Connecticut Department of Energy and Environmental Protection

Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

Regional Greenhouse Gas Initiative – Clean Power Plan Update

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SIPRAC

RGGI Program Elements

States:

Connecticut, Delaware, Maryland, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, Vermont

CO_2 Emissions Cap:

88.7 million short tons in 2015, and declines 2.5% each year until 2020; two interim adjustments to the cap (2014-2020) to account for banked CO2 allowances.

Coverage:

Fossil fuel-fired power plants 25 megawatts or greater in size (currently 163 facilities region-wide)

Compliance Period:

Three years,
Jan. 1, 2009 – Dec. 31, 2011;
Jan. 1 2012 – Dec. 31 2014
Jan. 1, 2015 – Dec. 31, 2017

CO_2 Emission Offsets:

Qualifying GHG reduction projects outside the electricity sector. Can use to meet 3.3% of compliance obligation.

Auction Proceeds:

$2.2 billion through Sept. 2015. States reinvest auction proceeds in energy efficiency, renewables, direct bill abatement, and GHG abatement programs.

New England Grid Operations

- Essentially a Deregulated Market operated by ISO NE
- Heavily Reliant on Nuclear and Natural Gas generation
- Clean Emissions Profile
- Recently CT became the largest share of regional gross generation
- CT's nuclear and gas generation fleets are base load
- CT's surplus generating capacity is called to serve load in other states

CT – Substantial Progress in Reducing GHG Emissions

- Power sector led all sectors in gross reductions
- Co-benefit: sharp decrease in NOx and SOx emissions
- 8x ACEEE Top 10 states for Energy Efficiency
- 13% redux in electricity consumption
- Progressive Renewable Portfolio Standards (20% by 2020)

