



# From Paris to Honolulu: US State Climate Policies in the 21<sup>st</sup> Century

Karen Palmer

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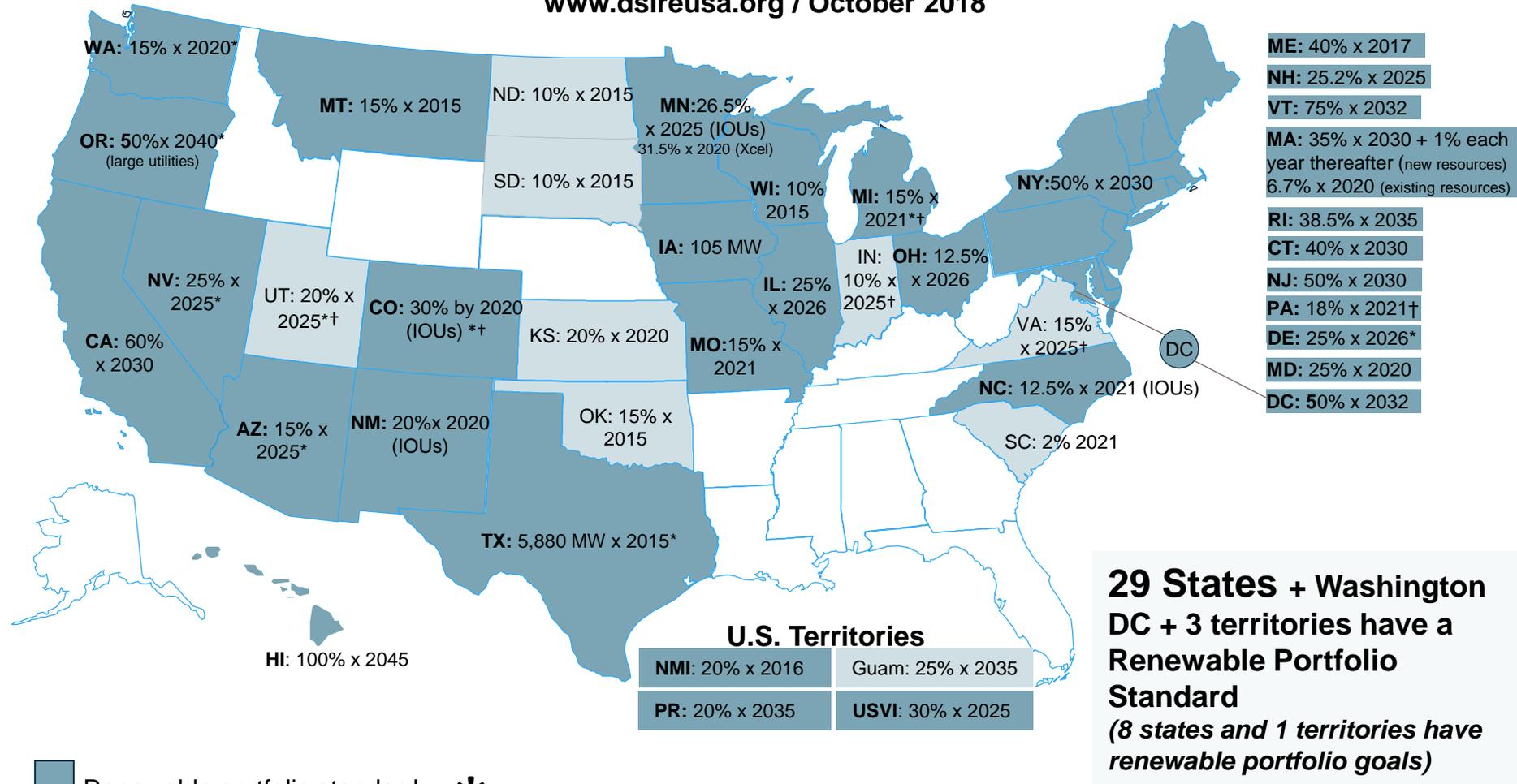
# State and Regional Climate Policies are Multifaceted like NDCs

- Electricity Policies
  - Renewable portfolio standards
  - Clean energy standards
  - Energy efficiency resource standards
  - Regional cap and trade programs (RGGI, CA)
- Transportation Policies
  - Regional cap-and-trade (Transportation and Climate Initiative)
  - Low-carbon fuel standard
- Economy-wide
  - US Climate Alliance Commitments
- Similar to the nationally determined contributions (NDCs) where each state pursues its own declared goal using a collection of different policy instruments
- In aggregate, state efforts start to add up
  - States in the US Climate Alliance represented over **40%** of total US GHG emissions in 2016 (See [EIA 2018](#))



