

# DRAFT 2016 RGGI Program Review CPP Reference Case and Model Run #1 Results

April 29, 2016

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# DRAFT 2016 CPP Reference Case and Model Run #1 Projections

- The following slides present select projections from two cases that RGGI specified for evaluation:
  - The CPP Nationally Reference Case, assuming Clean Power Plan in states outside of RGGI. This CPP assumption is the same for Model Run #1.
  - The Model Run #1, assuming a reduction in the number of CCR allowances available to limit available allowances each year in RGGI to the CPP mass based goals
- 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 assumptions are summarized in accompanying materials.

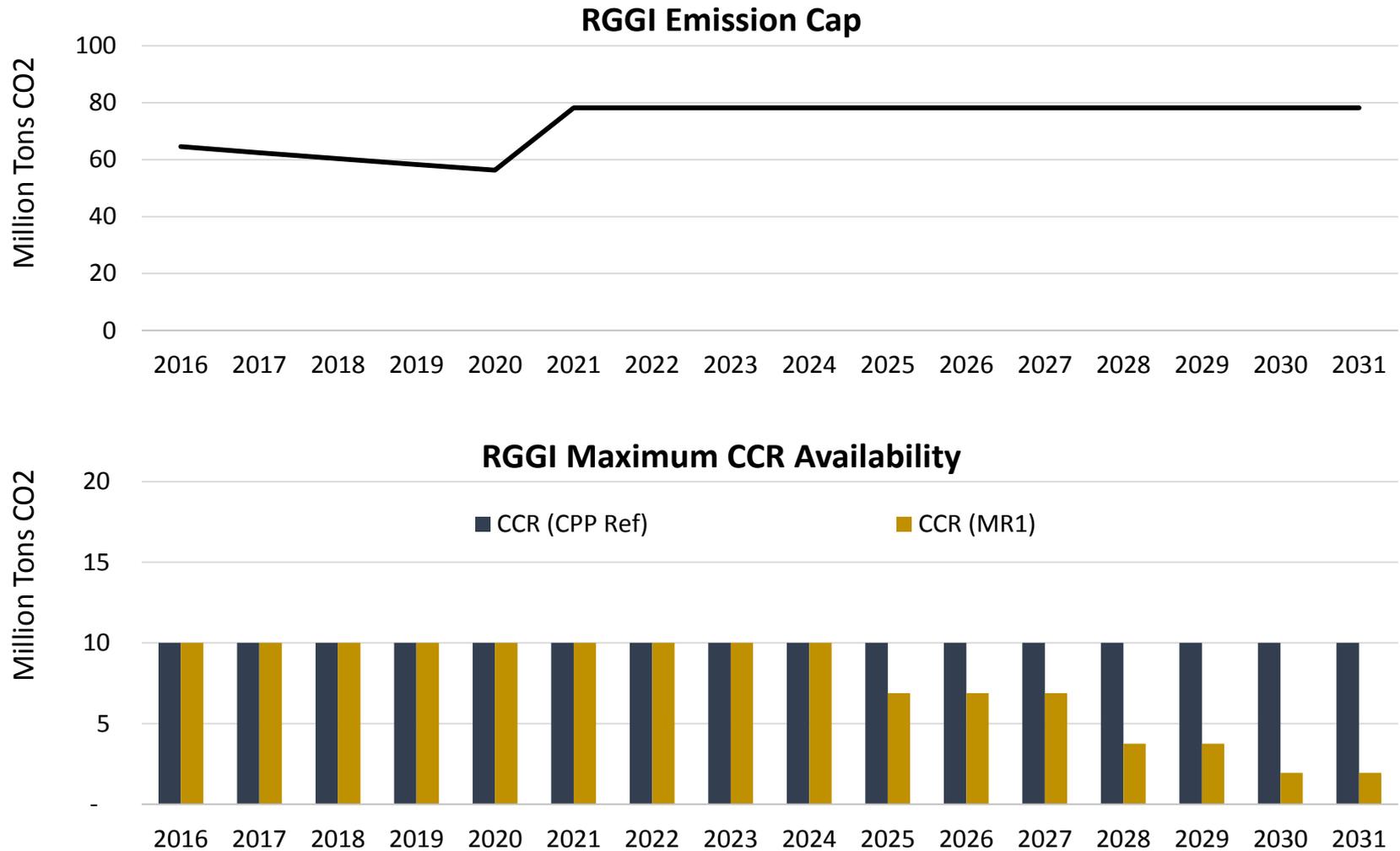
# Assumptions Updates

- The 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.