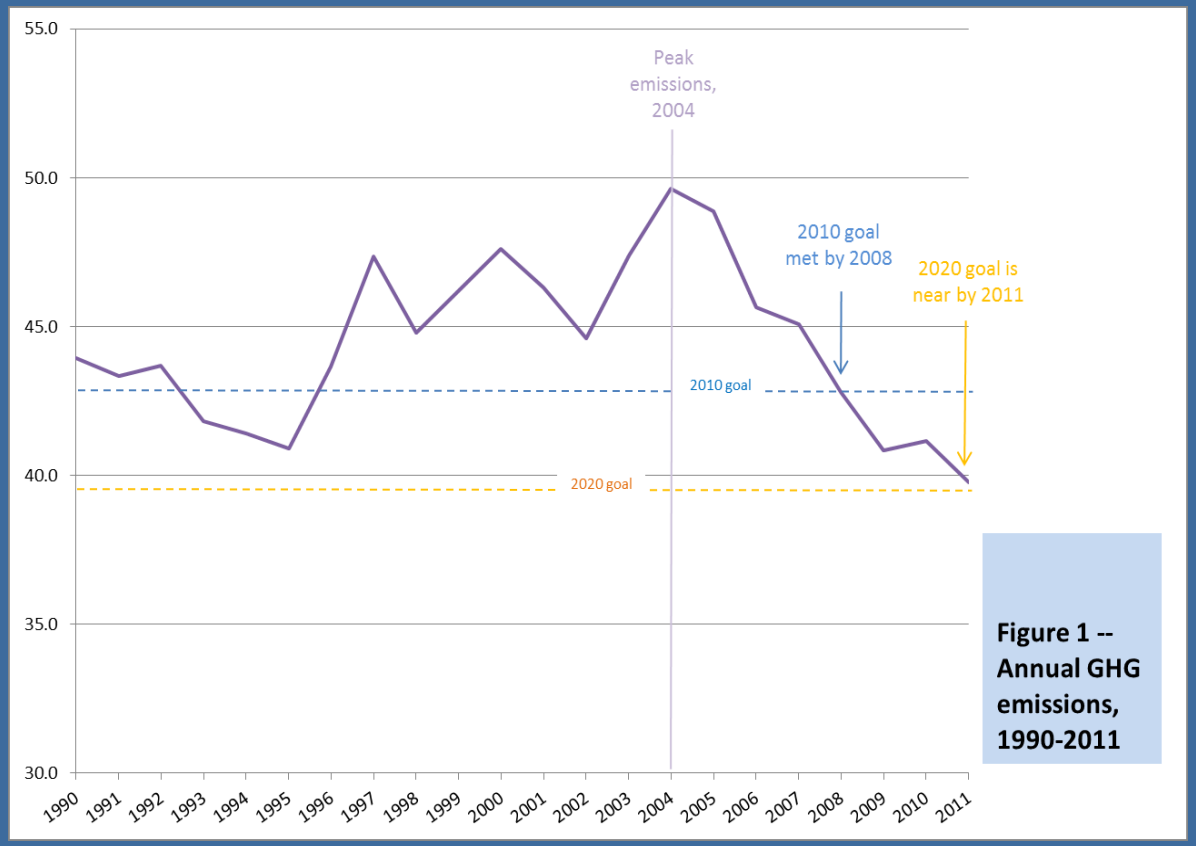
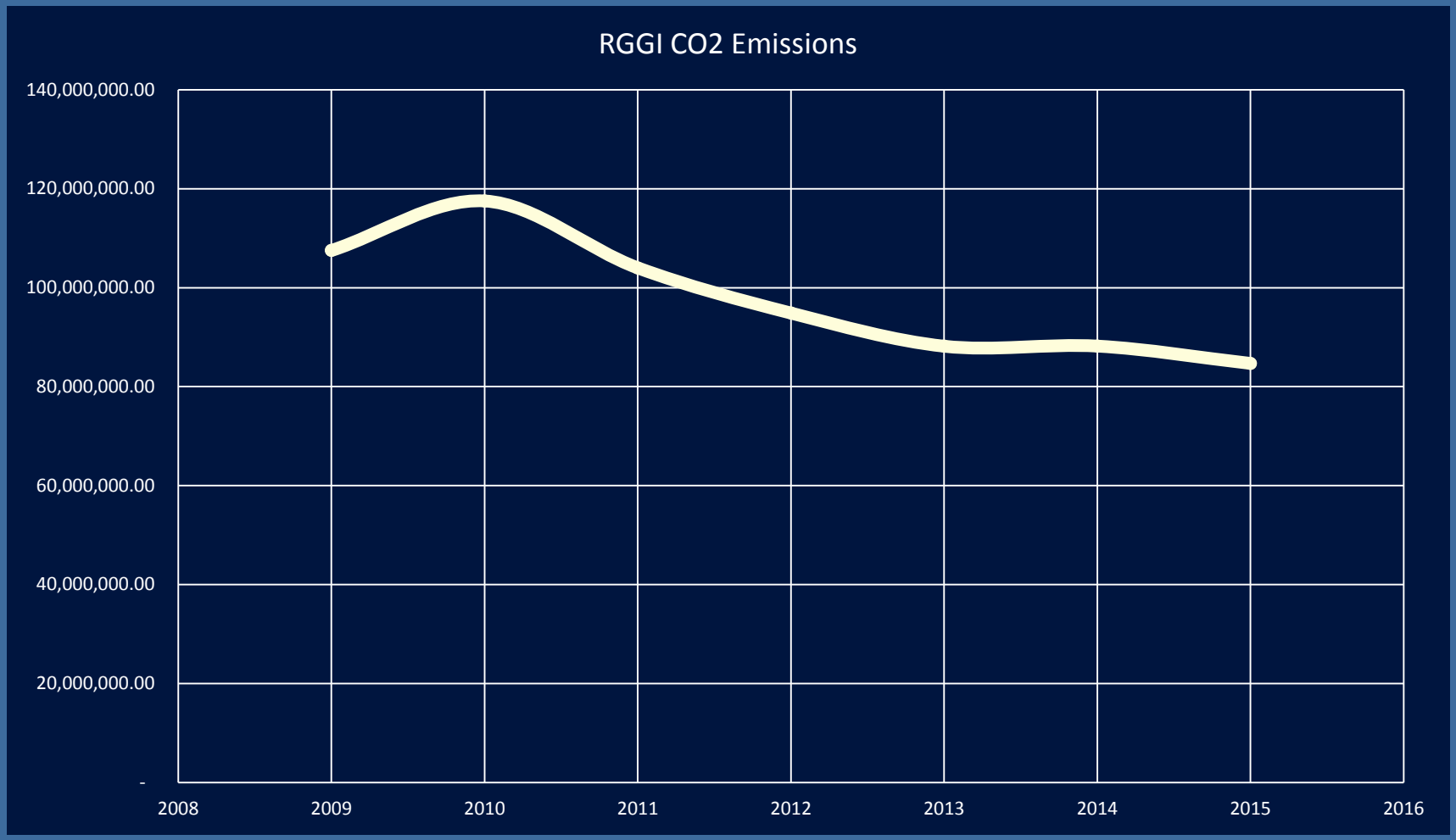