# Renewable Portfolio Standard Policies

www.dsireusa.org / October 2018

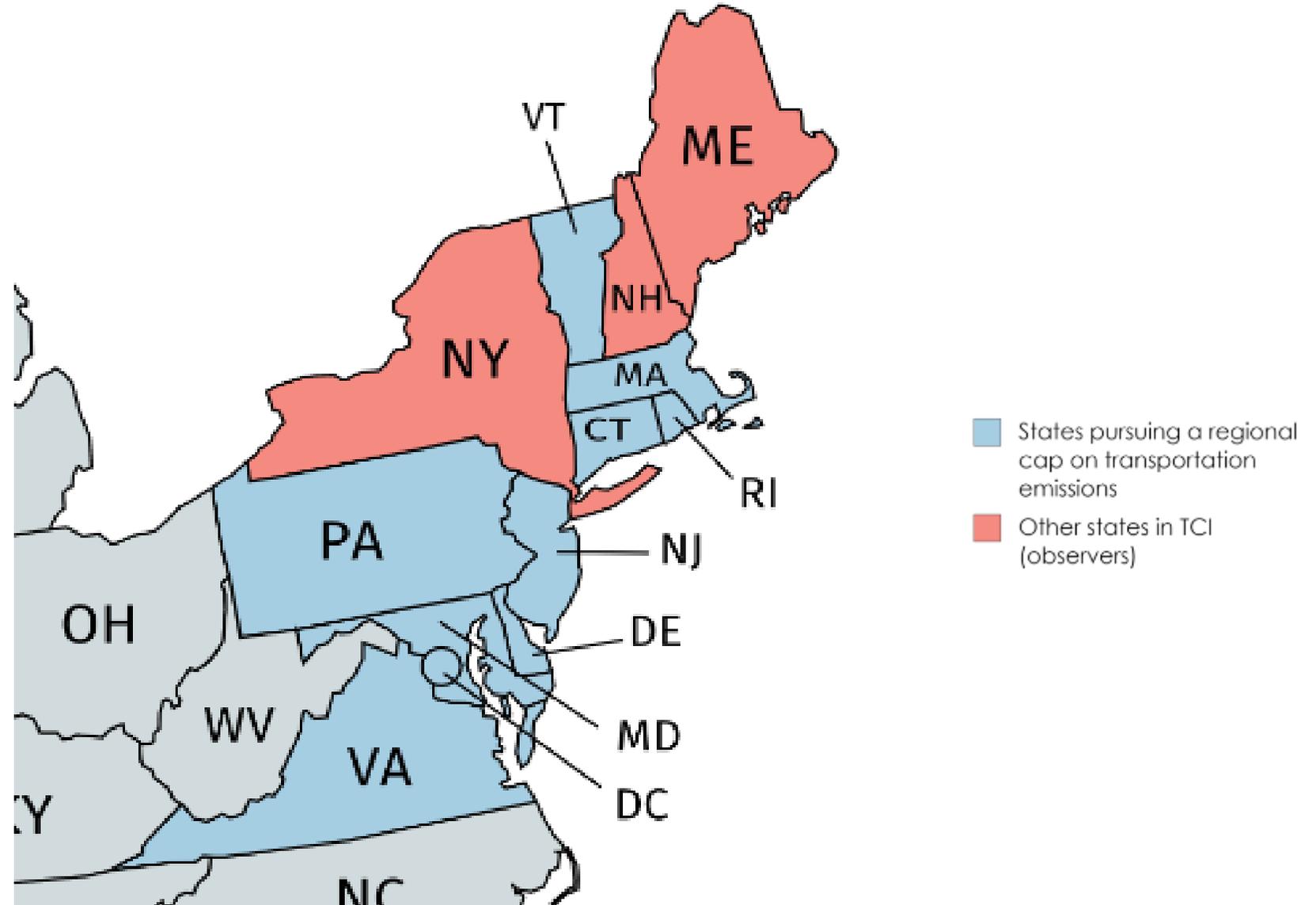


**29 States + Washington DC + 3 territories have a Renewable Portfolio Standard**  
*(8 states and 1 territories have renewable portfolio goals)*

