



Stress Testing a Price Collar on Carbon

Andy Stevenson

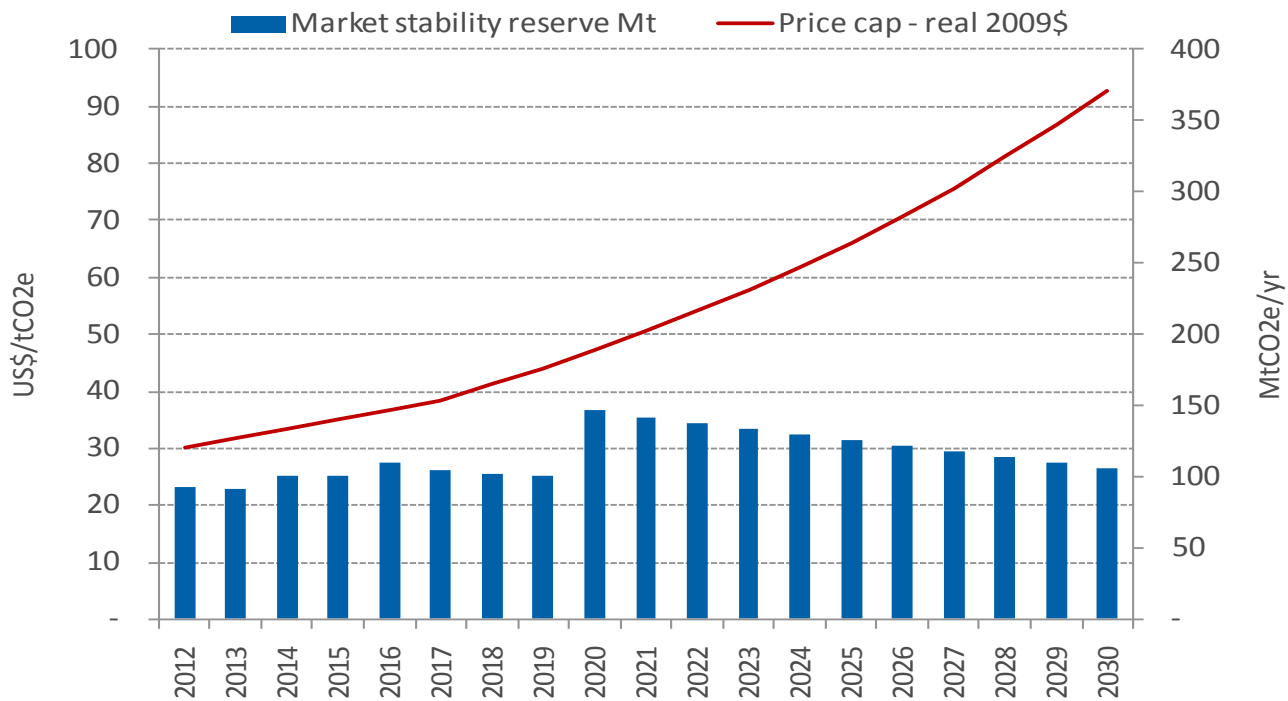
Senior Finance Analyst

Natural Resources Defense Council

February 22nd 2010

The Kerry-Boxer Market Stability Reserve (Sec. 726)

- The “market stability reserve” would create a pool of emission allowances (set aside from each year’s limit) that could be injected into the market if a certain price level is reached. Proceeds from these reserve auctions would then be used to buy domestic offsets or international forestry offset credits that would then be retired and added to the reserve total.
- The program is designed to help contain costs and minimize price fluctuations by auctioning these additional allowances at a minimum set price (\$28/ton in 2012) that increases annually.



