

DRAFT 2016 RGGI Program Review Reference Case Results

April 29, 2016

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DRAFT 2016 PR Reference Case Projections

- The following slides present select projections from two reference cases that RGGI specified for evaluation:
 - The updated RGGI Program Review Reference Case
 - The CPP Nationally Reference Case, assuming Clean Power Plan in states outside of RGGI
- Projections are based on assumptions in place as of April 15, 2016.
- These projections are draft and may change as ICF makes refinements based on review and input by the States.
- Detailed 2016 PR Reference Case assumptions are summarized in accompanying materials.

Assumptions Updates

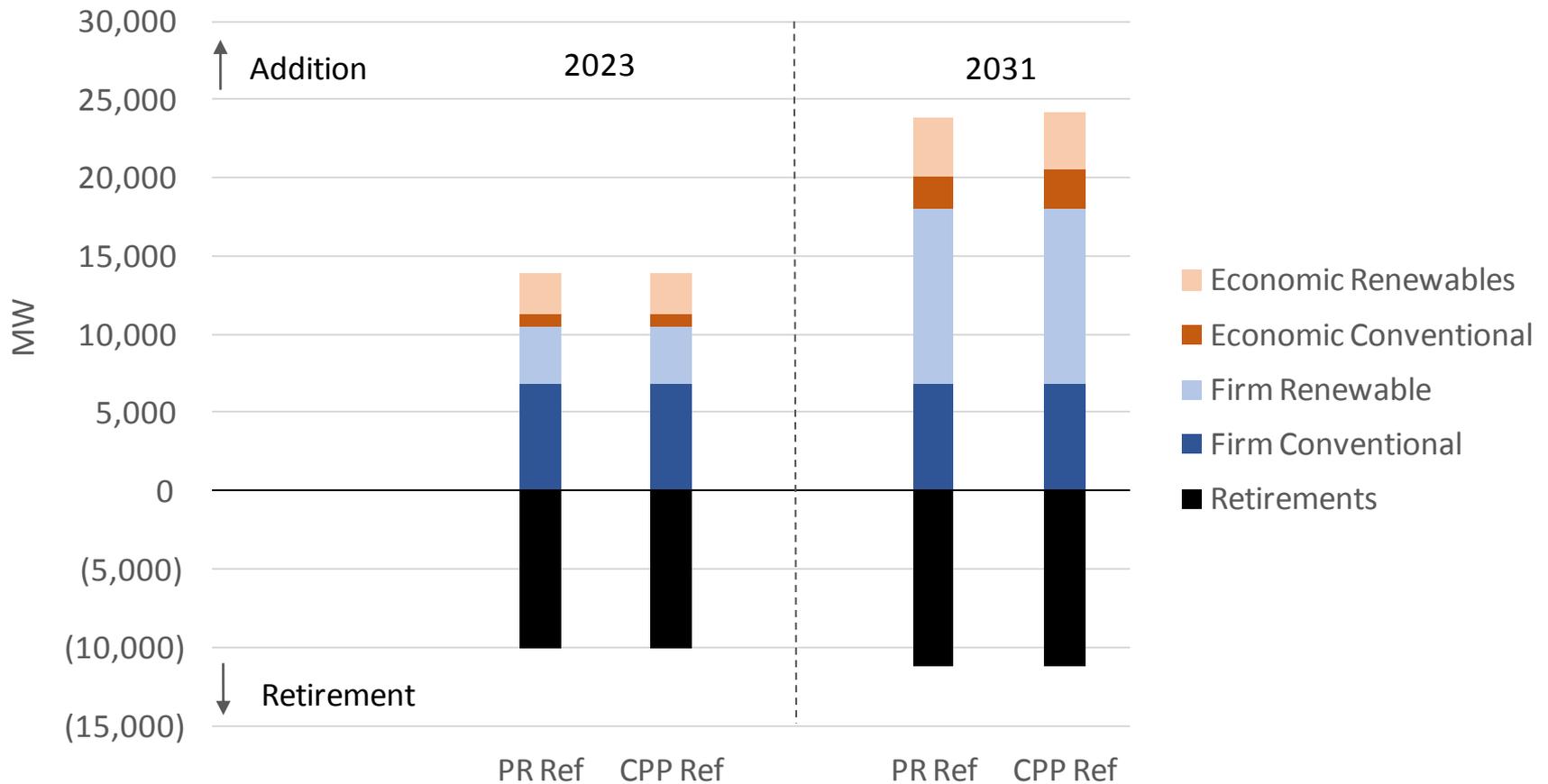
- Both reference cases rely on some assumptions that have been updated since they were published and previously reviewed with stakeholders:
 - Natural gas transportation costs are based on recent historical weather-normalized delivered prices but no longer adjusted over time to reflect cost trends from the Annual Energy Outlook (AEO) 2015.
 - Incremental renewable capacity and energy efficiency have been assumed for New York consistent with the proposed Clean Energy Standard (CES).
 - Some state –specific changes to economic biomass builds.