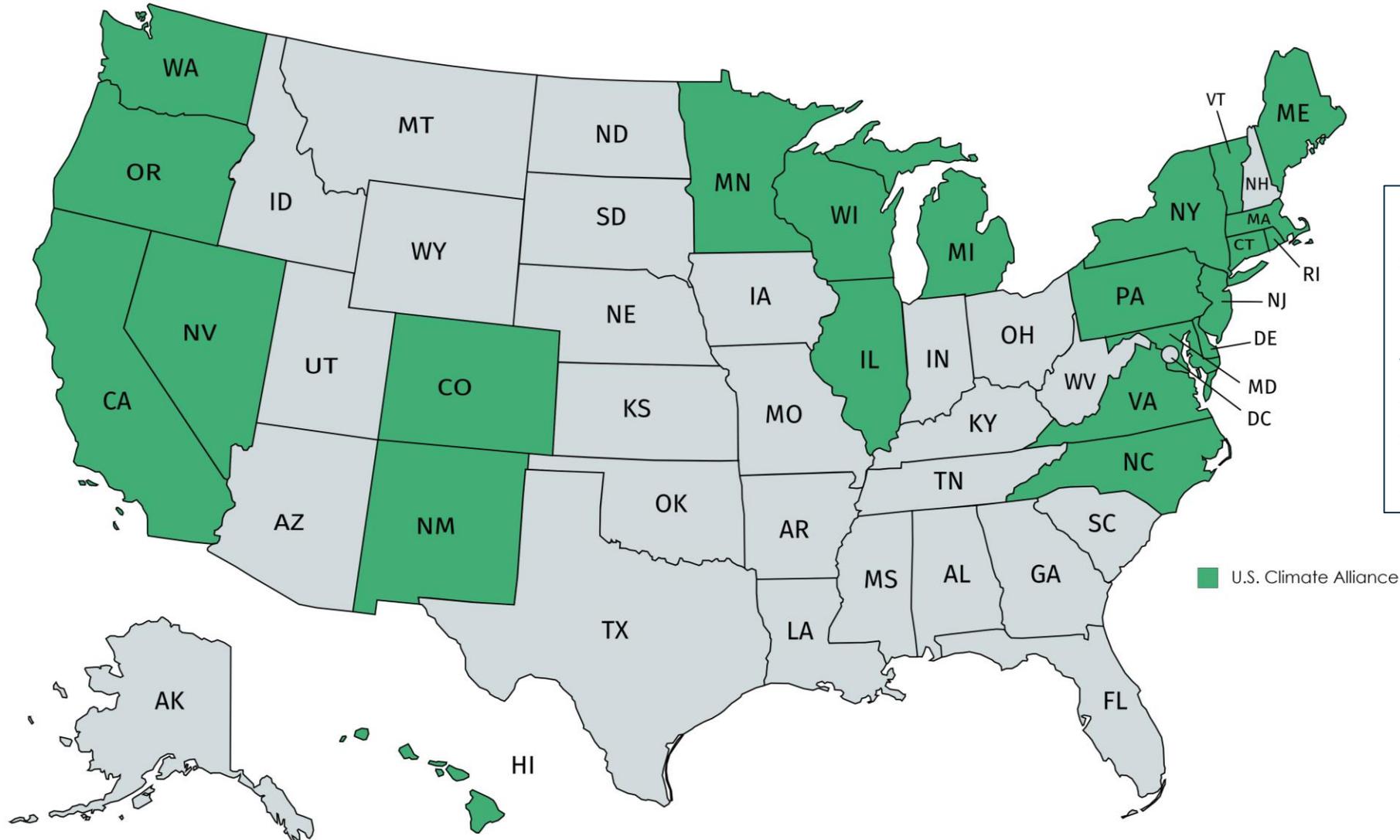




# States in the Transportation and Climate Initiative



# States in the US Climate Alliance

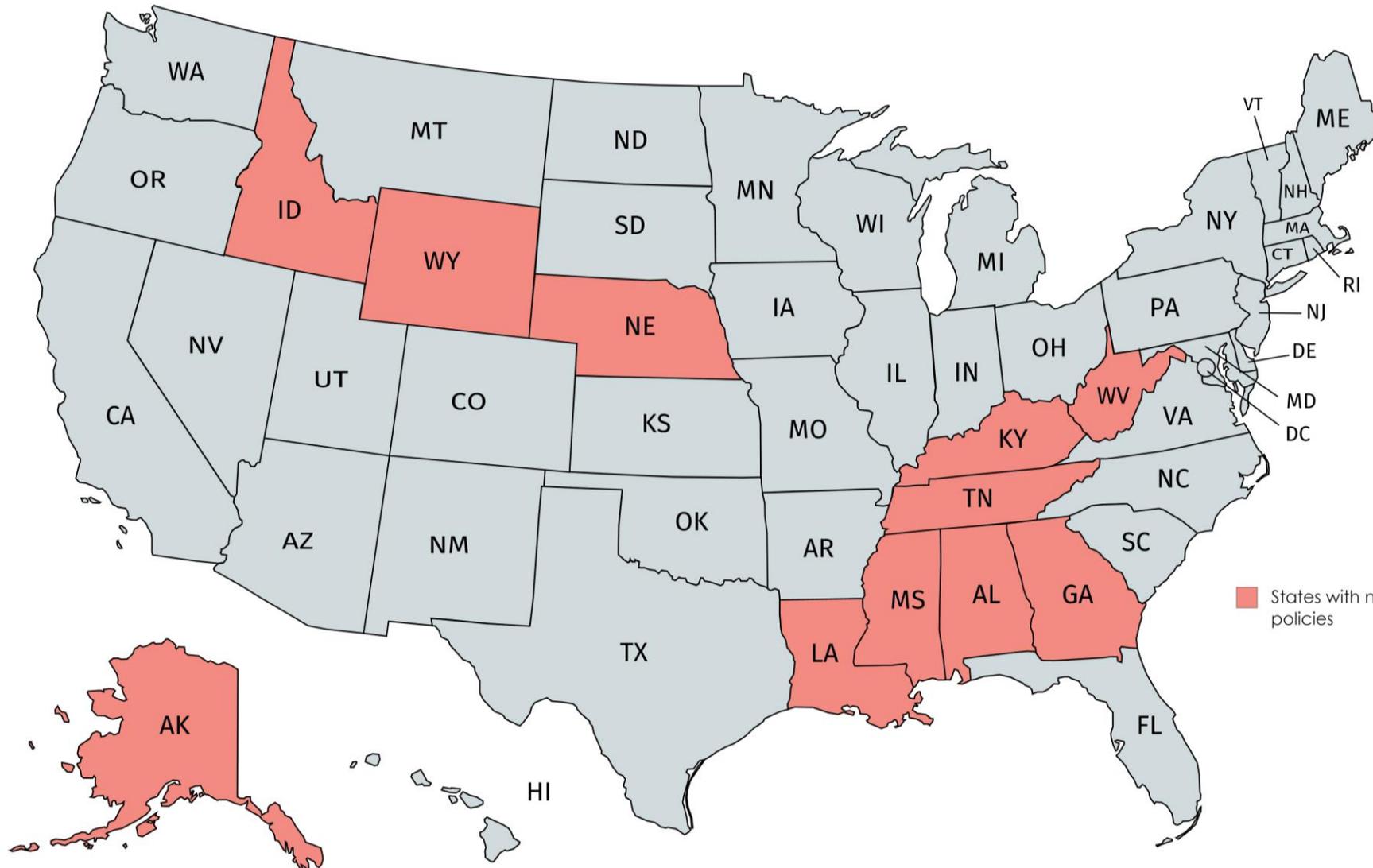


Member states are committed to meeting US Paris Agreement Goal of 26-28% below 2005 emission levels by 2025

