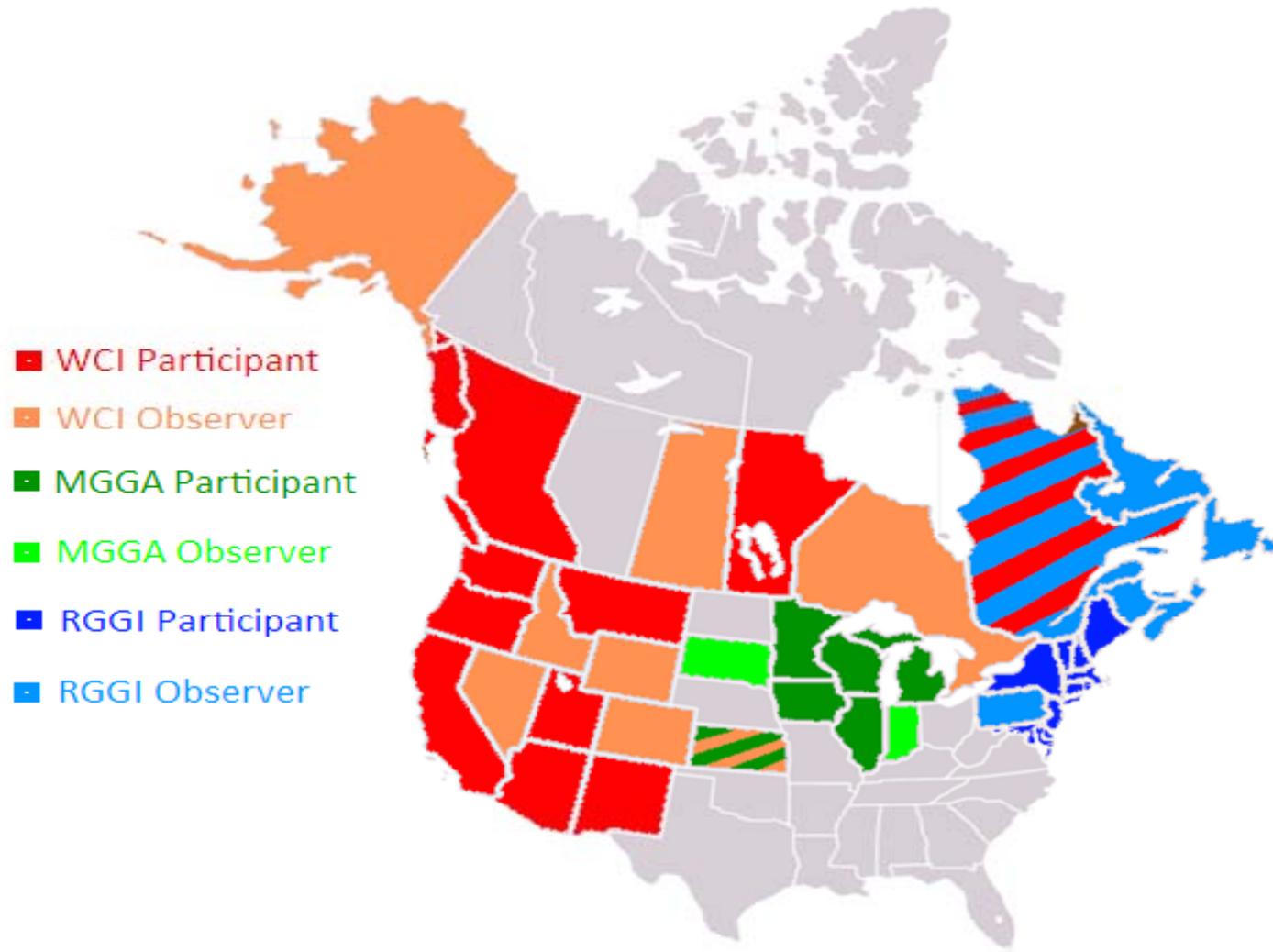
Price of 2013 California GHG Allowance Futures as reported by ICE. See prices for 2013, 2014, 2015, 2016. Updated weekly.

Theory of Cap and Trade

- *Market based* environmental regulation
 - Regulator sets *how much* pollution is allowed
 - The “market” decides *who* reduces pollution and *how* they do it.
- Preferred to taxes in settings where we are more worried about hitting a specific emissions target than the costs of hitting that target.

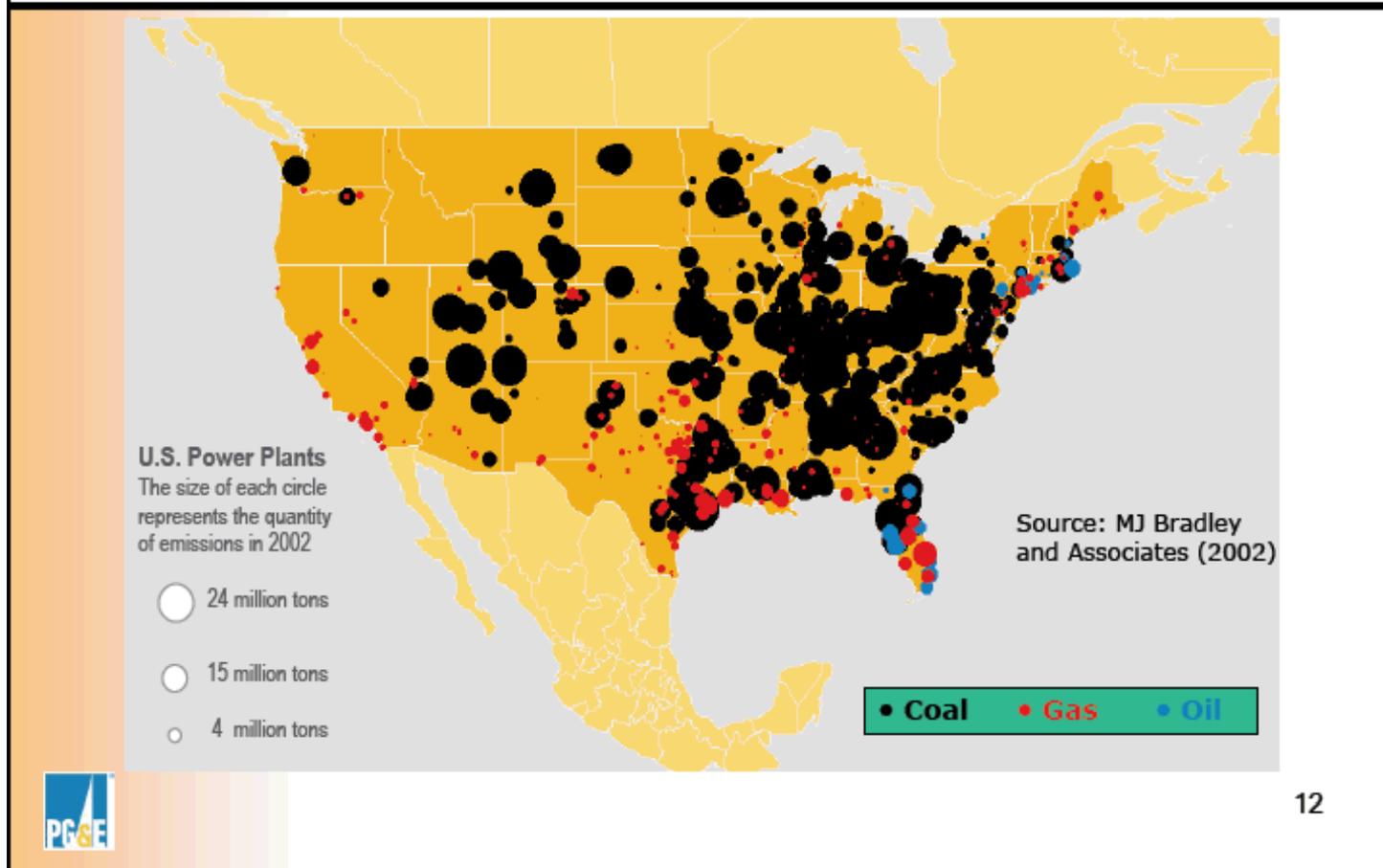
Regulator decides how much?