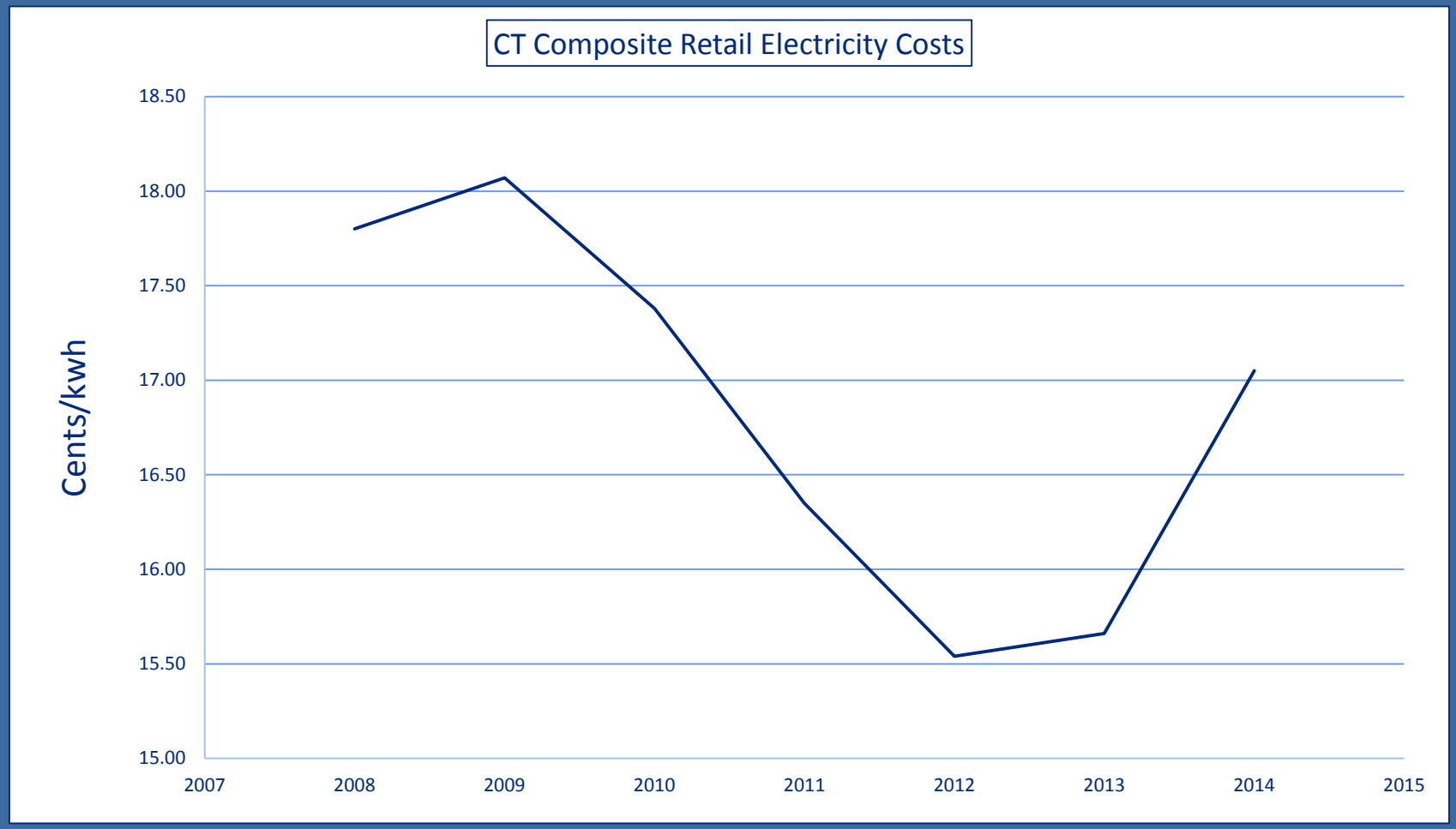