■ U.S. Climate Alliance



# States with No Climate Policy



None of these states have implemented any of the previously mentioned policies

States with no carbon policies



# Some States are Pursuing Aggressive Goals

- Vermont
  - 75% renewable energy by 2032
- New York
  - 50% renewable energy by 2030; governor proposed 100% carbon free by 2040.
- California
  - 100% zero-carbon electricity by 2045, of which 60% must come from renewable resources by 2030
- Nevada
  - Similar to CA, 100% zero-carbon electricity by 2050, of which 50% must come from renewable resources by 2030
- Hawaii
  - 100% renewable energy by 2045
- Washington
  - Recently passed 100% clean energy by 2045 law



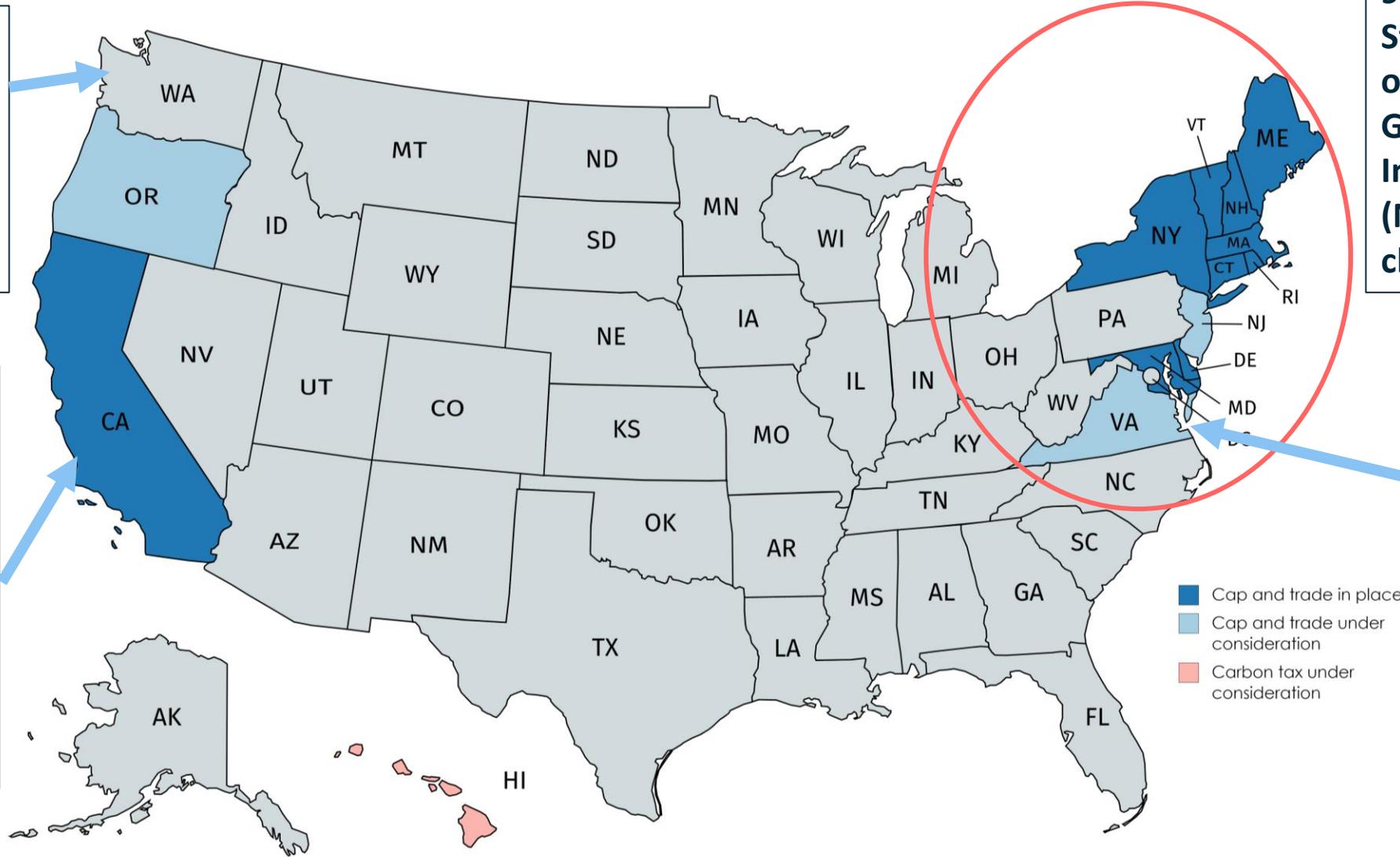
# States with Carbon Pricing

Washington State attempted to pass a carbon tax twice but failed

CA is part of the Western Climate Initiative (WCI) trading program with some Canadian Provinces

9 Northeast States are a part of the Regional Greenhouse Gas Initiative (RGGI) (New Jersey is close to joining)

Virginia finalized regulation to link to RGGI, but legislature recently defunded linking activities by DEQ.