Reference Case Specifications

Assumption	Program Review (PR) Reference Case	CPP Nationally (CPP) Reference Case
RGGI Cap	2020 cap extended through end of modeling horizon	
RGGI Cost Containment Reserve (CCR)	10 million tons available in each year with trigger price rising at 2.5% annually through end of modeling horizon	
RGGI Offsets	Offsets allowed for up to 3.3% of compliance through end of modeling horizon at \$25/ton	
RGGI Trading	Trading of RGGI allowances among RGGI states	
Banking	Unlimited banking across the modeling horizon	
Clean Power Plan Goals	None	States outside of RGGI subject to mass caps covering existing and new units
Clean Power Plan Trading	None	Trading among all states outside of RGGI

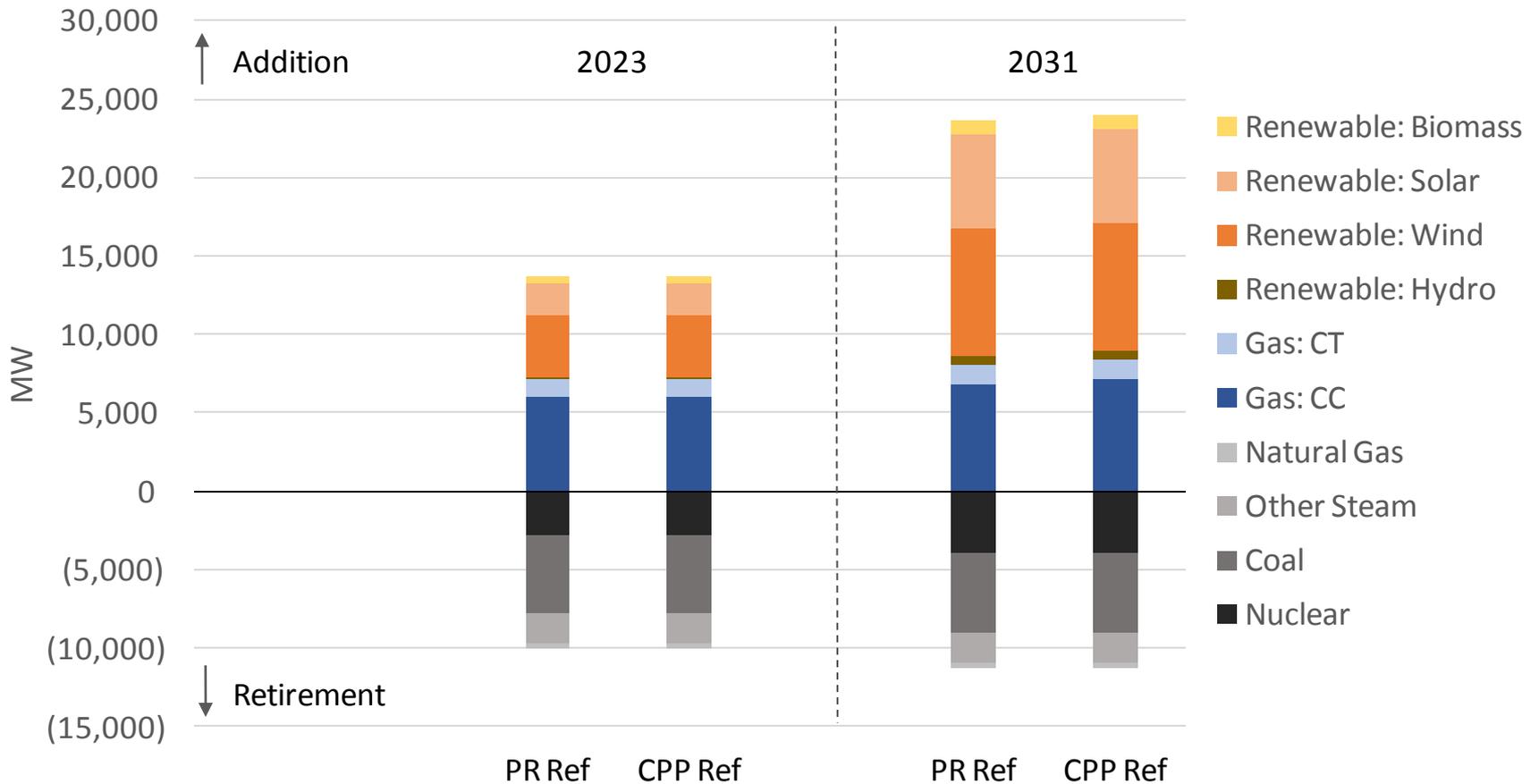
RGGI Cumulative Capacity Additions

- The chart shows the distribution of capacity additions and retirements across firmly planned (“Firm”) and model-projected (“Economic”) types.



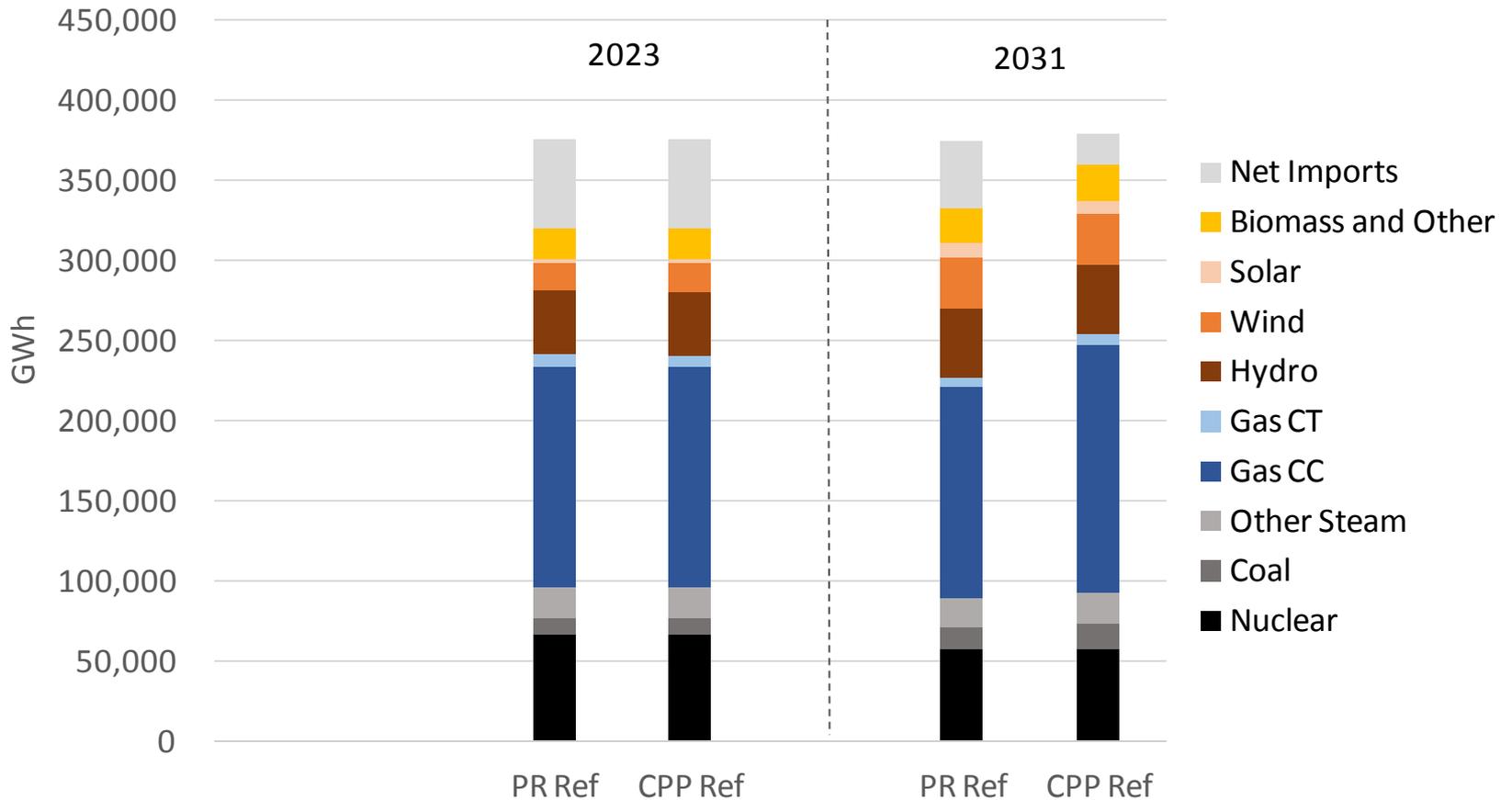
RGGI Cumulative Capacity Additions (2)

- The chart shows the distribution of capacity additions and retirements by capacity type.