Figure 1 -- Annual GHG emissions, 1990-2011

Emissions Reductions Achieved to Date

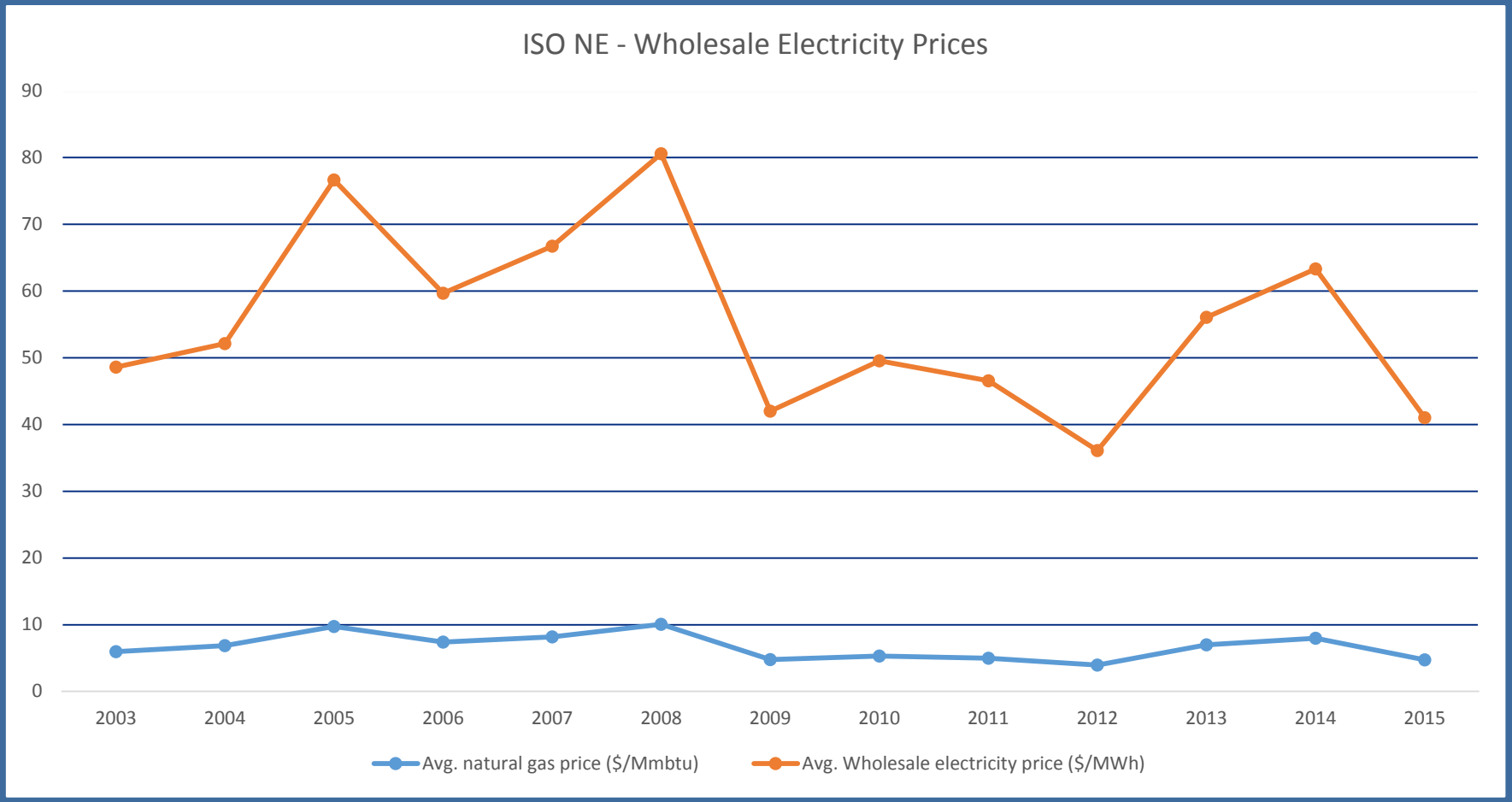


Historic Retail Electricity Prices



Source: http://www.eia.gov/electricity/data/state/sales_annual.xls

Minimal Impact on Wholesale Prices



Source:
http://www.iso-ne.com/static-assets/documents/2016/03/20160329_prelim_2015_prices_release.pdf

RGGI Benefits - 2013

Source: https://www.rggi.org/rggi_benefits

Validation of Benefits

- Nicholas Institute

  https://sites.nicholasinstitute.duke.edu/environmentaleconomics/files/2014/05/RGGI_final.pdf

- Analysis Group

  http://www.analysisgroup.com/uploadedfiles/content/insights/publishing/analysis_group_rggi_report_july_2015.pdf

- Synapse Energy Economics Inc.

  http://www.synapse-energy.com/project/rggi-benefits-analysis

Clean Power Plan
Key Elements

What is the Clean Power Plan?

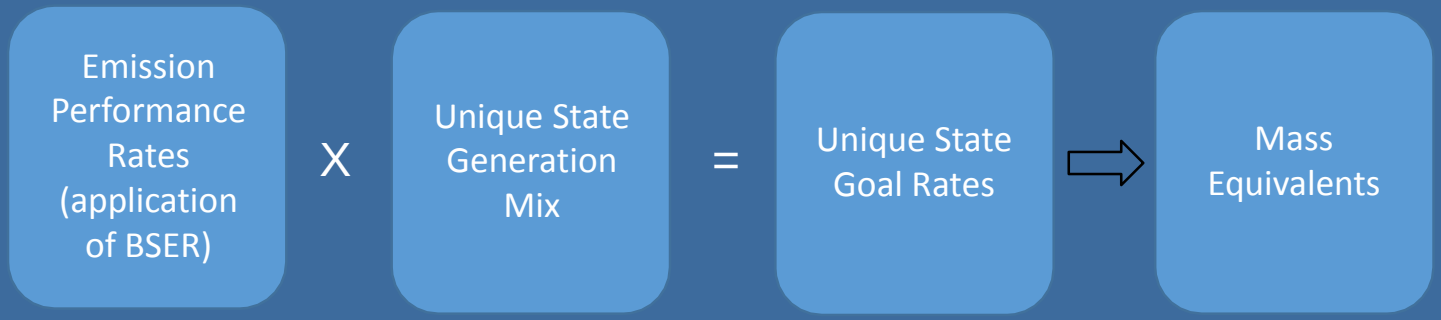
- EPA is taking three actions to reduce carbon pollution from the power sector
  - Clean Power Plan (CPP) –existing sources
  - Carbon Pollution Standards –new, modified and reconstructed sources
  - Federal Plan proposal and model rule
- These are the first-ever national standards that address carbon pollution from power plants.
- The Clean Power Plan recognizes the effectiveness of mass-based, multi-state emission reductions programs, such as RGGI

How Does the Clean Power Plan Work?

- The Clean Air Act – under section 111(d) – creates a partnership between EPA and states – with EPA setting a goal and states choosing how they will meet it.
- EPA is establishing interim and final carbon dioxide (CO_2) emission performance rates for:
  - Fossil fuel-fired electric steam generating units (generally, coal- and oil-fired power plants)
  - Natural gas-fired combined cycle generating units

Category-Specific Performance Rates

Power plants are subject to the same standards no matter where they are located.



EPA established carbon dioxide **emission performance rates** for two subcategories of existing fossil fuel-fired electric generating units (EGUs):

1. Fossil fuel-fired electric generating units (generally, coal-fired power plants)
2. Natural gas combined cycle units

Category-Specific Performance Rates

- Emission performance rates have been translated into equivalent state goals

- EPA is providing state goals in three forms:

  - rate-based goal measured in pounds per megawatt hour (lb/MWh);
  - mass-based goal measured in short tons of CO_2
  - mass-based goal with a new source complement (for states that choose to include new sources) measured in short tons of CO_2