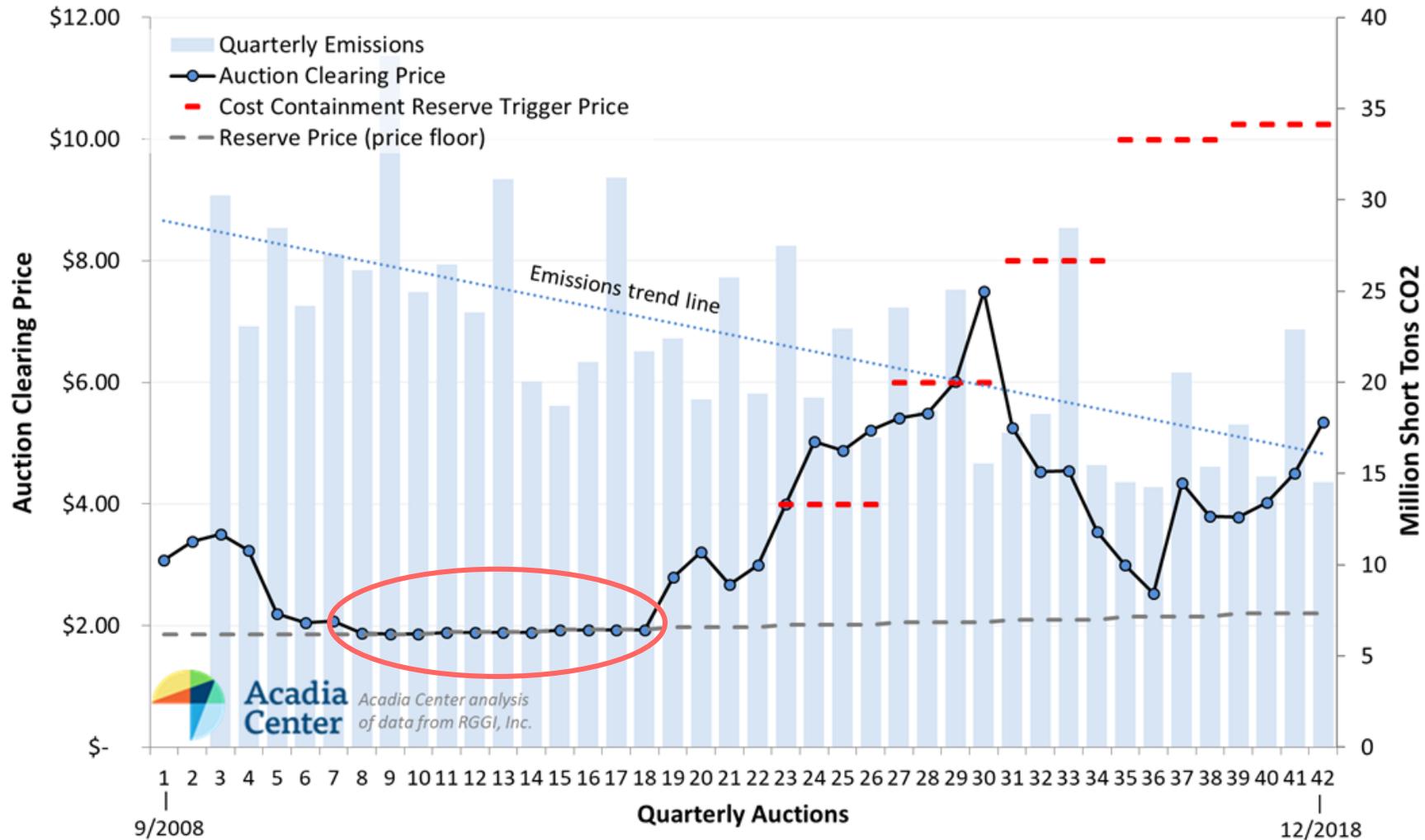


# States are Innovators on Carbon Pricing

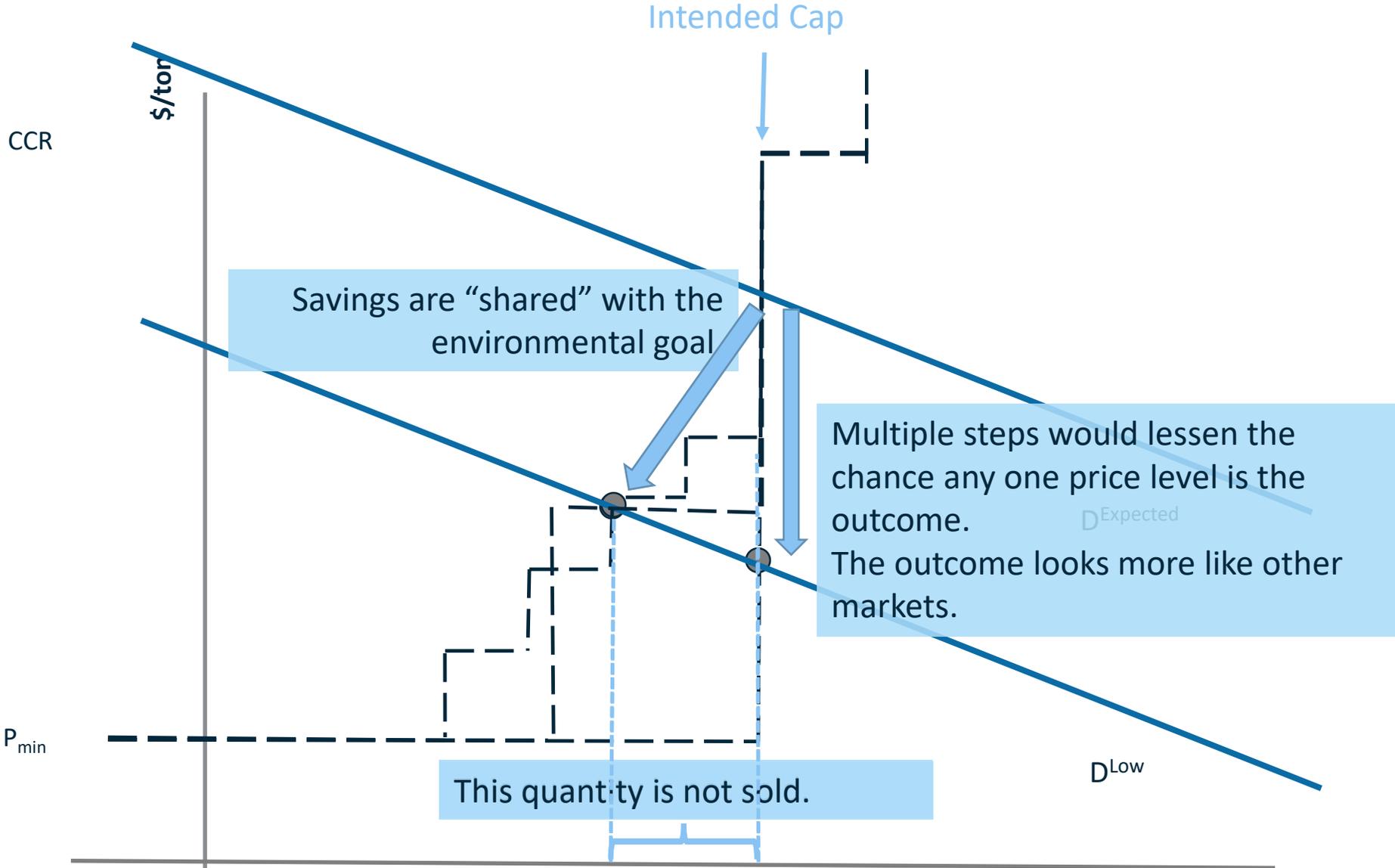
- Regional Greenhouse Gas Initiative (RGGI)
  - ~~Regional cap-and-trade program for electricity~~
  - Features include an allowance auction, price floor, cost containment reserve, emission containment reserve and declining cap over time
  - RGGI footprint expected to expand in 2020 with addition of NJ
- California Cap and Trade Program
  - Economy-wide cap-and-trade program that includes electricity, industry, and more recently, transportation
  - Features include an auction, cost containment reserve, price ceiling and floor, and inclusion of carbon offsets for compliance
- New York ISO Carbon Adder Proposal
  - New York considering incorporating carbon pricing into wholesale markets at the social cost of carbon *minus the RGGI allowance price*
- PJM
  - Recently initiated a stakeholder process to create a method for integrating state carbon pricing mechanisms into the PJM wholesale markets (such as states that participate in RGGI) and prevent leakage between states