Regional Climate Agreements



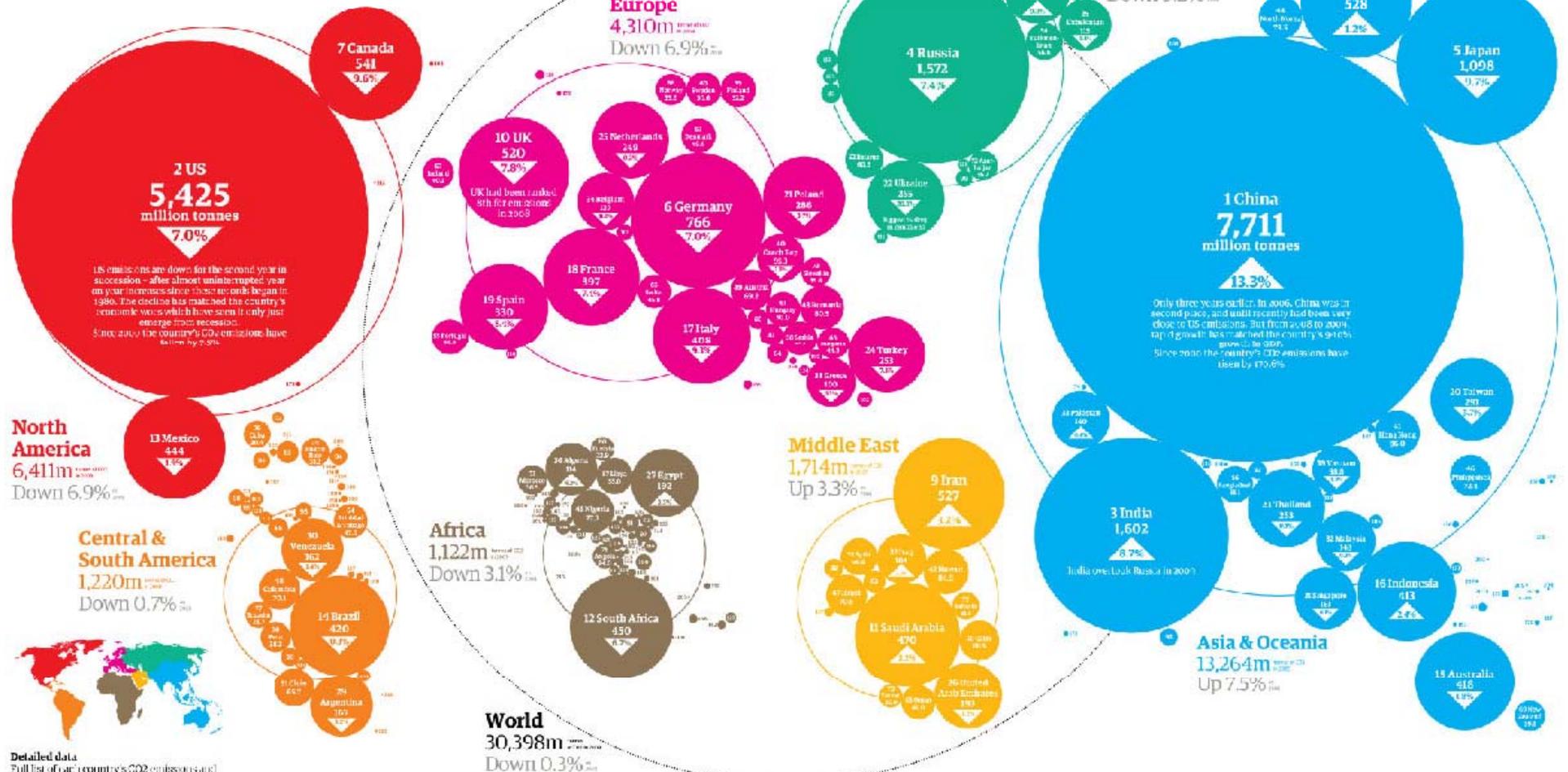
Regulator decides how much?

Electric Generating Sector GHG Footprint



An atlas of pollution: the world in carbon dioxide emissions

Latest data published by the US Energy Information Administration provides a unique picture of economic growth - and decline. China has sped ahead of the US, as shown by this map, which resizes each country according to CO₂ emissions. And, for the first time, world emissions have gone down.