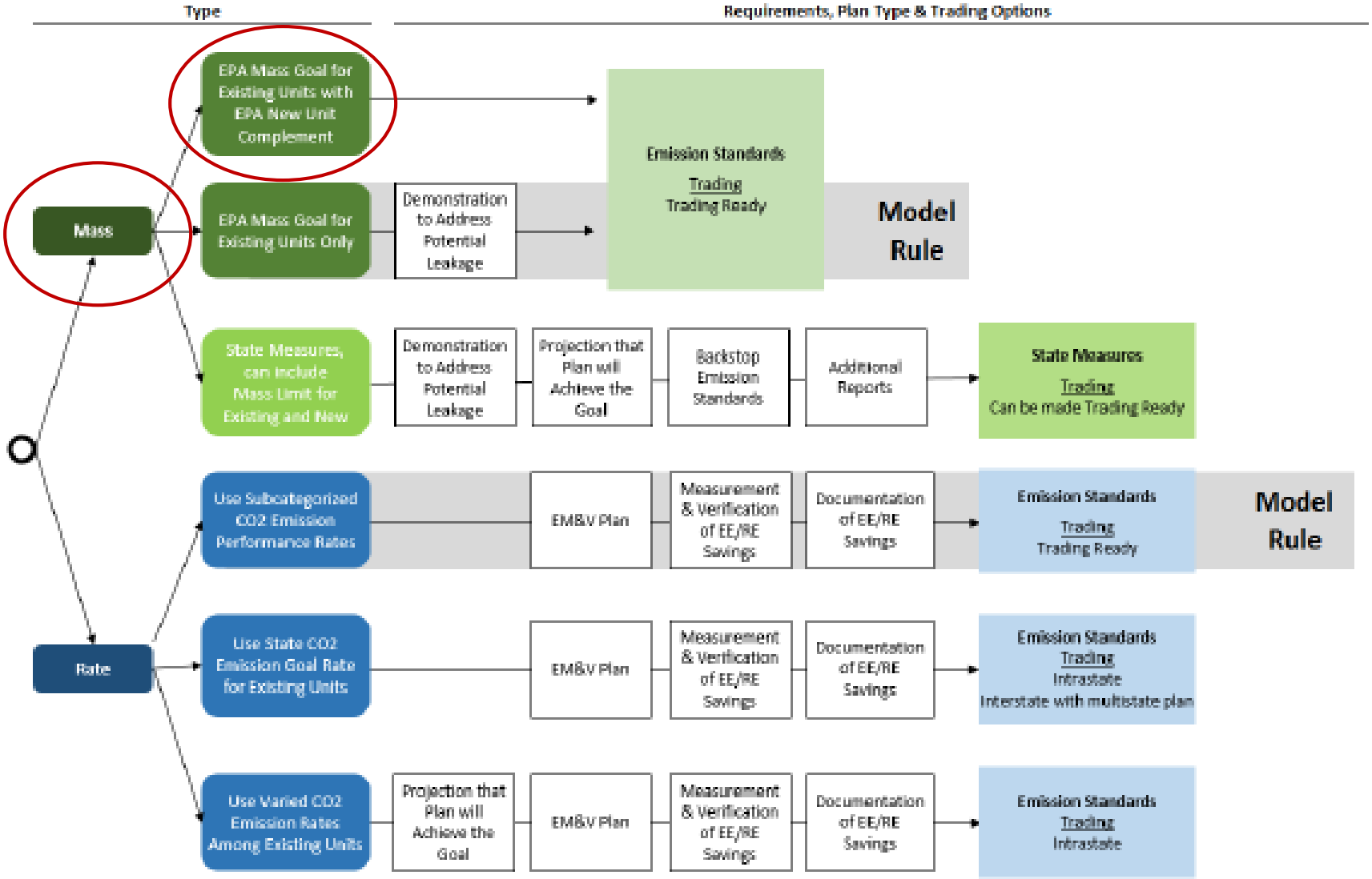
The Numbers for CT and RGGI

All values expressed as annual emissions in short tons
CPP values for New and Existing Sources

	Proposed CPP	Final CPP	RGGI 2020	2014 RGGI Actual Emissions
CT	5,127,100	7,080,993	5,061,540	7,271,363
RGGI	63,421,600	80,116,944	78,175,215*	85,427,306

* Current RGGI program includes Offsets and a Cost Containment Reserve that in combination with the promulgated Budgets would result in allowable emissions in excess of 88,000,000 short tons/year from 2020 on.

CPP Decision Tree



Clean Power Plan Timeline

- August 3, 2015 - Final Clean Power Plan
- September 6, 2016- States make initial submittal with extension request or submit Final Plan
- September 6, 2018 - States with extensions submit Final Plan
- January 1, 2022 - Compliance period begins
- January 1, 2030 - CO_2 Emission Goals met