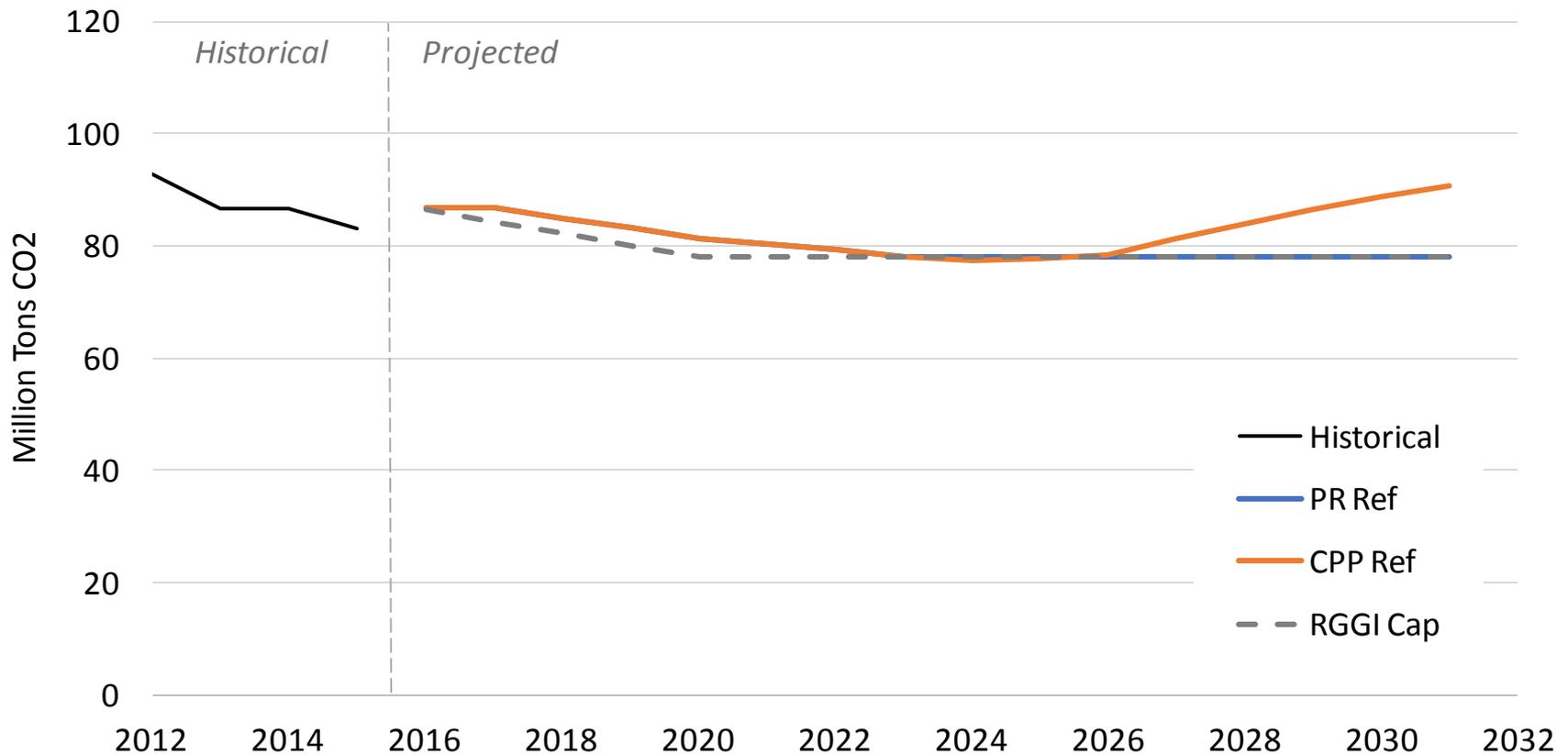
RGGI Generation Mix

- The chart shows generation by type and net imports for the RGGI states.