# CPP Nationally Reference Case and Model Run #1 Specifications

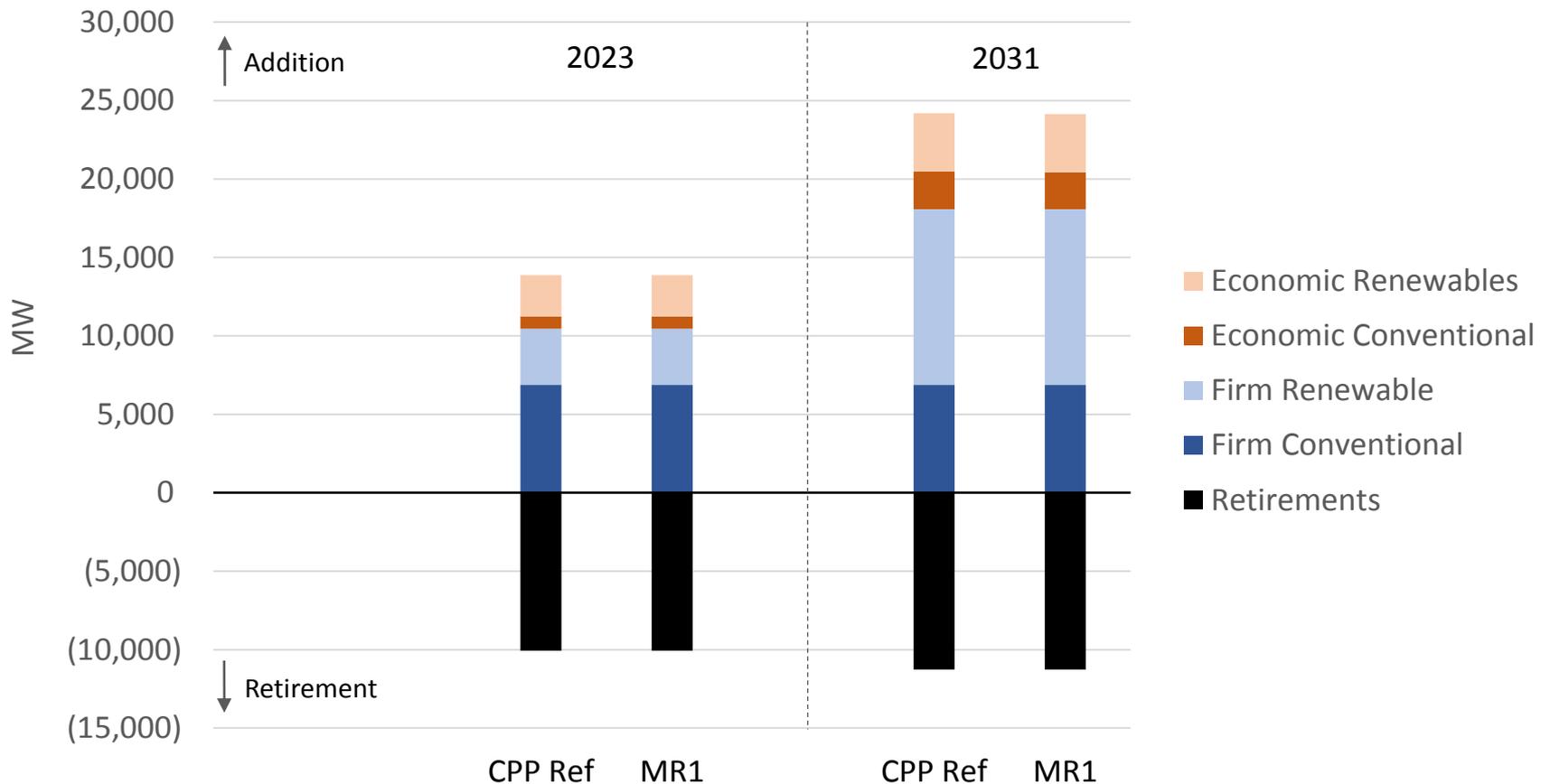
Assumption	CPP Nationally (CPP) Reference Case	Model Run #1 (MR1)
RGGI Cap	2020 cap extended through end of modeling horizon	
RGGI Cost Containment Reserve (CCR)	10 million tons available in each year through end of modeling horizon	10 million tons available in each year, limited each year by RGGI CPP mass based goal. CCR declines from 10 M in 2022 to 1.9 M in 2031.
RGGI CCR Trigger Price	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	States outside of RGGI subject to mass caps covering existing and new units	
Clean Power Plan Trading	Trading among all states outside of RGGI	