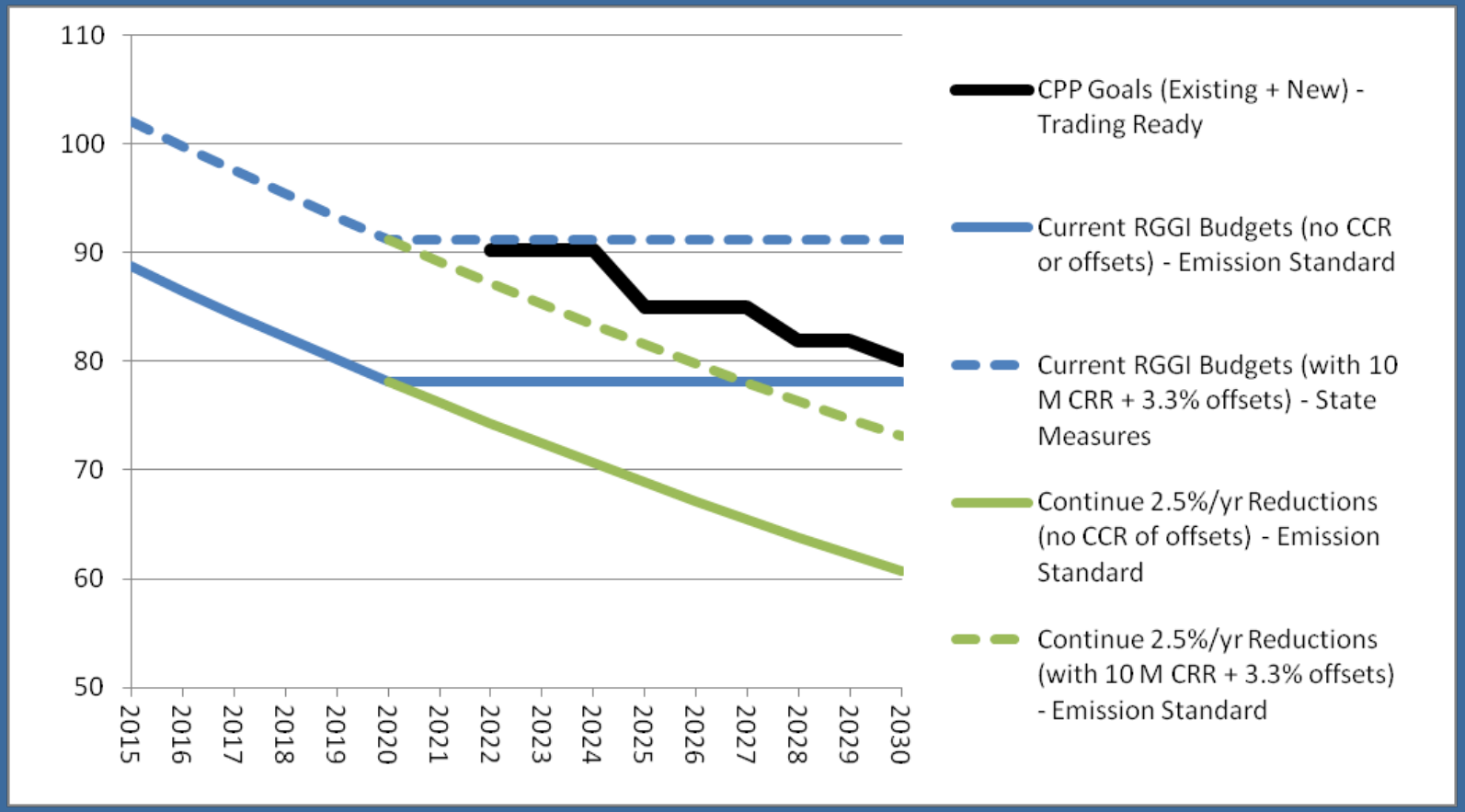
Clean Power Plan Current Status

- Fall 2015 – EPA promulgates CPP
- Fall 2015 – 26 states and various private interests sue to block CPP
- February 2016 – Supreme Court Stays CPP until pending litigation resolved
- September 2016 – Circuit Court to hear CPP en banc

RGGI Program Review
Co_2 Emission Reductions & Flexibility Mechanisms

RGGI vs. CPP: Cap Levels

(million tons)



Adjustments for banked allowances may be necessary to guarantee post-2022 emission levels
Minor applicability differences such as combustion turbines are not addressed in this analysis
Example plan types are included to illustrate relationships between RGGI cap levels and CPP options

RGGI 2016 Program Review

- Regular program review has been key to RGGI's success
  - Improvements implemented in previous (2012) program review included 45% reduction in the RGGI cap, interim cap adjustments, and the creation of the Cost Containment Reserve (CCR)

- 2016 Program Review
  - RGGI, Inc., on behalf of the RGGI states, is facilitating public meetings to gather stakeholder input for the states' 2016 Program Review
  - First regional stakeholder meeting was held in November 2015
  - Four stakeholder meetings held, with more tentatively planned
  - States anticipate that any proposed program changes may be implemented starting in the fourth control period (2018-2020)

RGGI 2016 Program Review

- RGGI states have identified several key items for discussion with stakeholders

- These include but are not limited to:
  - CO_2 emissions reductions – the "Cap"
  - Flexibility mechanisms
    - Offsets
    - Cost Containment Reserve
    - Compliance Periods
  - RGGI regulated sources
  - Promoting renewable energy and energy efficiency
  - Improvements to RGGI CO_2 allowance auctions and RGGI COATS (RGGI emission and allowance tracking system)