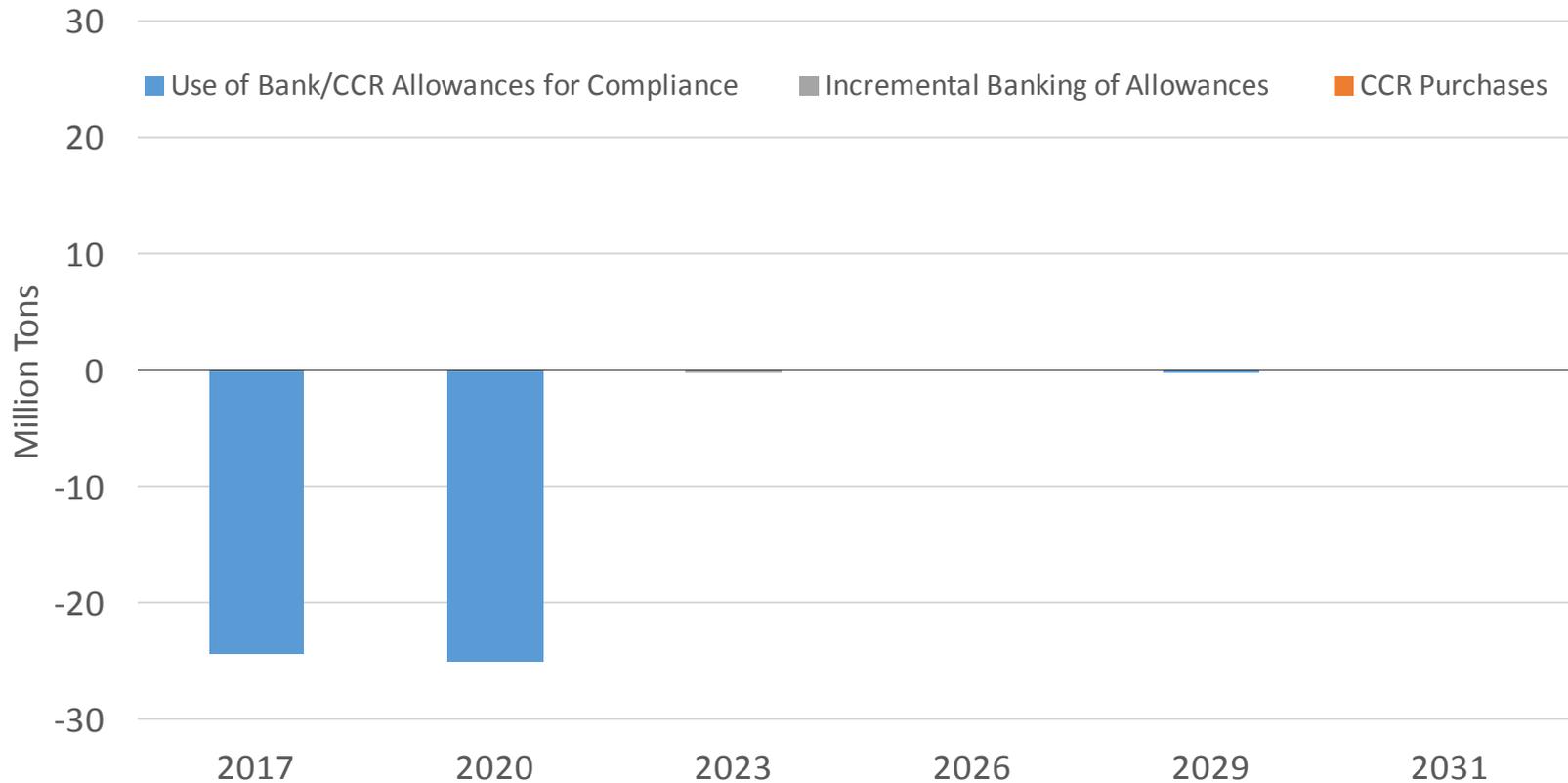
RGGI CO₂ Emissions

- The chart shows projected CO₂ emissions from RGGI-affected sources.
- Emissions exceed the RGGI Cap when allowances are withdrawn from the bank or purchased at the CCR trigger price.