# Assumed RGGI CO<sub>2</sub> Caps and CCR Availability



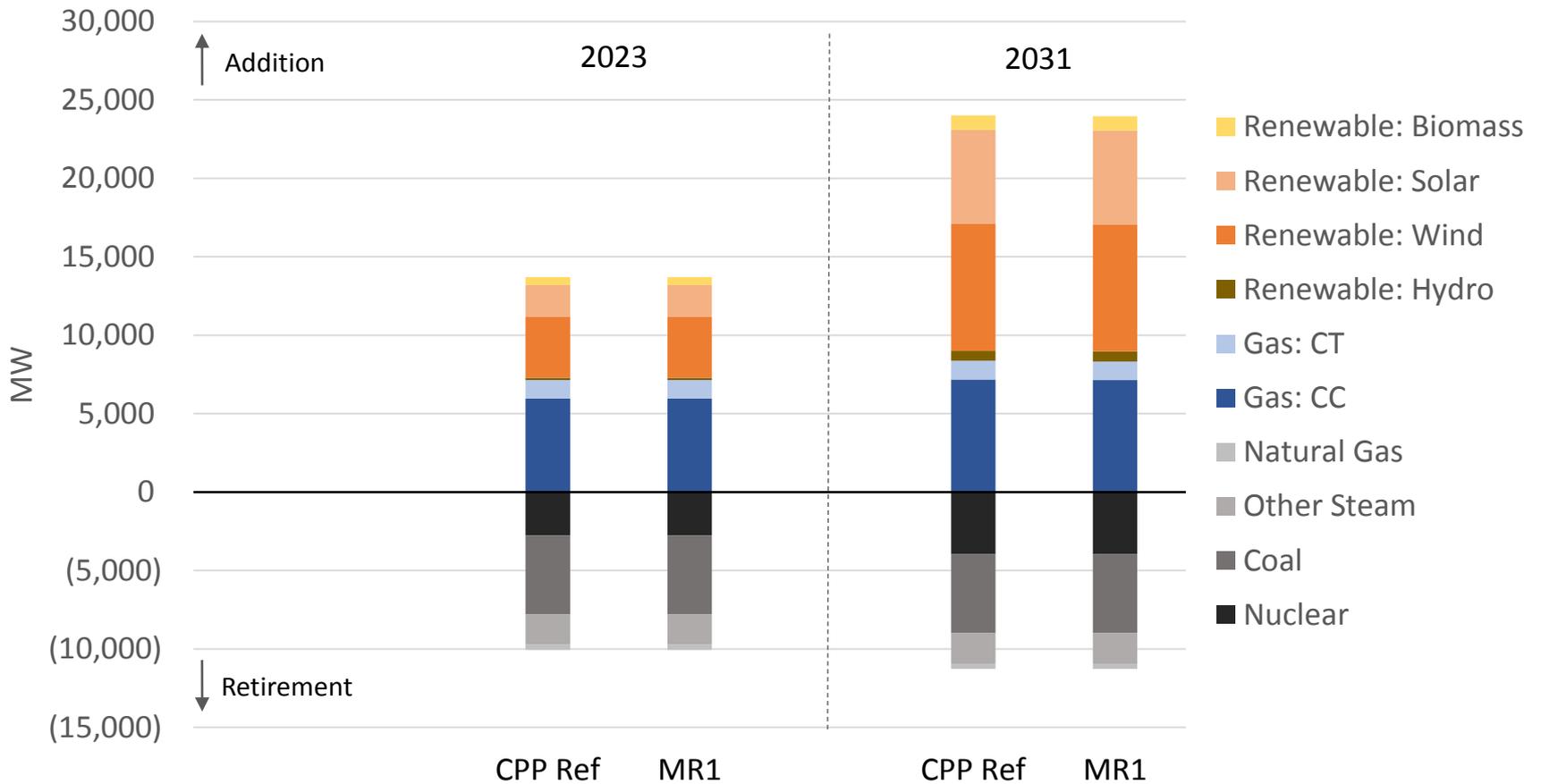
# RGGI Cumulative Capacity Additions