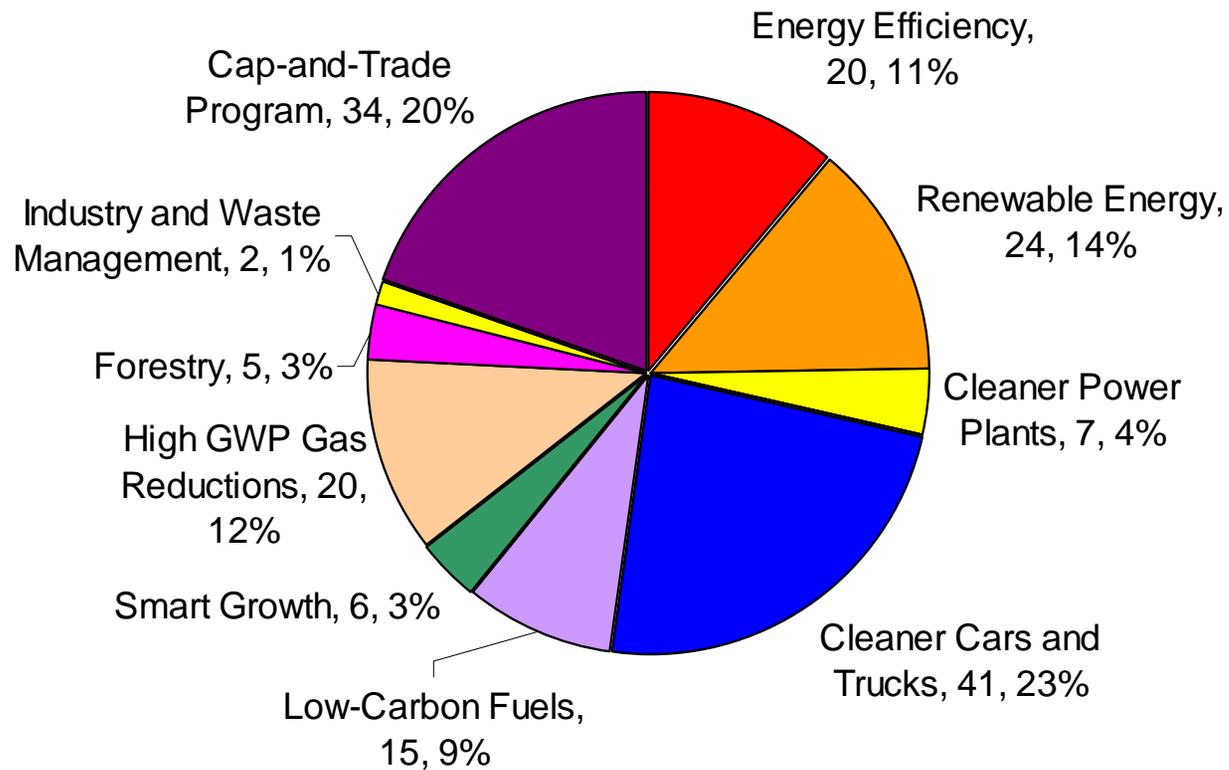


Detailed data
Full list of each country's CO₂ emissions and movement in the world emissions league table

Country	2010	2009	% Change	Country	2010	2009	% Change	Country	2010	2009	% Change	Country	2010	2009	% Change	Country	2010	2009	% Change
1 US	5,425	5,425	0.0%	11 Mexico	444	444	0.0%	21 Thailand	153	153	0.0%	31 Cambodia	143	143	0.0%				
2 China	7,711	7,711	0.0%	12 South Africa	450	450	0.0%	22 India	1,602	1,602	0.0%	32 Laos	143	143	0.0%				
3 Indonesia	413	413	0.0%	13 Egypt	350	350	0.0%	23 Indonesia	413	413	0.0%	33 Myanmar	143	143	0.0%				
4 Russia	1,572	1,572	0.0%	14 Iraq	300	300	0.0%	24 Australia	416	416	0.0%	34 Vietnam	143	143	0.0%				
5 Japan	1,098	1,098	0.0%	15 Libya	250	250	0.0%	25 New Zealand	193	193	0.0%	35 Laos	143	143	0.0%				
6 Germany	766	766	0.0%	16 Algeria	200	200	0.0%	26 Philippines	143	143	0.0%	36 Myanmar	143	143	0.0%				
7 Canada	541	541	0.0%	17 Sudan	150	150	0.0%	27 Malaysia	143	143	0.0%	37 Vietnam	143	143	0.0%				
8 South Korea	528	528	0.0%	18 Chad	100	100	0.0%	28 Singapore	143	143	0.0%	38 Laos	143	143	0.0%				
9 Iran	527	527	0.0%	19 Mali	50	50	0.0%	29 Brunei Darussalam	143	143	0.0%	39 Myanmar	143	143	0.0%				
10 UK	520	520	0.0%	20 Nigeria	50	50	0.0%	30 Timor-Leste	143	143	0.0%	40 Vietnam	143	143	0.0%				

Source: Emissions in 2008. Data for 2009 & 2010. © 2010 Emissions in 2008. Data for 2009 & 2010. © 2010 Emissions in 2008. Data for 2009 & 2010.

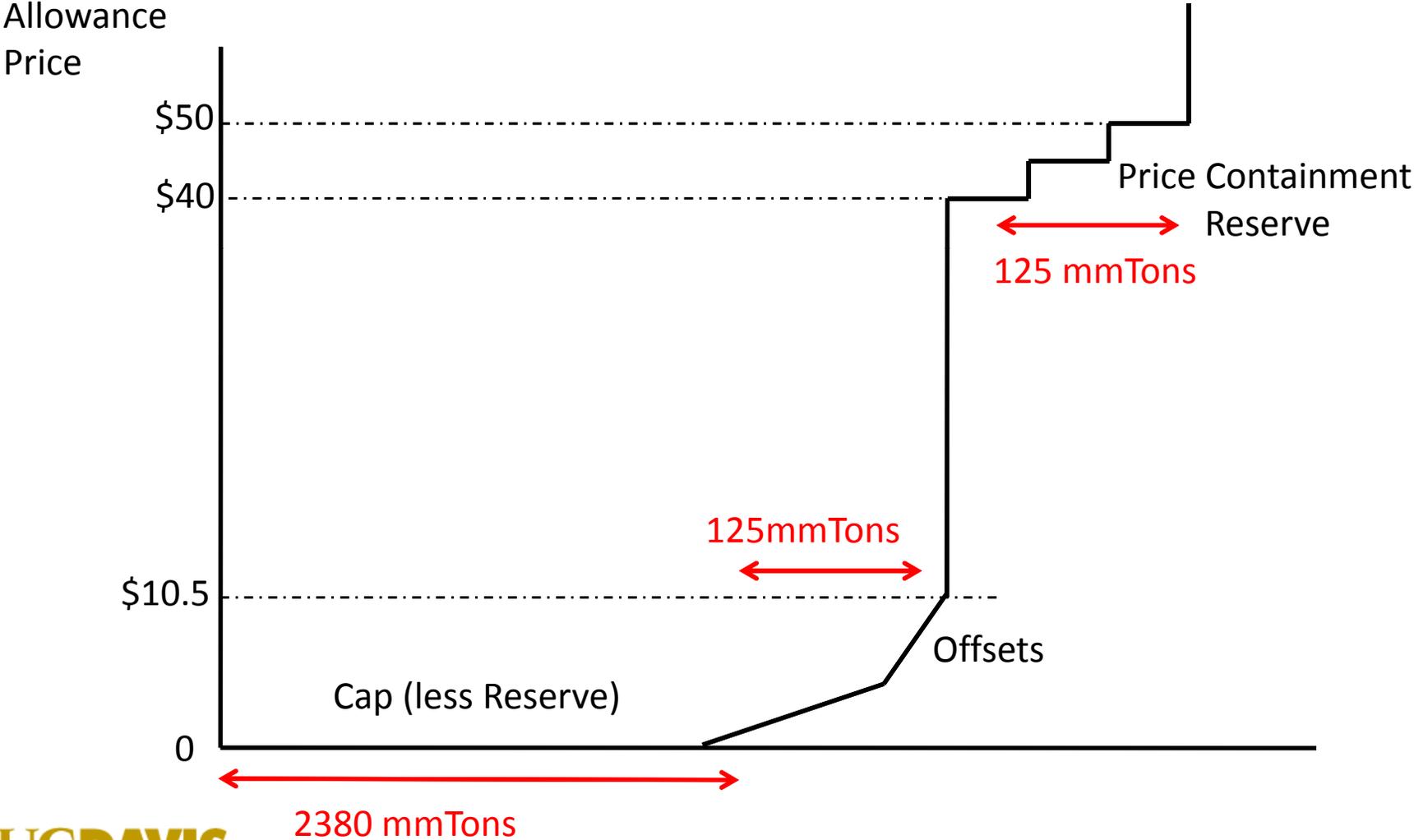
Market decides who and how?