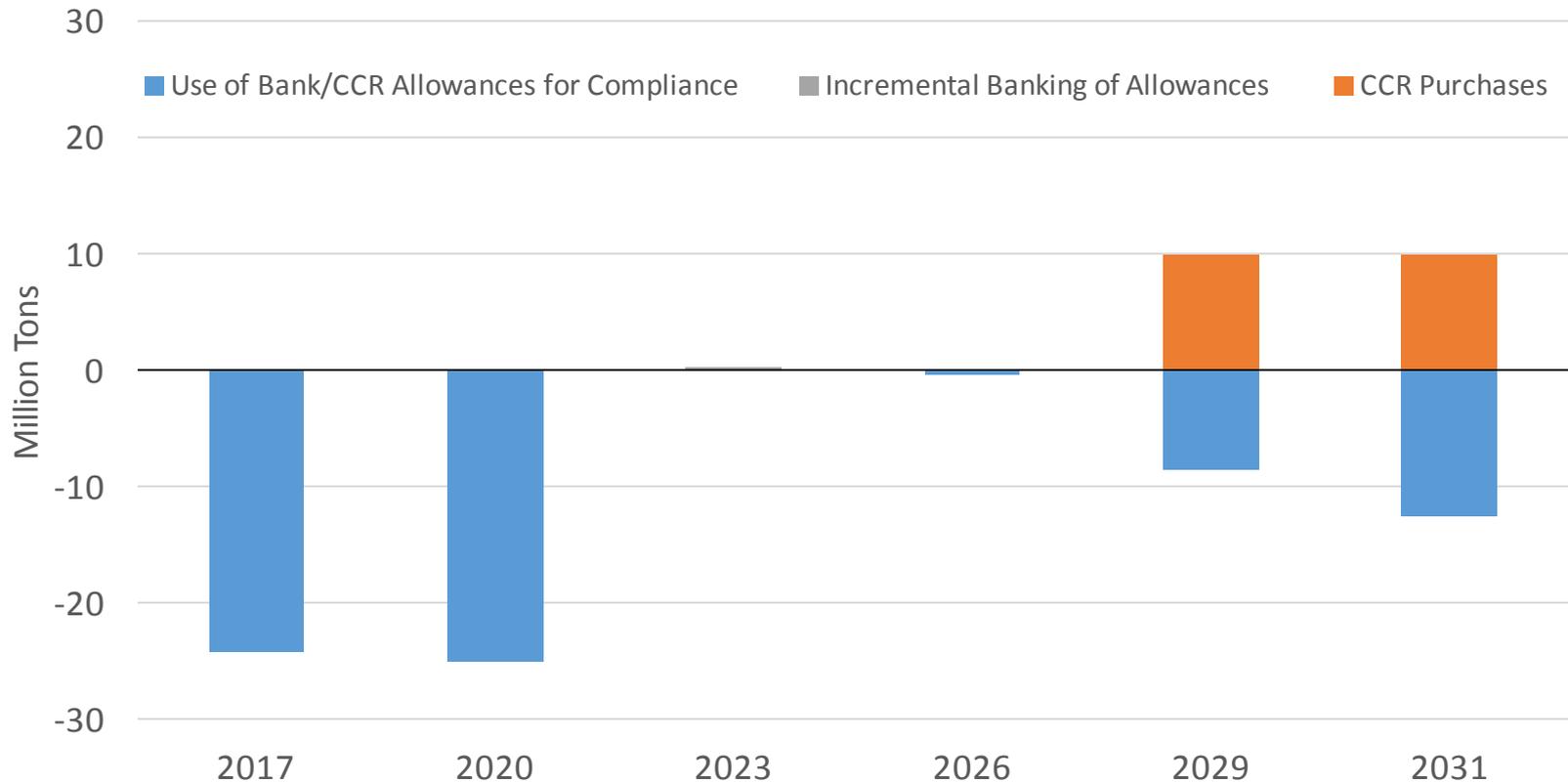
Use of CCR & Banked Allowances –PR Reference

- The chart shows banking and the use of banked allowances for compliance, as well as projected purchases of CCR allowances and their use for compliance.



Use of CCR & Banked Allowances –CPP Reference

- The chart shows banking and the use of banked allowances for compliance, as well as projected purchases of CCR allowances and their use for compliance.



CCR purchases are for model run groups. Total CCR purchases from 2028-2031 are 40 M.