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



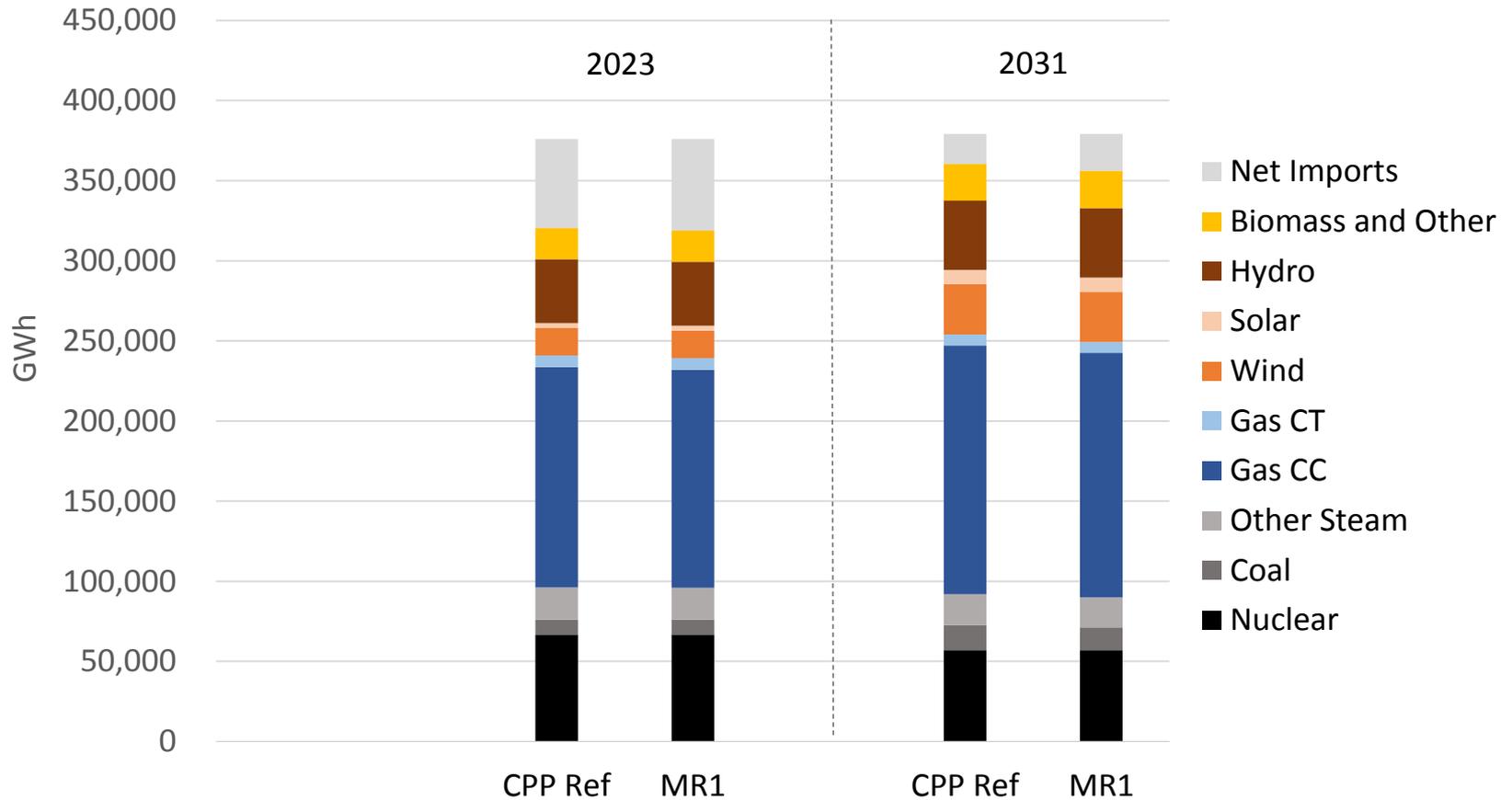
# RGGI Cumulative Capacity Additions (2)