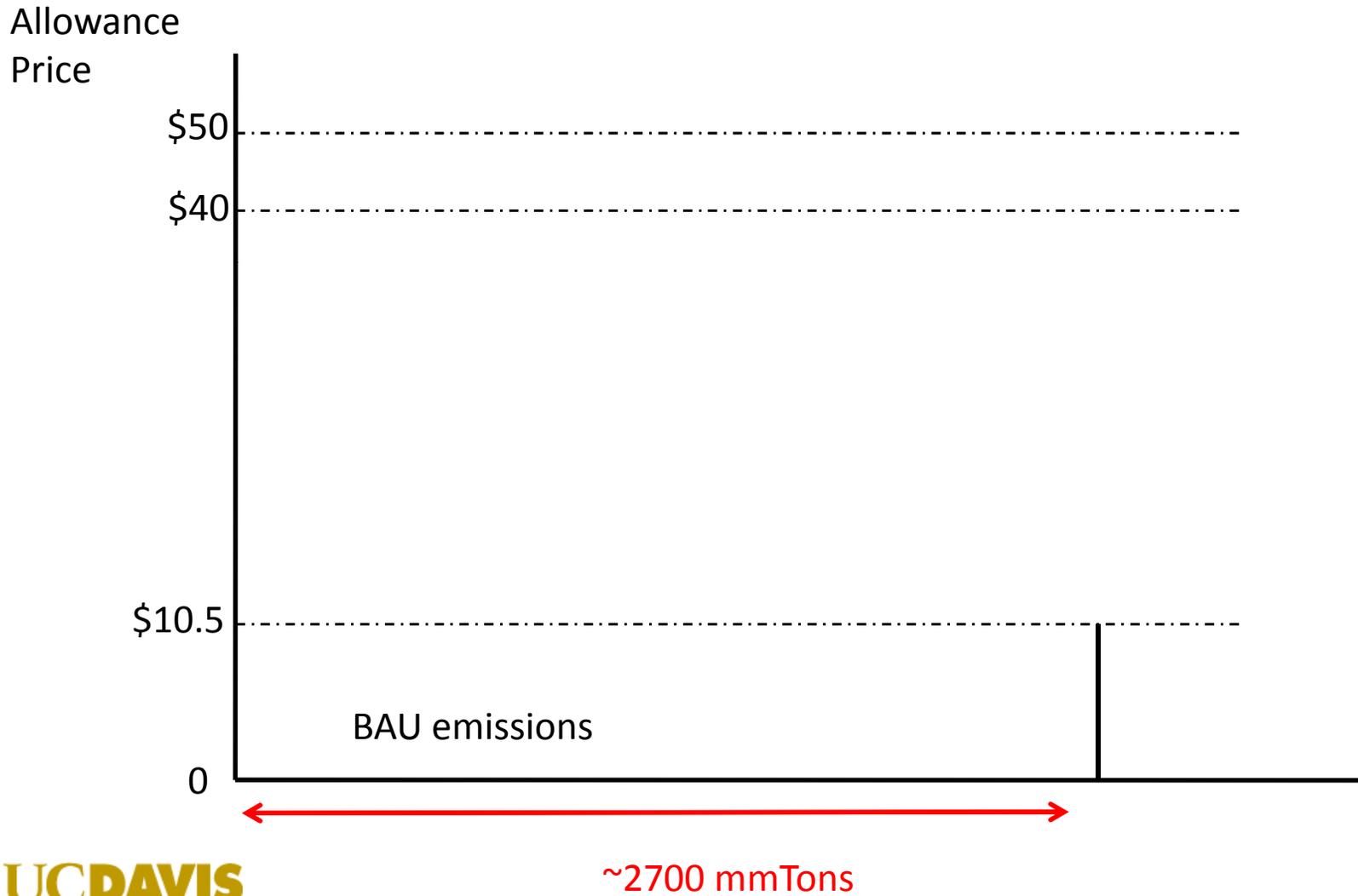
Climate and cap-and trade theory

- Should not take quantity targets too literally
 - Local action to reduce global pollutant
 - All targets to date well short of what is needed
- Much talk of adding a consistent cost of GHG emissions to business planning and consumer activity
 - But caps are a bad way to do that
- Key question: what is the best way to build forward momentum for reducing global GHG?
- Key Takeaway: Price Collars are Really Important in Carbon Markets!