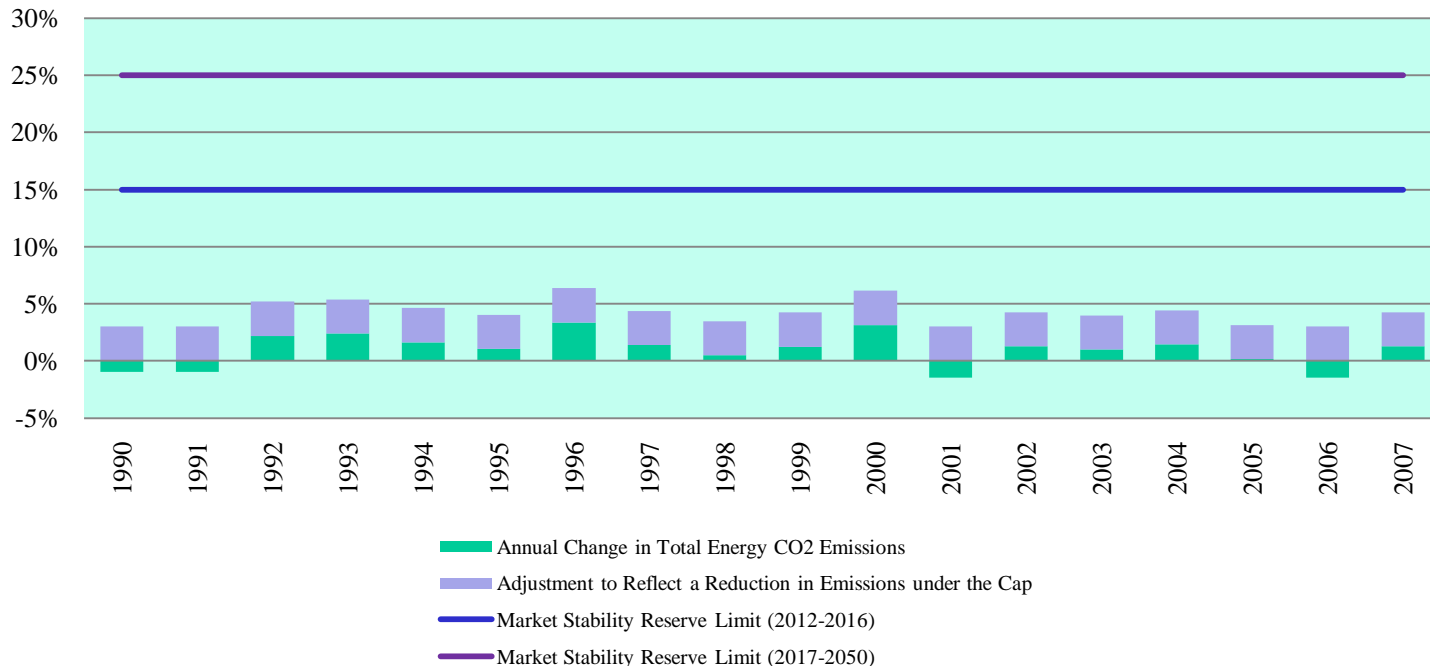
Note: Mt = million metric tonne, US\$ values are in \$2009

Source: New Energy Finance

The Reserve is large enough to absorb expected fluctuations in CO2 emissions.