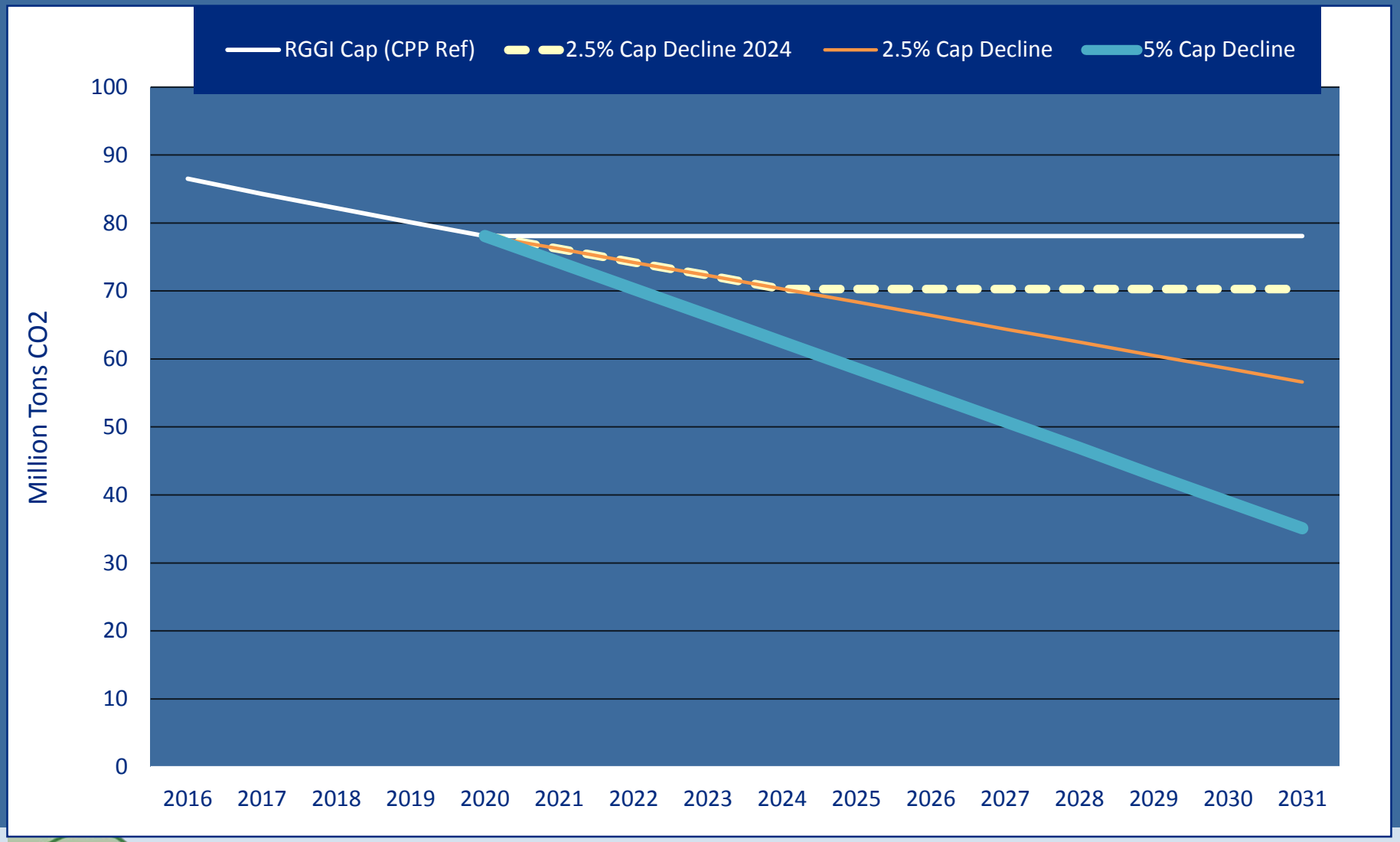
IPM Modeling & Program Review

- States using IPM modeling to inform the future design of RGGI
- Two Reference Cases were prepared
- Scenario modeling:
  - Iterative process to analyze potential impacts of changing RGGI design elements and to inform decision making
  - Does not reflect a preference for any specific policy
  - Provides general information on trends, not precise predictions
- Modeling informed by stakeholder comments to date

IPM Reference Cases

- Developed and updated Two Reference Cases:
  - Clean Power Plan (CPP) New and Existing (CPP N+E)—Mass-based goals in non–RGGI states for existing sources and new sources complement
  - CPP Existing (CPP E)—Mass-based goals in non-RGGI states for existing sources and information to date on proposed EPA leakage set-aside