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



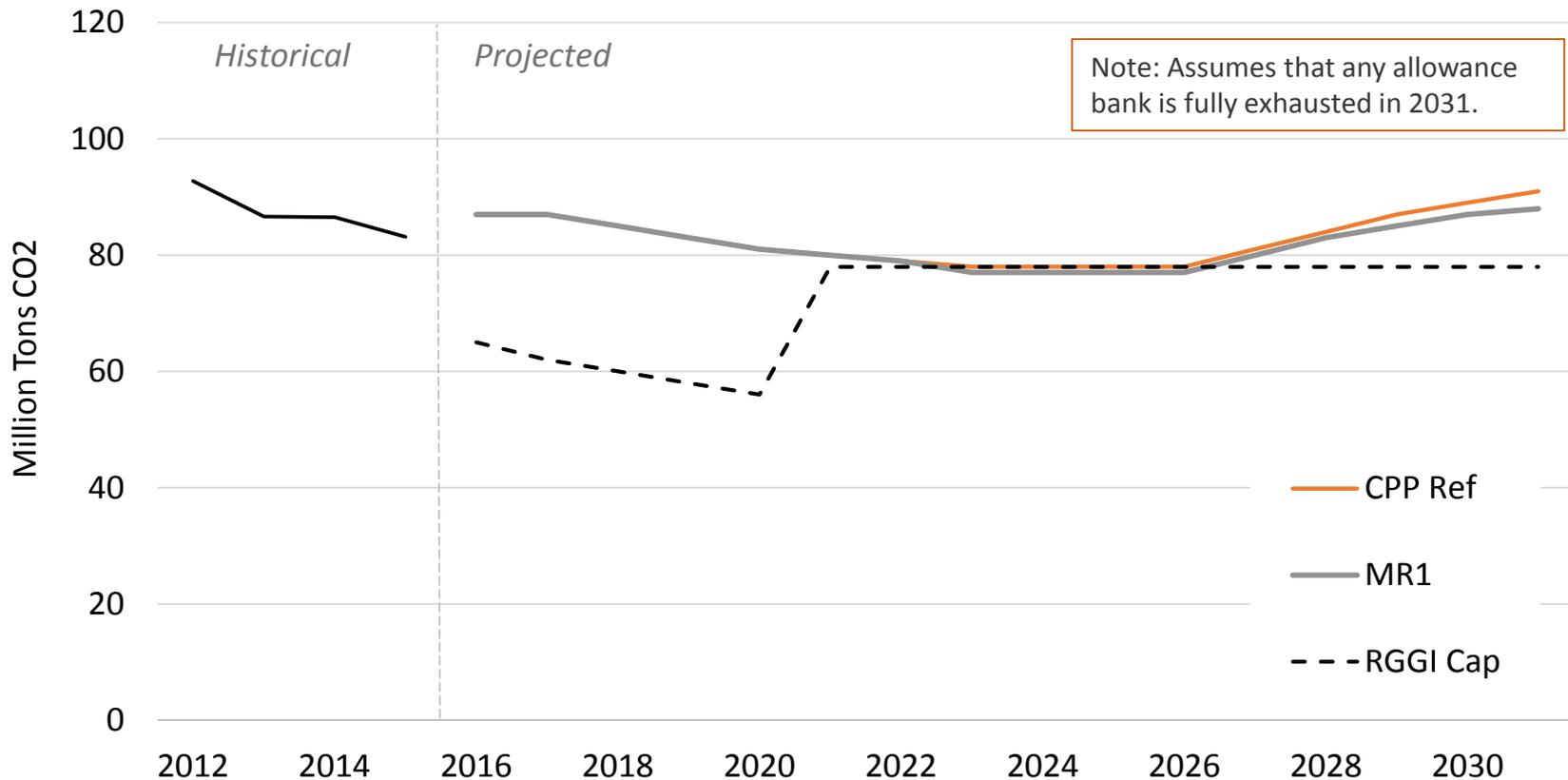
# RGGI Generation Mix

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



# RGGI CO<sub>2</sub> Emissions

- The chart shows projected CO<sub>2</sub> emissions from RGGI-affected sources.
- Emissions exceed the RGGI Cap when allowances are withdrawn from the bank or purchased at the CCR trigger price.