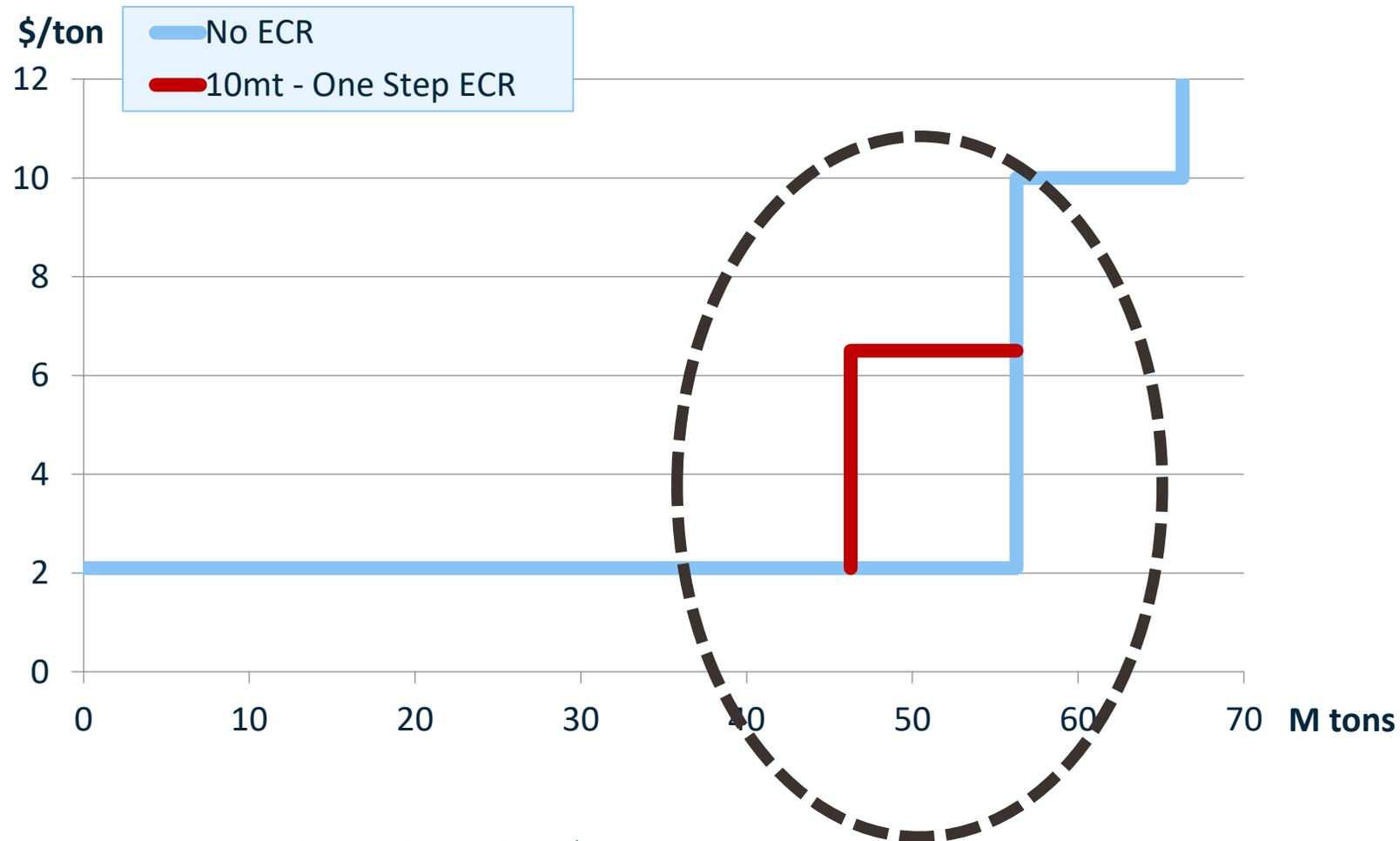
# RGGI Experience with Allowance Prices



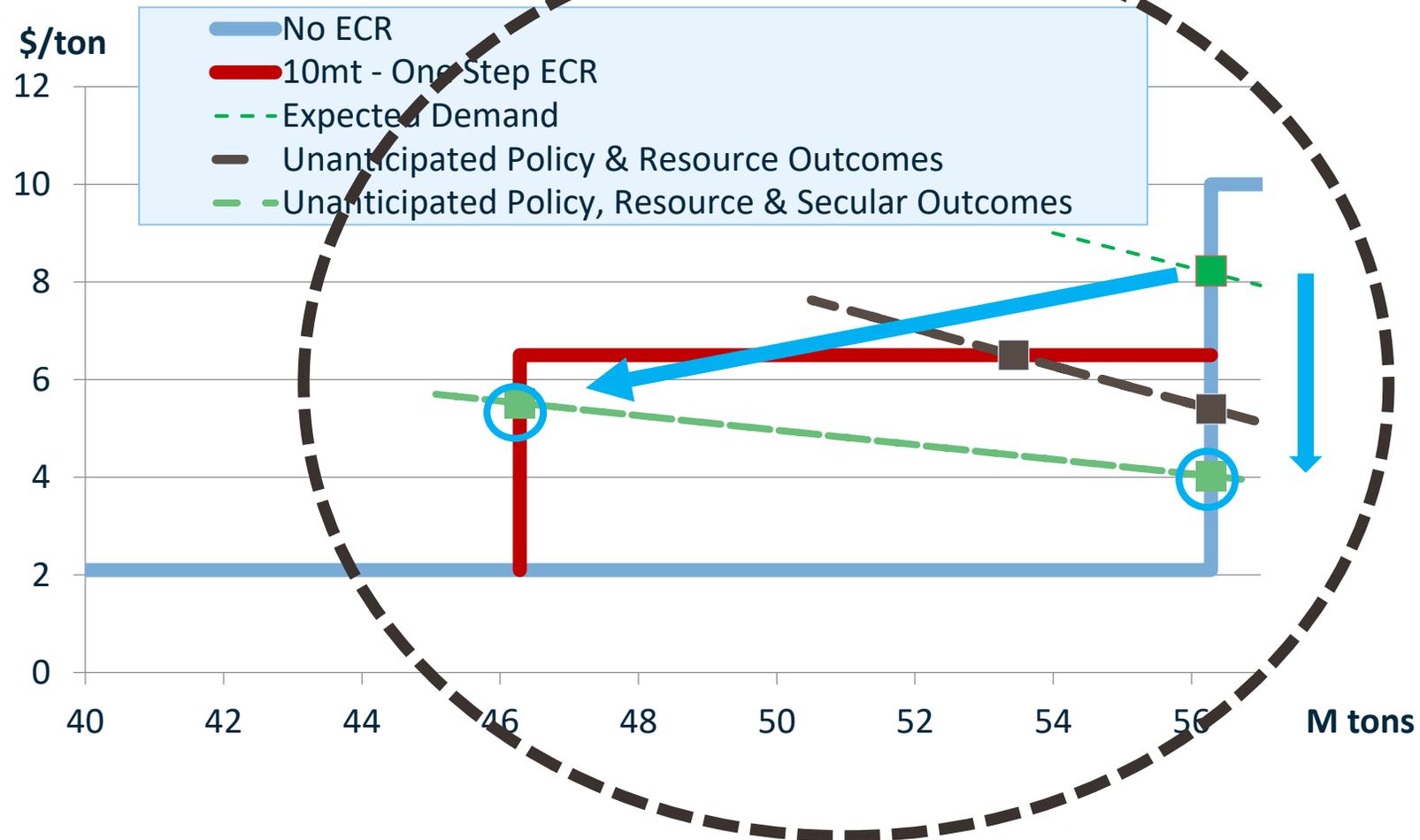
# A Price Responsive Allowance Supply Curve