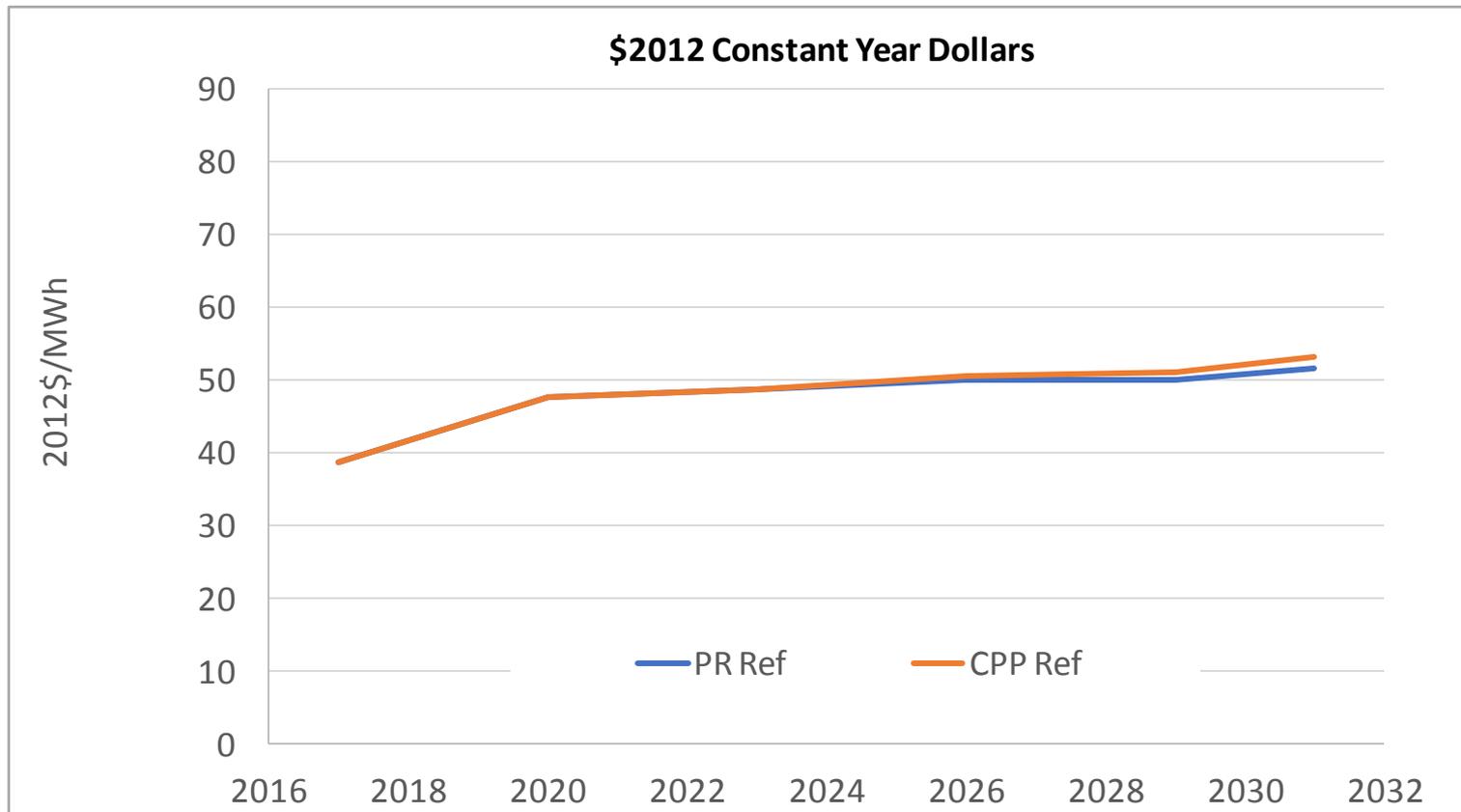
RGGI Cumulative Emissions (Million of Tons)

Case	2016-2021	2022-2031	2022-2029	2030-2031
Program Review Reference Case	504	782	625	156
CPP Nationally Reference Case	504	822	642	179

<i>CPP Goals (Aggregate for RGGI States)</i>	2022-2031	2022-2029	2030-2031
	850	690	160

RGGI Firm Power Prices

- The charts show the projected RGGI average annual firm (energy + capacity) prices in real dollars.



RGGI Allowance Prices

- The charts show the projected RGGI allowance prices in real dollars.
- Allowance prices exceed the CCR trigger price in the CPP Ref Case in 2030 and 2031 because affected sources must reduce emissions even after acquiring the CCR allowances.