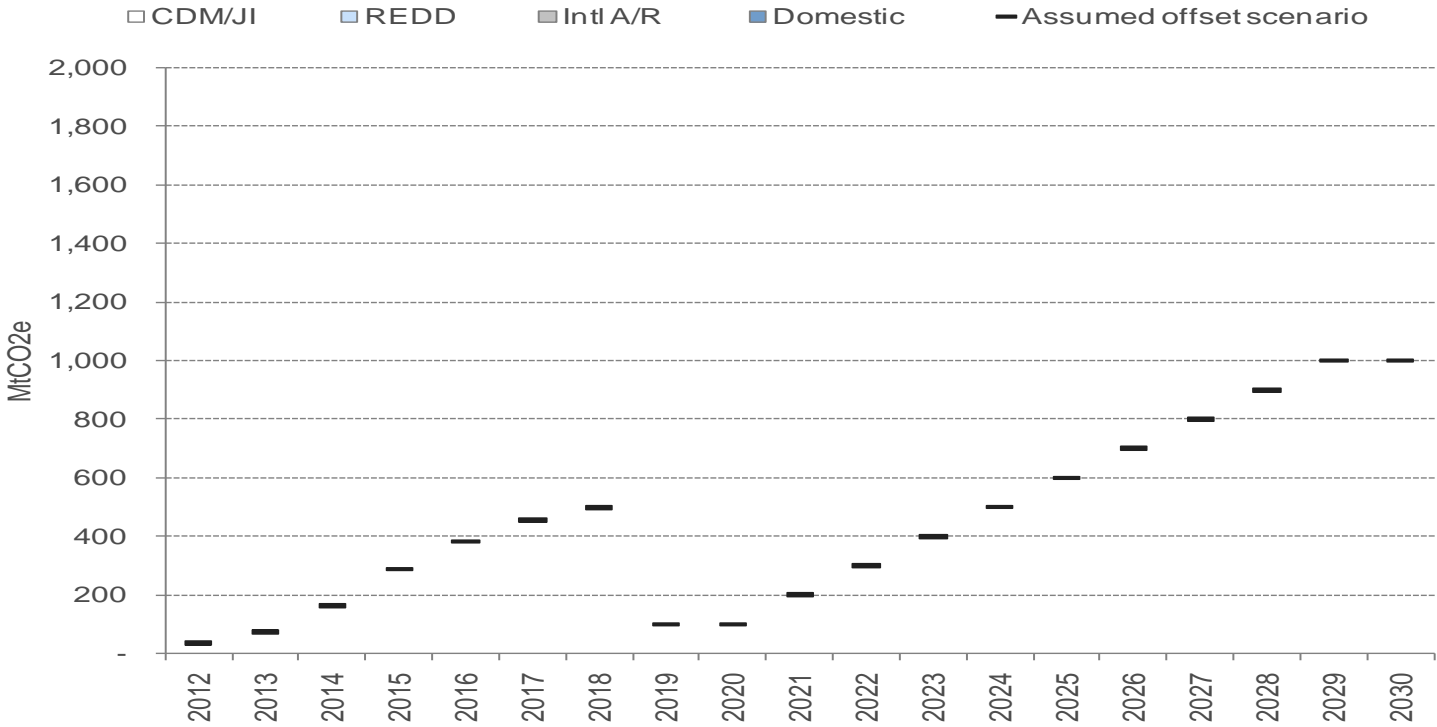
- The Administrator would have the authority to inject 15% of the allowances auctioned in a given year from the “market stability reserve” from 2012-2016 and 25% of allowances thereafter to keep prices contained below the de facto price cap.
- When adjusted up by 3% to reflect the need to reduce emissions under the cap, this injection of allowances represents 2.5 to 4 times as many allowances needed to meet the largest annual demand shock from increased CO2 output seen over this time period.

Annual Percentage Change in Total Energy CO2 Emissions
(source EIA)



But is it large enough to cope with a supply based shock?