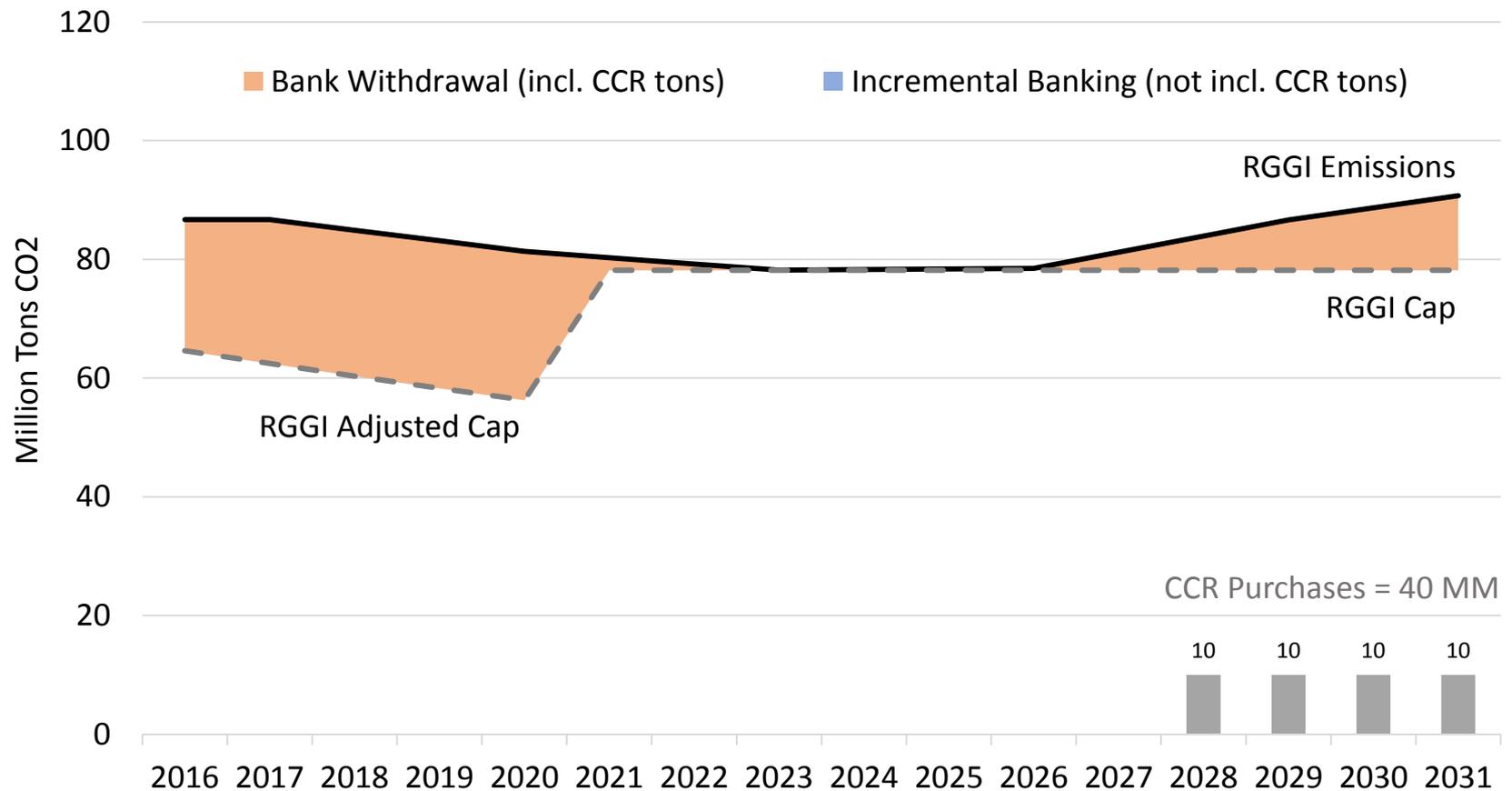
# RGGI Emissions (Million of Tons)

Case	Cumulative Emissions			
	2016-2021	2022-2031	2022-2029	2030-2031
CPP Nationally Reference Case	504	822	642	179
Model Run #1	504	807	634	173