# Modelled ECR of 10 million tons at \$6.50 per ton



# Close Up of ECR Sharing Outcome

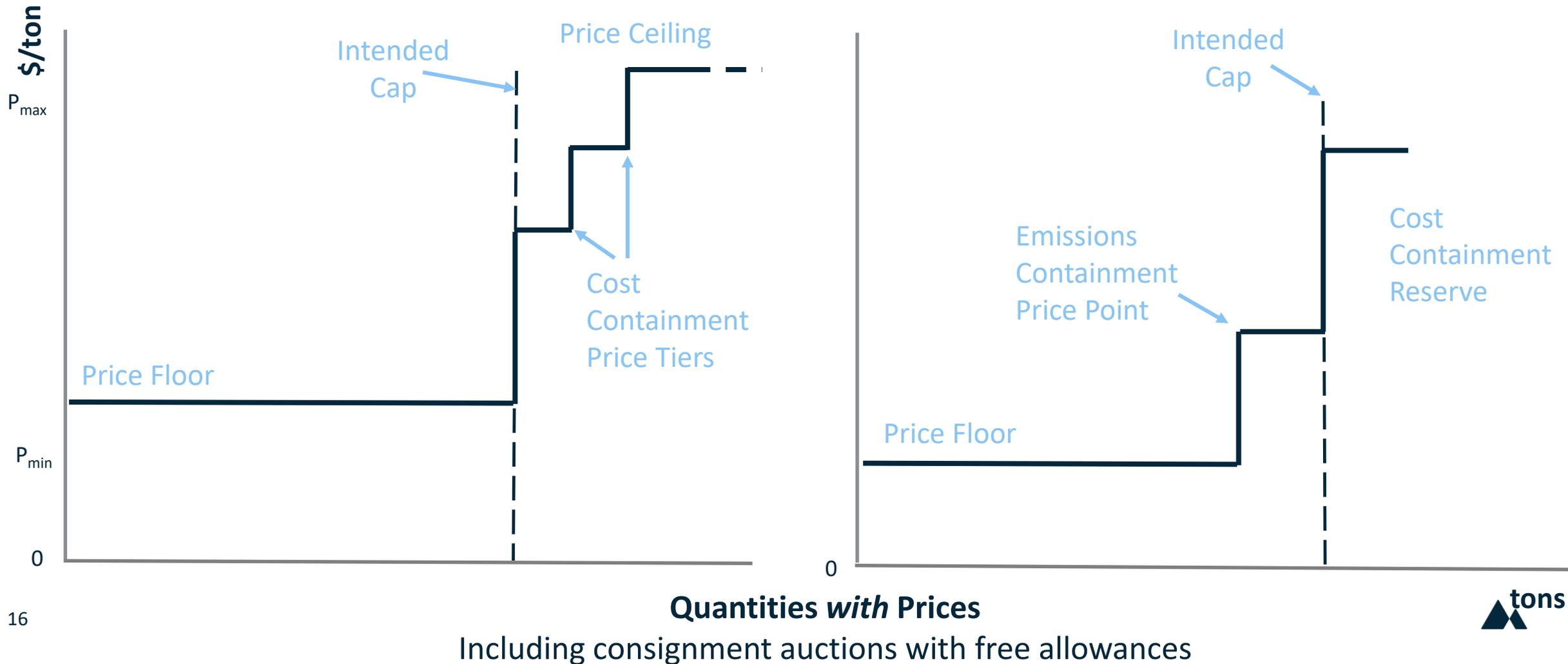


# Results from Simulations

3.5% Annual Cap Reduction	Reference Case	Low Allowance Demand: Policy, Resource and Secular Unanticipated Outcomes			
2020 Results (2011 dollars)	No ECR	No ECR	One Step ECR (10Mtons)	Three Step ECR (15 Mtons)	Ramp ECR (17.5Mtons)
Retail Electricity Price (\$/MWh)	143	140	141	141	141
Fossil Generation (TWh)	143.5	112.1	101.7	107.6	106.4
Nonemitting Generation (TWh)	152.6	160.3	166.4	162.6	163.3
Allowance Price (\$/ton CO <sub>2</sub> )	8.2	4.0	5.3	5.0	5.0
RGGI Covered Emissions (Mtons)	72.3	70.1	62.5	66.6	65.8
SO <sub>2</sub> Emissions (Mtons)	10.4	13.4	11.8	12.8	12.7
Allowance Value (M\$)	463	226	246	253	250



# Supply Schedules in N. American Carbon Trading Programs



# New RFF Report

- Analyze RGGI-like carbon cap and trade and technology policies in six states: North Carolina, Pennsylvania, Illinois, Michigan, Minnesota and Wisconsin.
- Intended reductions in annual emissions from cap of 30% over 10 years; *achieved* cumulative reductions across states *exceed* intended by roughly *40 percent*.
- Reductions achieved at low cost and state programs could easily link to RGGI for reduced uncertainty in program cost.



# Conclusions

- States have been leaders with respect to carbon policies
  - Includes a range of technology and pricing policies
  - Some have or are developing policies that affect multiple sectors
  - Over twenty have committed to meeting Paris goals
- Some states have aggressive policies, and the list is getting longer
- Carbon pricing can achieve important emissions reductions at low cost.
- Price responsive allowance supply is an important innovation that makes carbon pricing policy politically resilient and gives potency to other policies.





# Thank you.

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