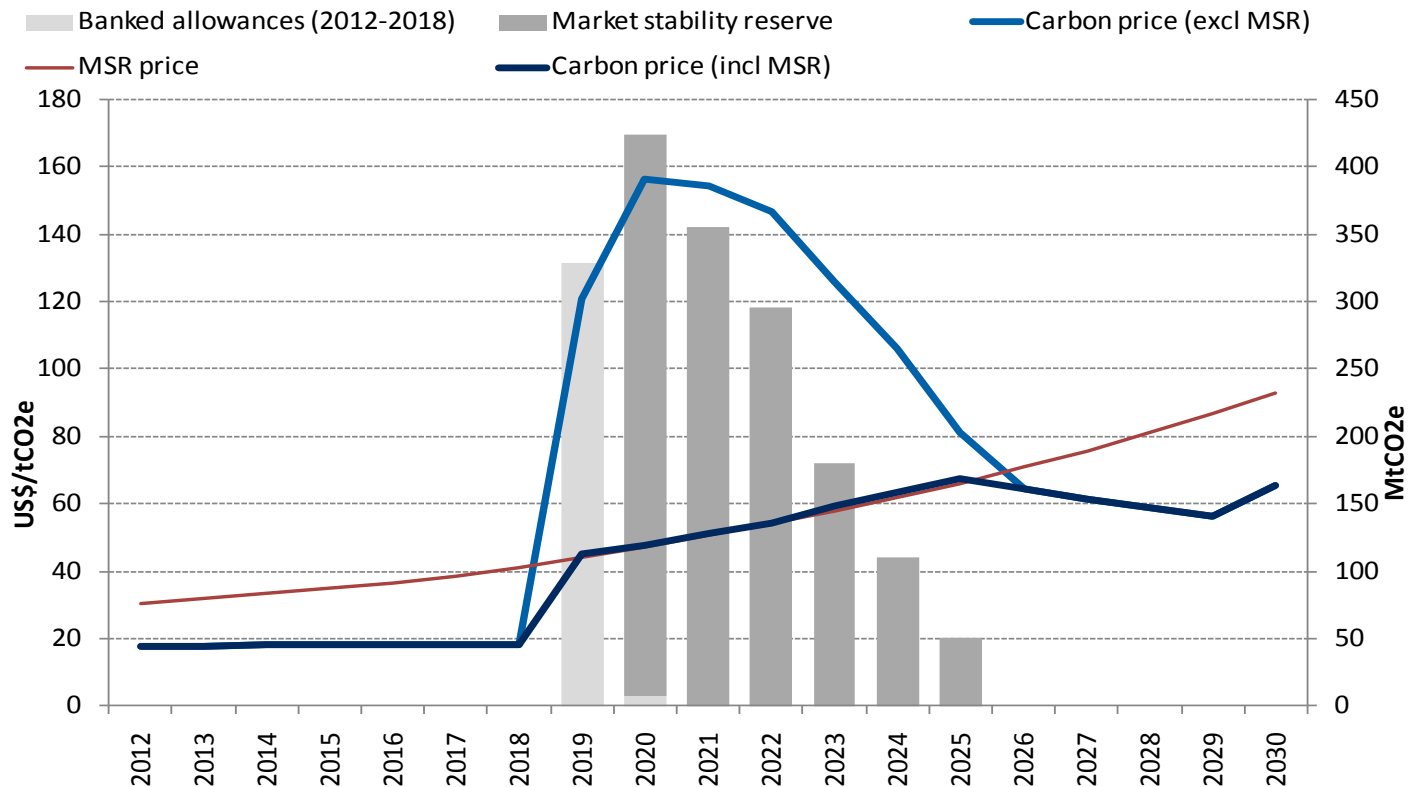
In order to also stress test the reserve from the supply side, NRDC has asked New Energy Finance (NEF) to model a scenario where offset supply suddenly drops (due to additionality concerns) from 700mln tons in 2019 (under NEF's core offsets case) to 100mln tons and then built back up gradually over time.