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

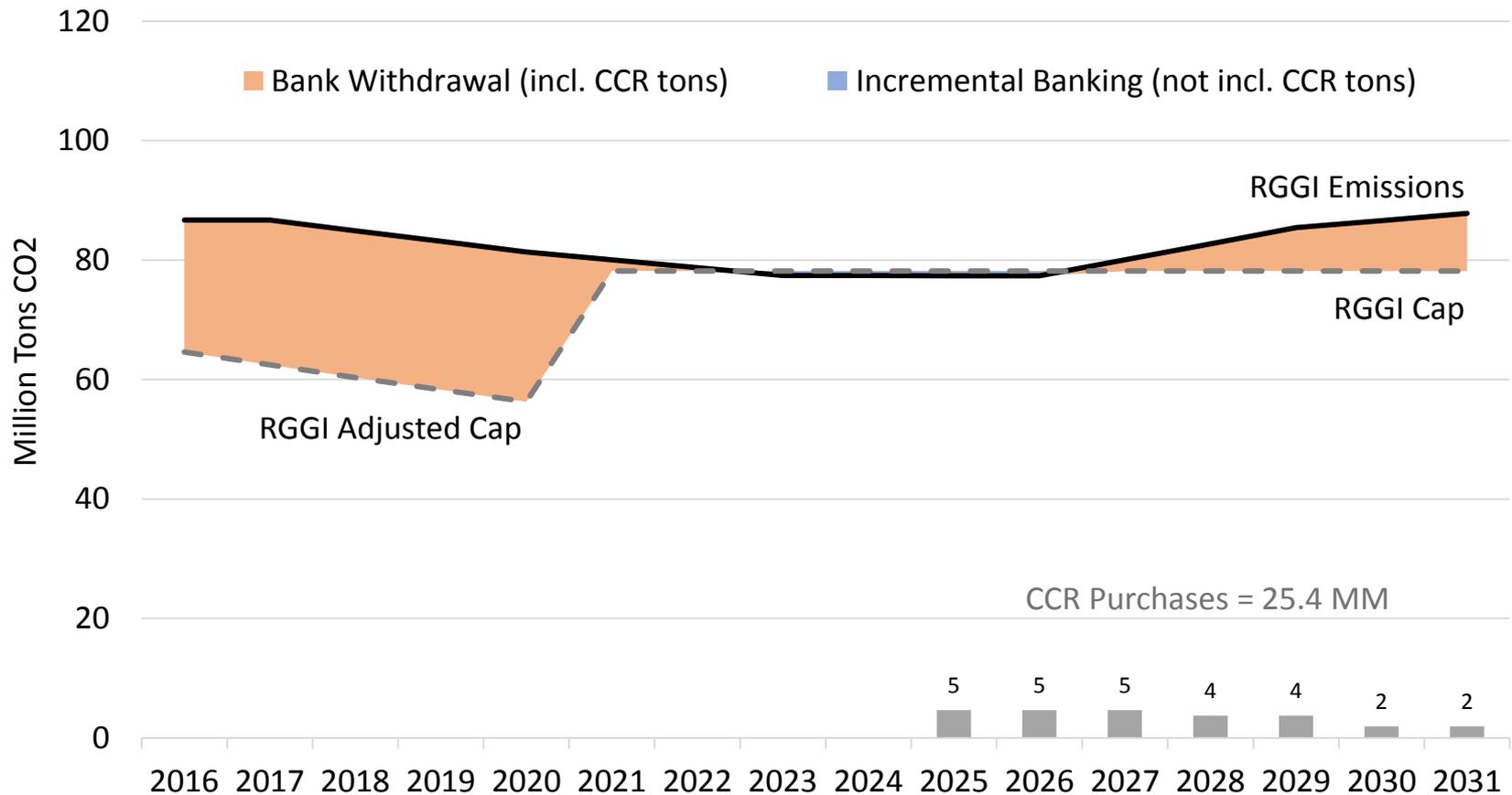
# CO<sub>2</sub> Emission Reductions – CPP Reference

- The chart shows the projected CO<sub>2</sub> emissions relative to the cap and the use of banked allowances and CCR allowances used for compliance.