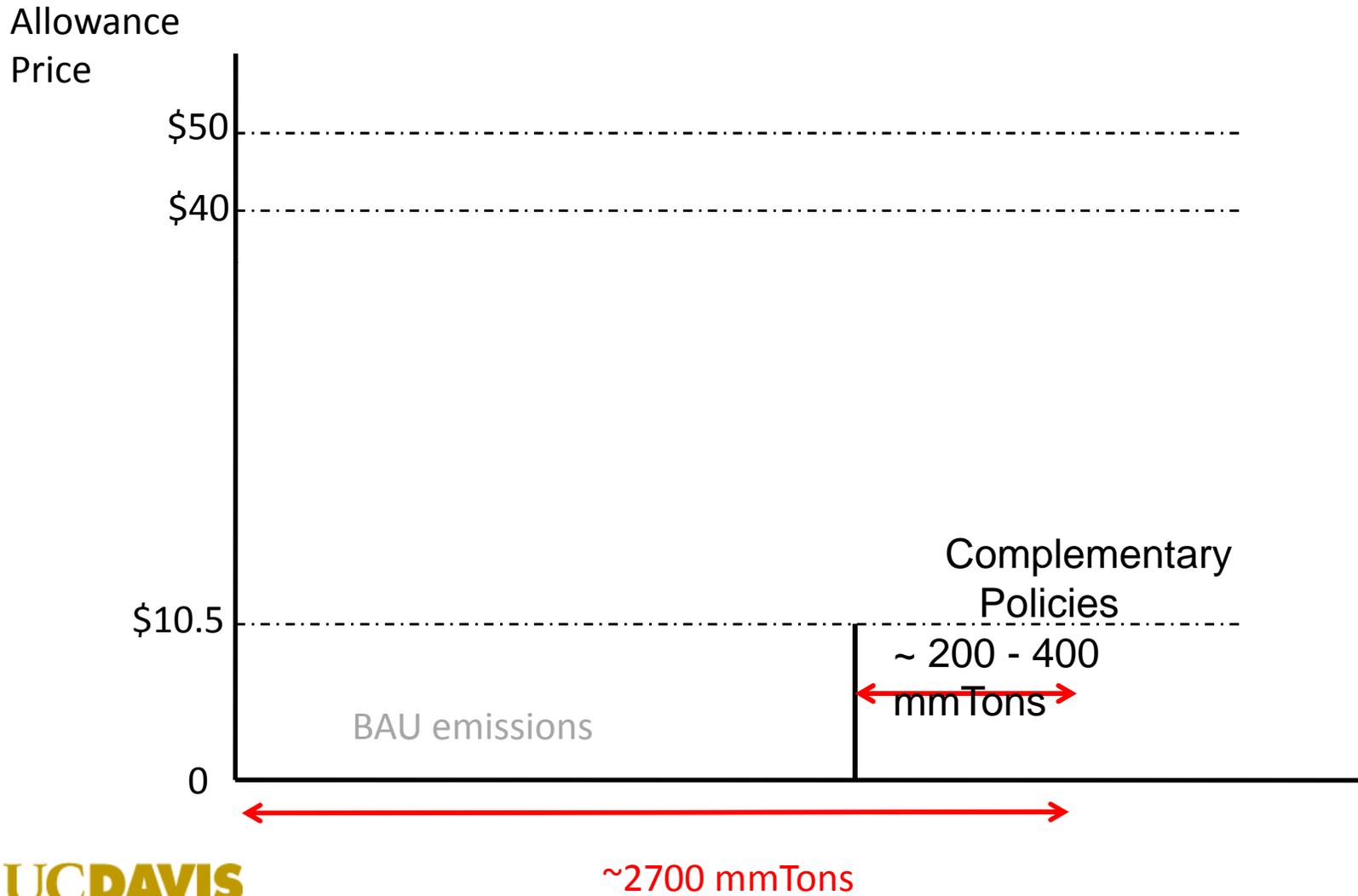
Supply of Allowances



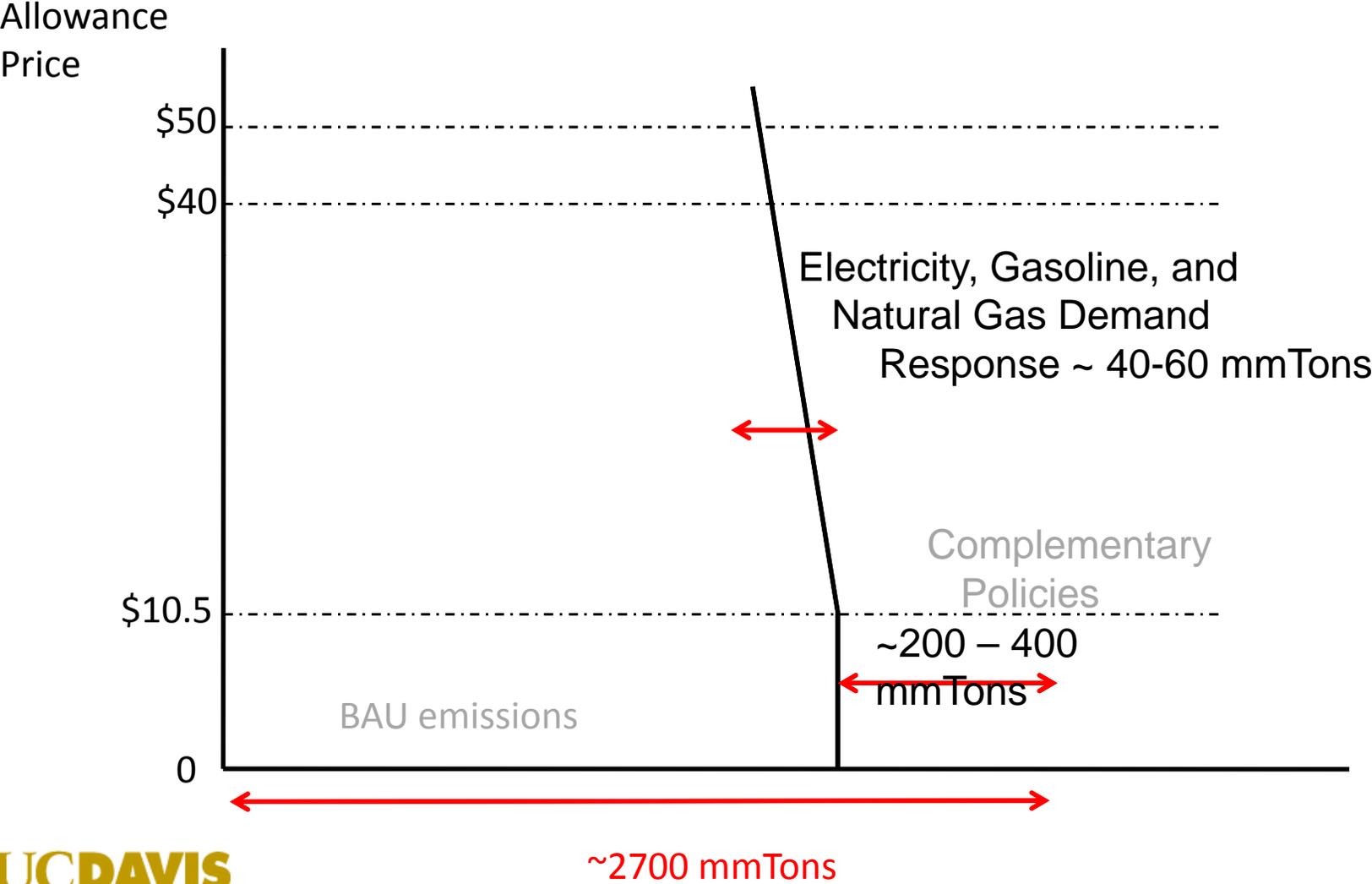
Demand for Allowances



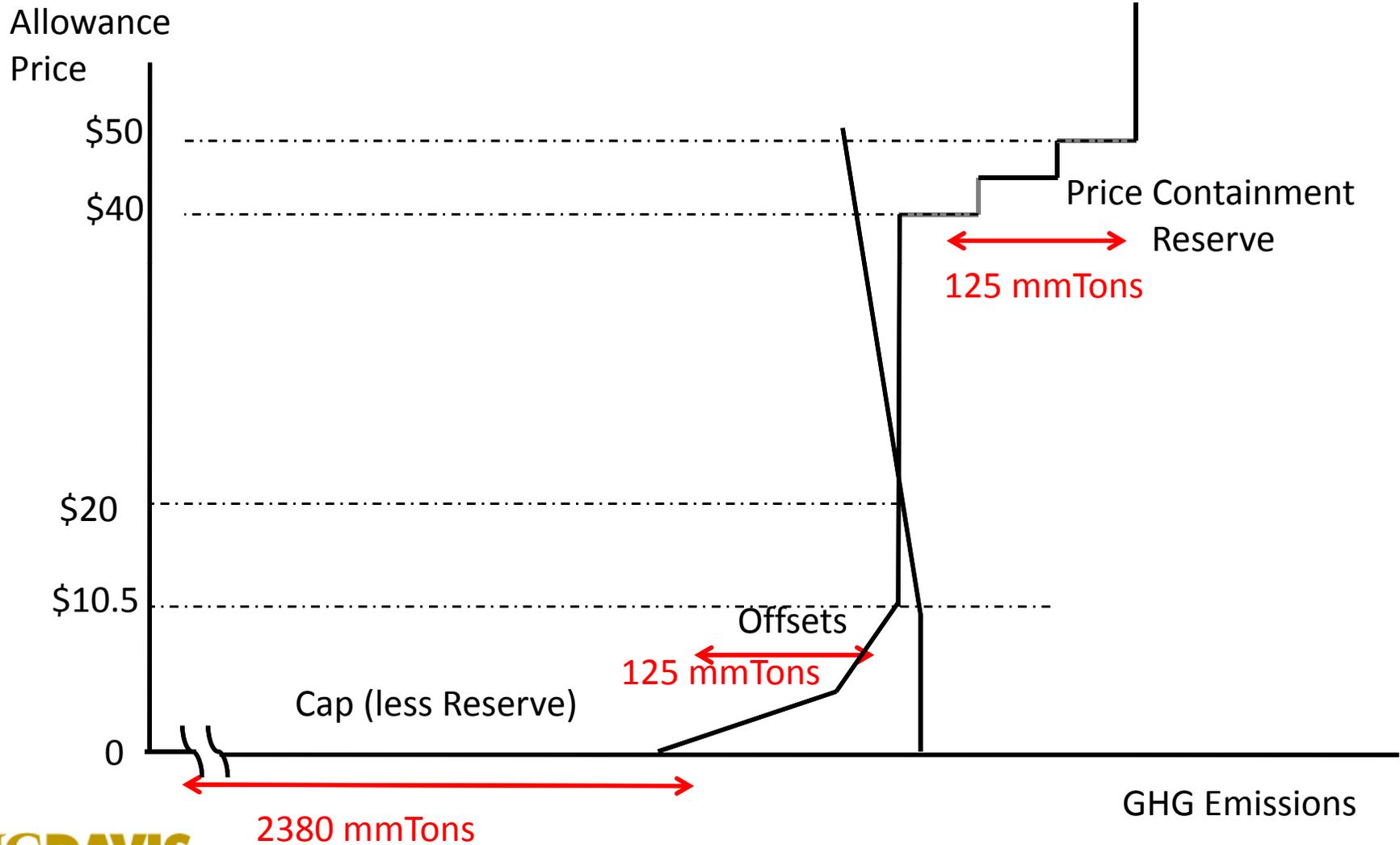
Demand for Allowances



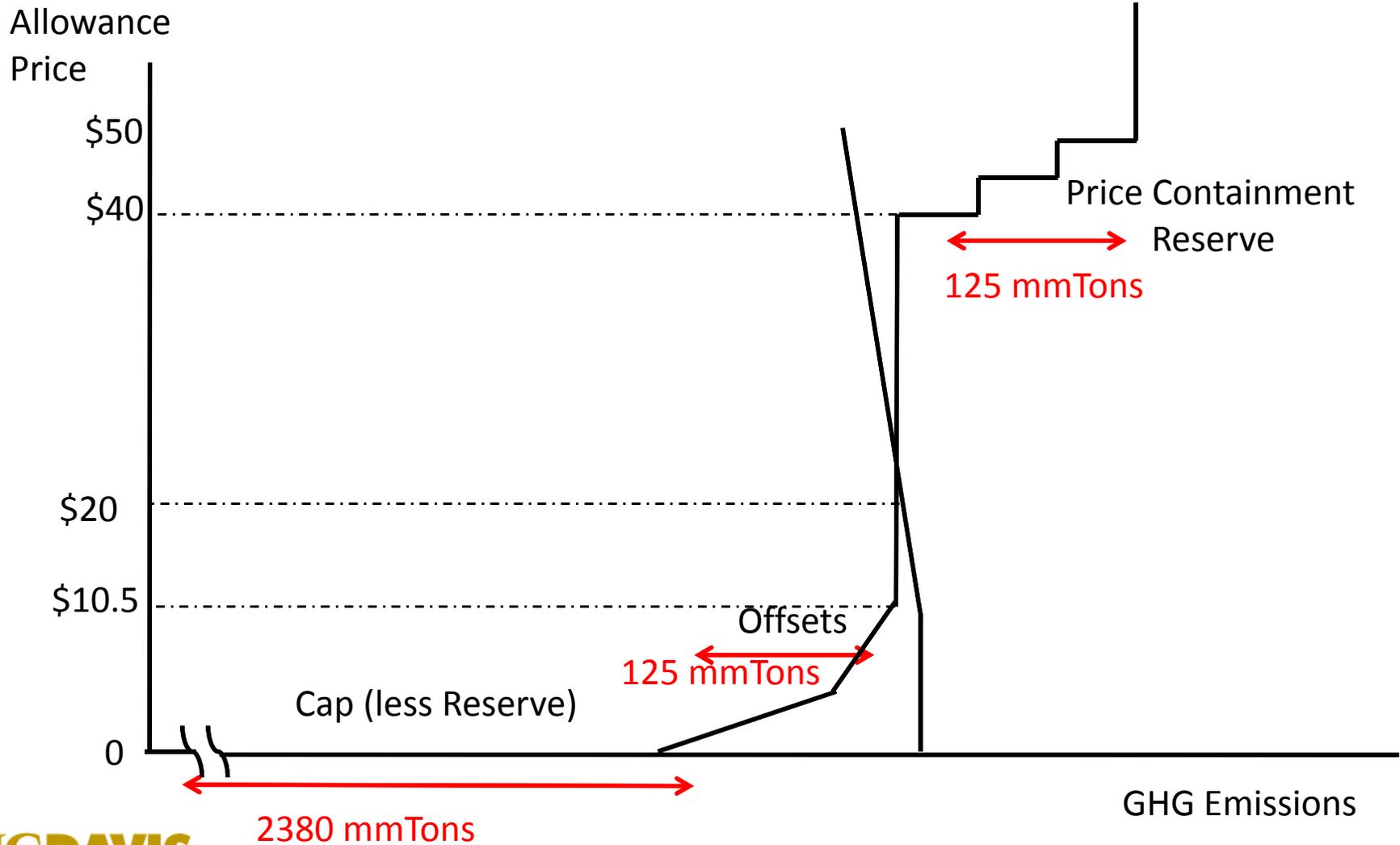
Demand for Allowances



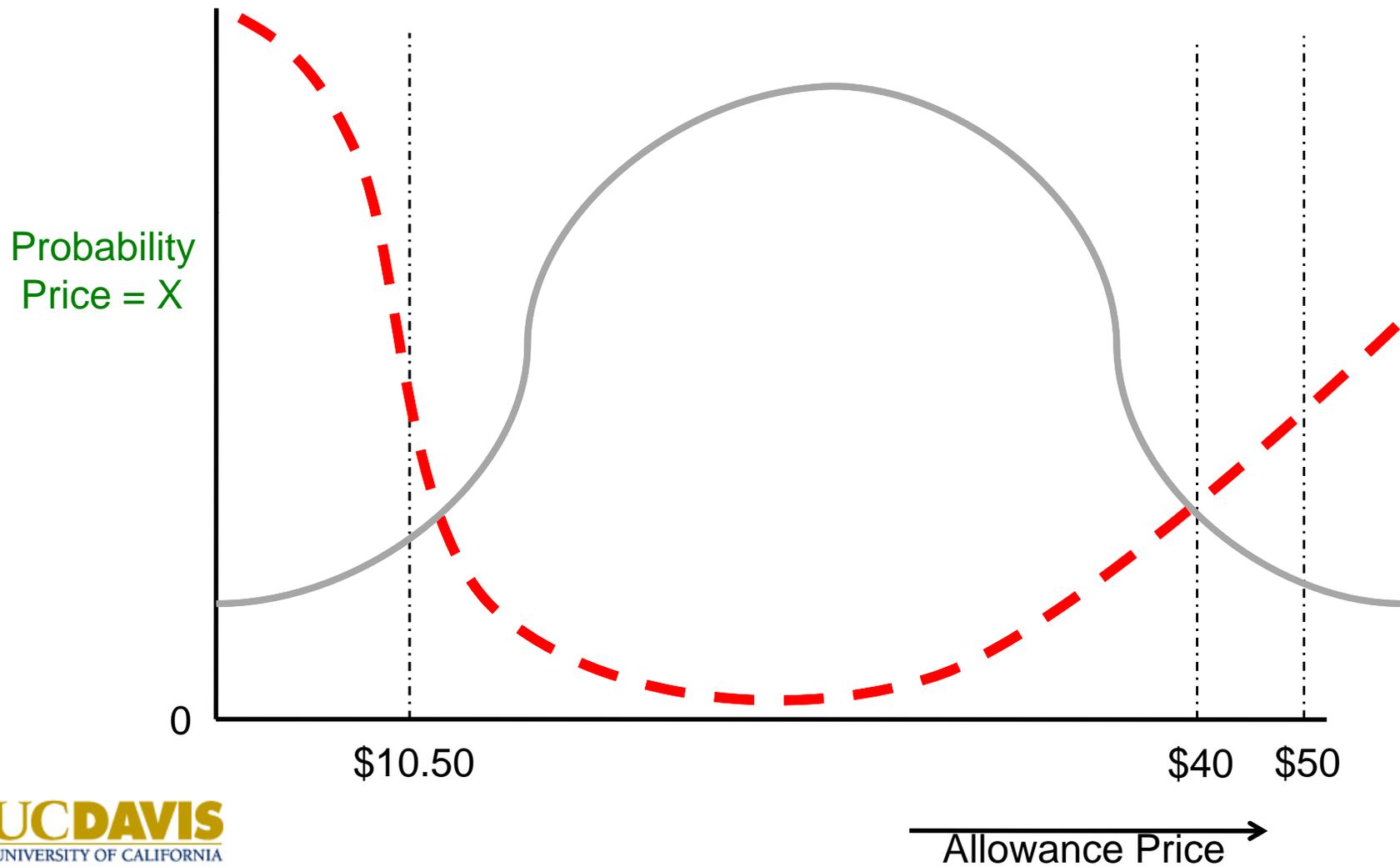
Supply and Demand



Supply and Demand



Possible Distributions of Allowance Price

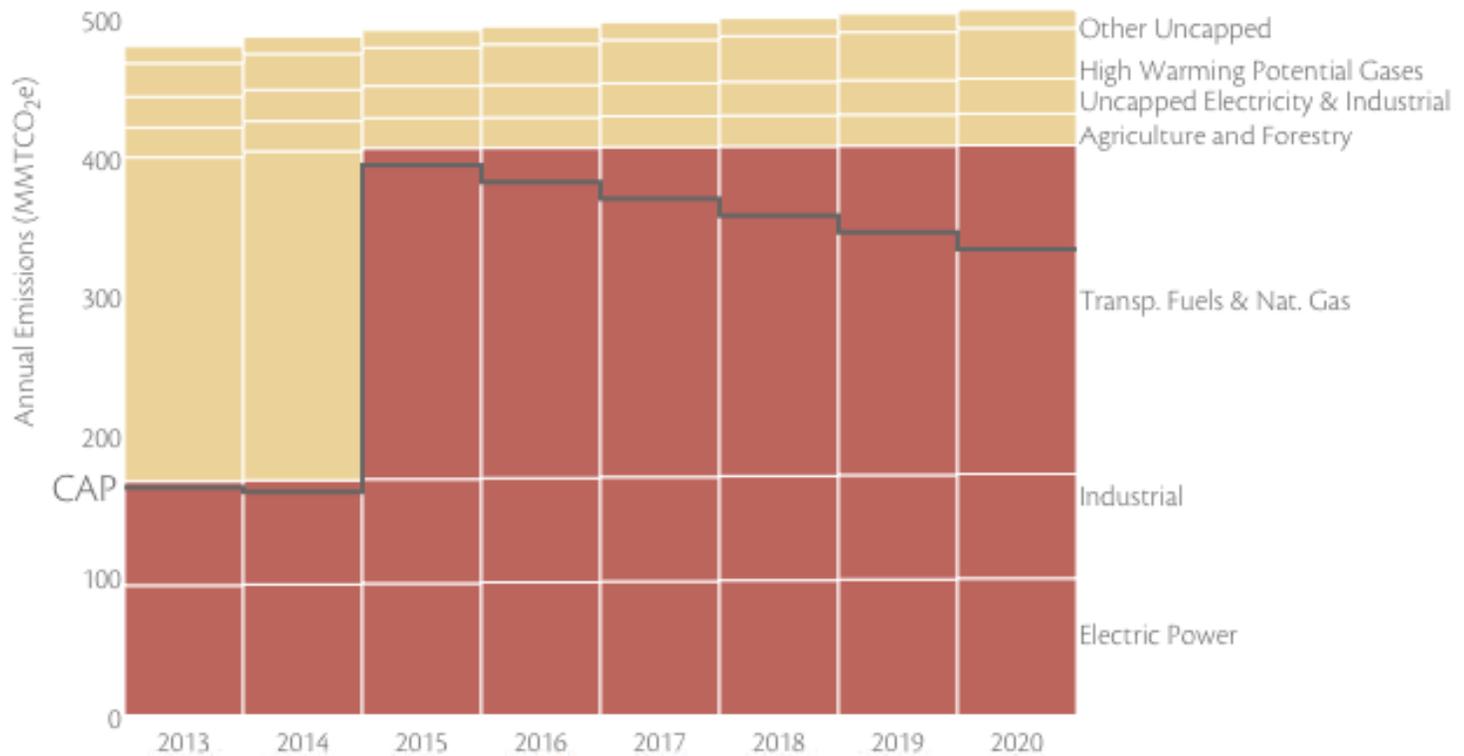


COMPLEMENTARY POLICIES

EMISSIONS CAP

EMISSIONS HISTORY