Source: New Energy Finance

Even with low offset supply, the “market stability reserve” can contain prices,

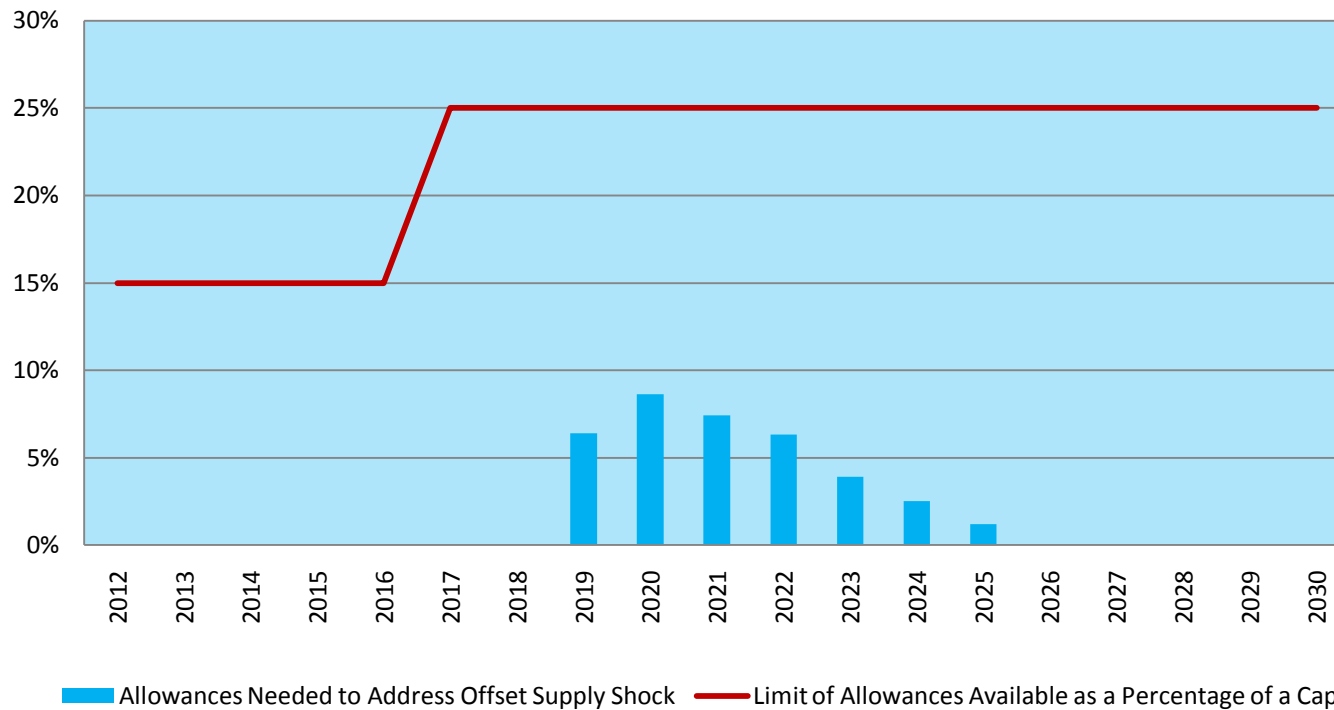
- Under this very low offsets case scenario, the market stability reserve is still able to contain allowance prices at the minimum reserve auction price (note without a market stability reserve prices are forecast to rise to nearly \$160/ton by 2030)..
- After 2025 prices stay below the price cap as offset availability ramps up again.



...using less than a third of the allowances available under the reserve.