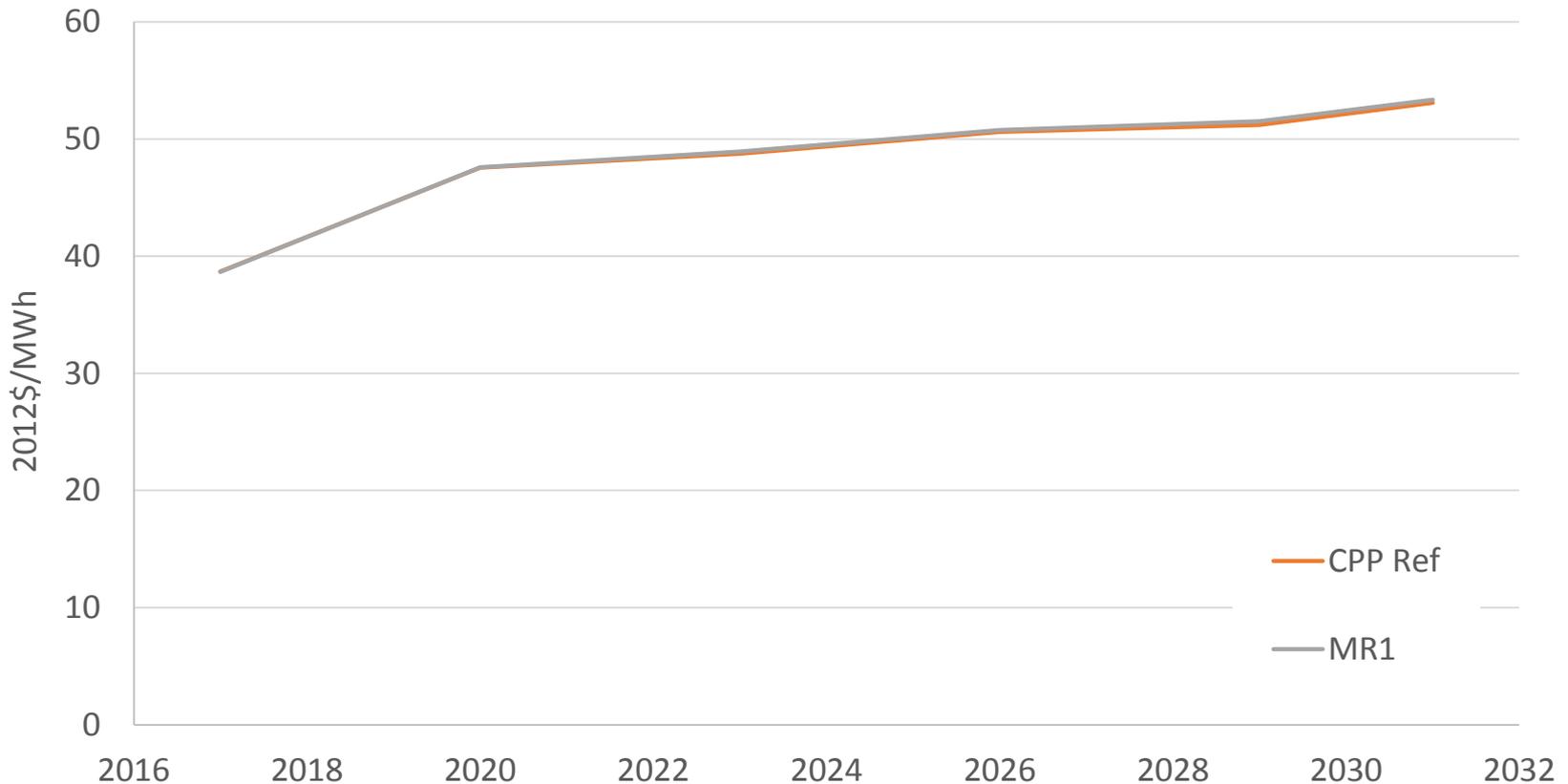
# CO<sub>2</sub> Emission Reductions – MR1

- The chart shows the projected CO<sub>2</sub> emissions relative to the cap and the use of banked allowances and CCR allowances used for compliance.



# RGGI Firm Power Prices

- The charts show the projected RGGI average annual firm (energy + capacity) prices in constant 2012 dollars.



# RGGI Allowance Prices

- The charts show the projected RGGI allowance prices in constant 2012 dollars.