Projected business-as-usual emissions through 2020 for capped and uncapped sectors. The overlaid line indicates the cap for each year. *Mouse over a row to see how permits are allocated to each sector.*



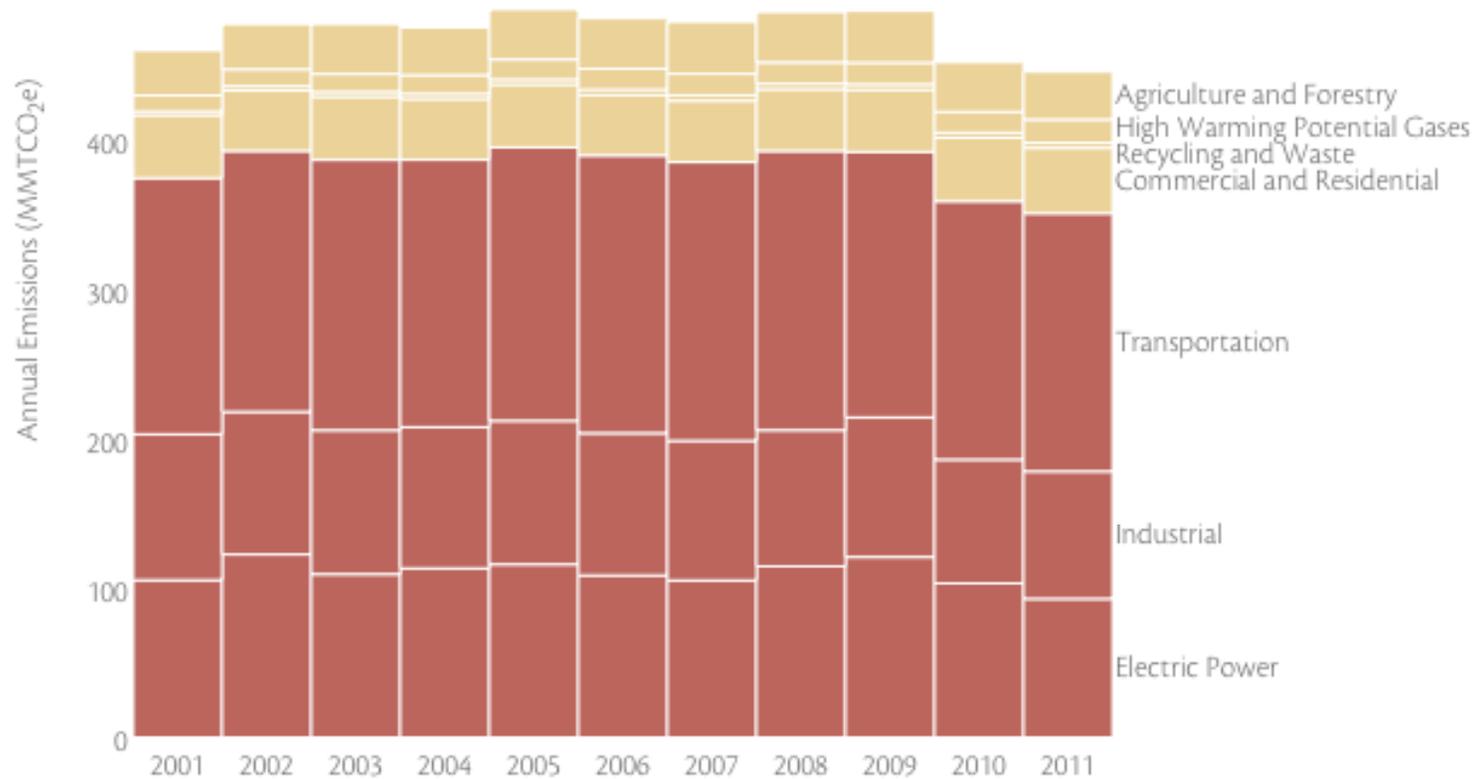
Source: The California Air Resources Board's [2020 Emissions Forecast](#).

COMPLEMENTARY POLICIES

EMISSIONS CAP

EMISSIONS HISTORY

California statewide greenhouse gas emissions from 2000 to 2011. The transportation, electric, and industrial sectors have generated the majority of emissions in California for decades. *Mouse over to see sector names.*



Source: The California Air Resources Board's [Greenhouse Gas Emissions Inventory](#).

2006-07: EU Carbon price crashes



California Allowance Prices

CARBON PRICE



Price of 2013 California GHG Allowance Futures as reported by ICE. See prices for 2013, 2014, 2015, 2016. Updated weekly.

Things to Look for Going Forward

- End of Phase I (2013 – 2014)
 - Reporting of electricity imports
- What happens if there is a positive shock to emissions before 2020?
 - The importance of transportation
 - Policy supporting the price-containment reserve
- What will happen post 2020?
 - Banking of allowances supports minimum prices
 - Relationship with rest of US?

Summary

- Price Collars are Really Important in Carbon Markets!
 - A good price-collar makes up for a lot of flaws in any cap and trade market
 - Stable non-trivial carbon prices best way to steer investment and consumption on to a low carbon trajectory

Thank You!

Special Thanks and Apologies to the websites of

- Environmental Defense Fund
- SNL Financial
- Carbon Policy Initiative