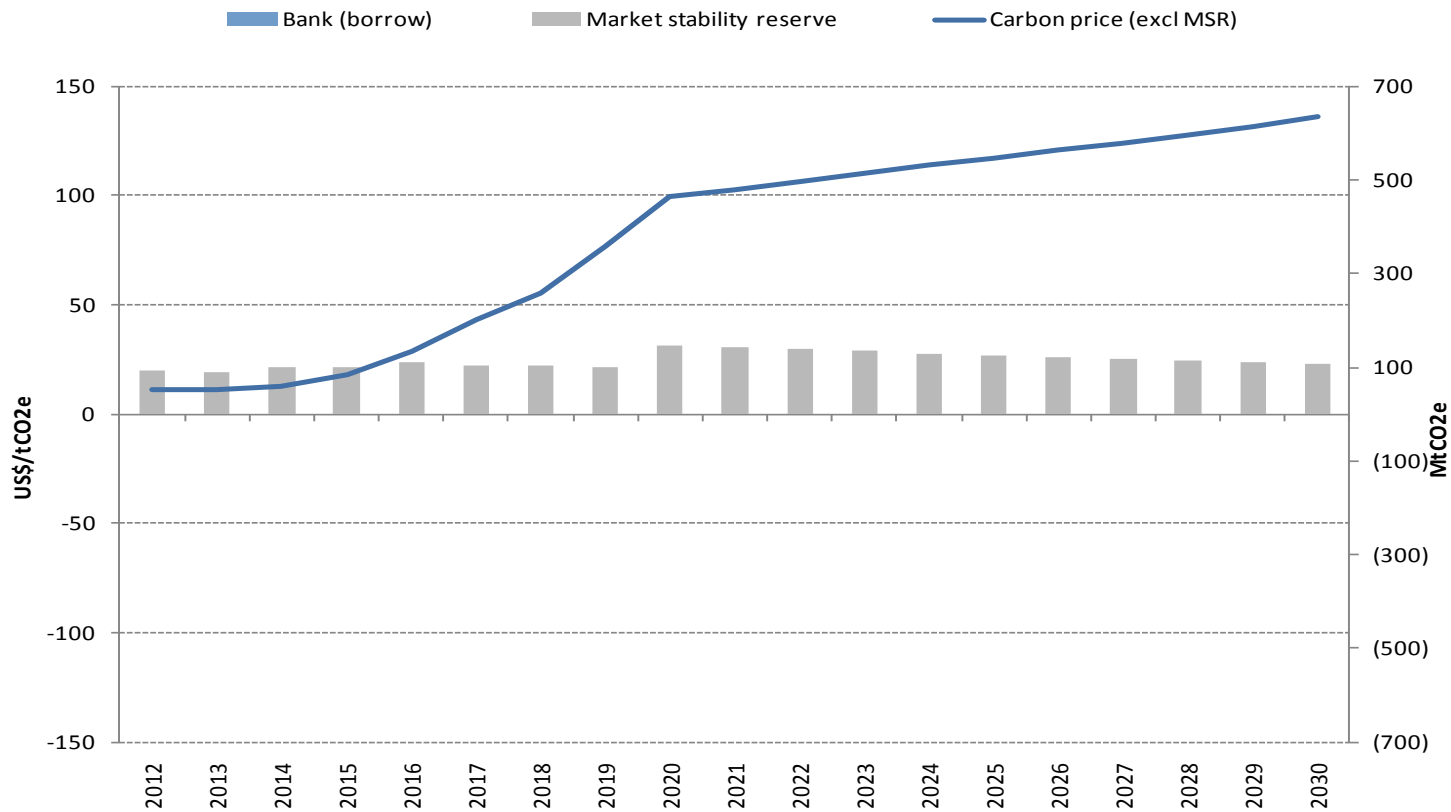
- Under this unlikely offset scenario, the market stability reserve is still able to meet this supply shock using less than a third of the auction limit under Boxer-Kerry.

Allowances Needed to Maintain the Market Stability Reserve as a Percentage of the Cap under Kerry-Boxer
(source New Carbon Finance)



Banking and Borrowing to also help keep price spikes contained

Temporary price spikes may also be mitigated by less banking / more borrowing in the system given how large these flows are expected to be relative to the reserve.



Source: New Energy Finance

Conclusions:

- The market stability reserve appears to respond well to both supply and demand shocks to emissions volumes.
- Under both scenarios, the 15-25% limit on allowances available for auction appears at least two to three times larger than what is needed to contain prices and a result should allow the “market stability reserve” to serve as an effective cap on allowance values.
- Banking and borrowing are also expected to help reduce temporary pressure on the “market stability reserve” and lower volatility.
- This approach has the environmental benefit of maintaining the integrity of the cap relative to a safety valve.