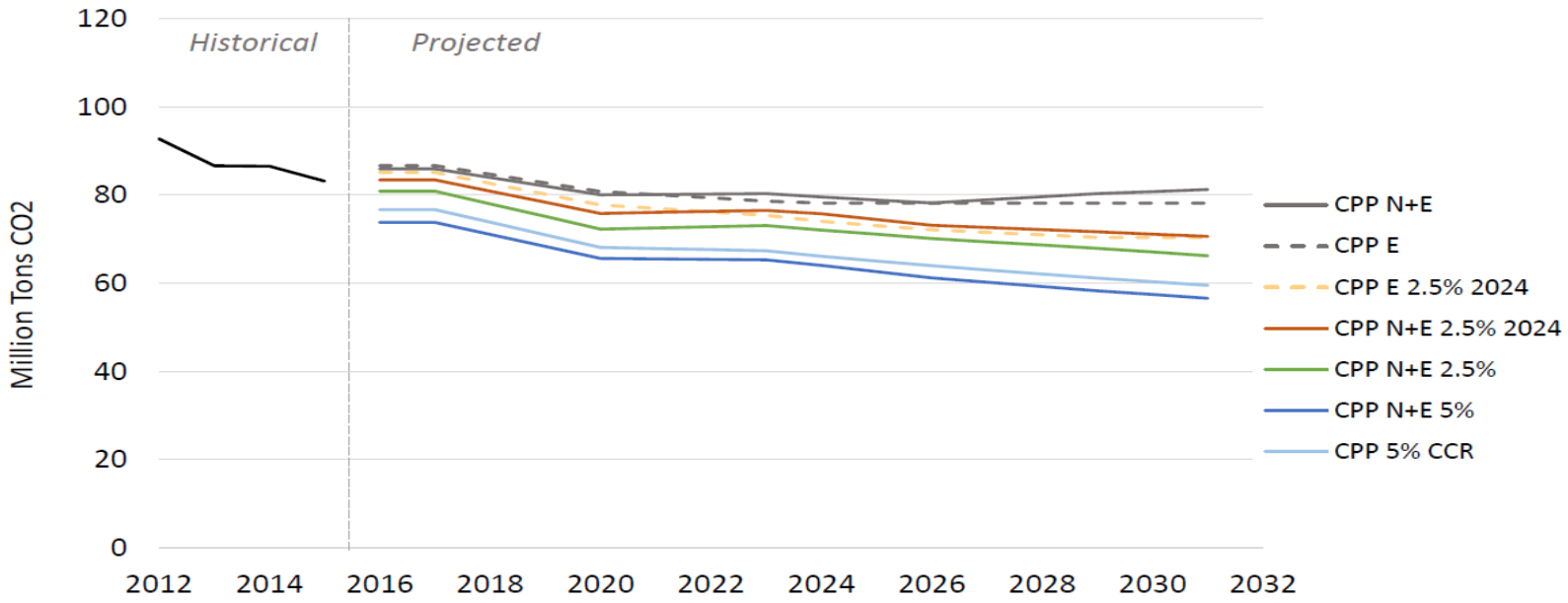
Assumed RGGI CO_2 Caps



Predicted RGGI Region Emissions

RGGI CO_2 Emissions

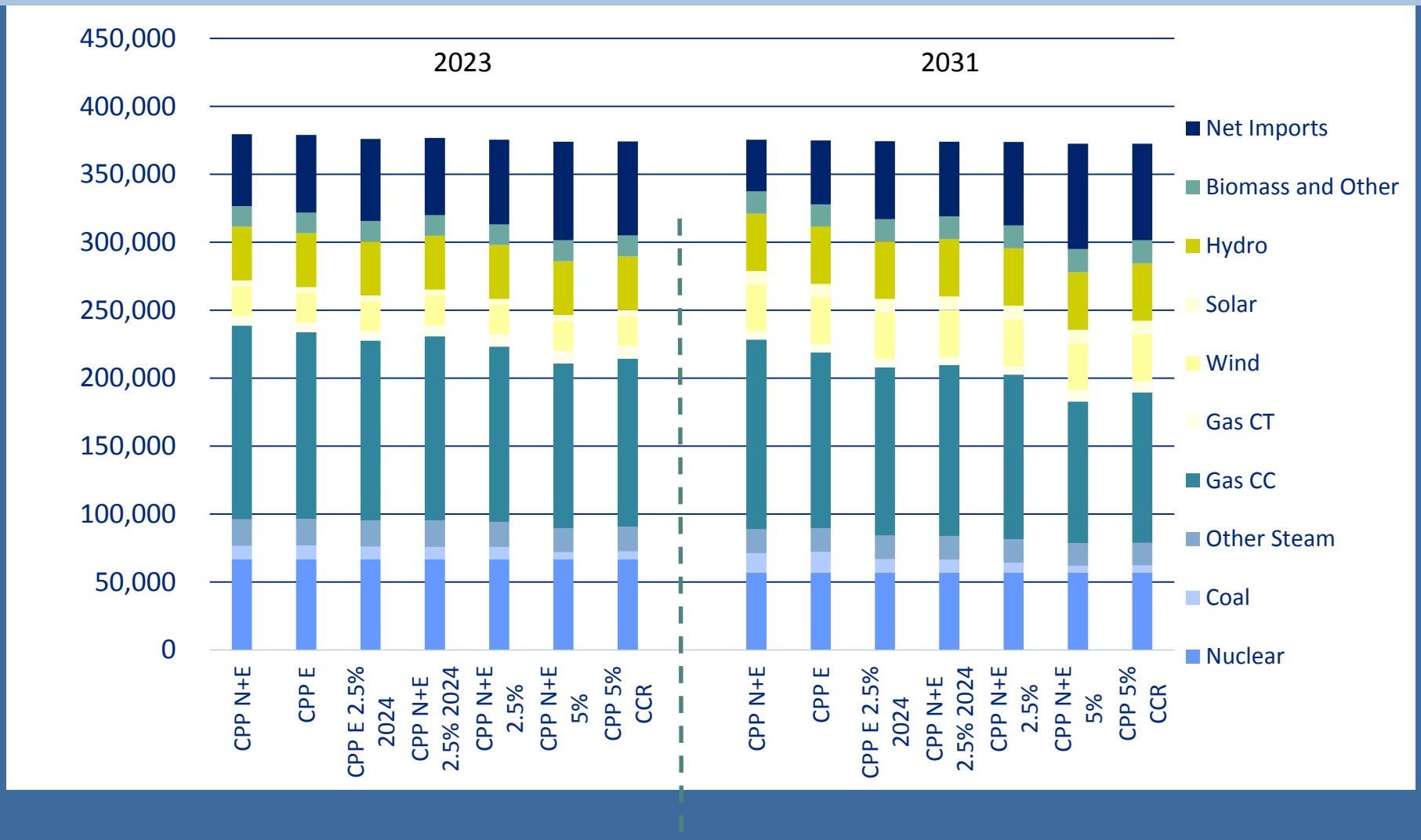
- The chart shows projected CO_2 emissions from RGGI-affected sources.
- Emissions exceed the RGGI Cap when allowances are withdrawn from the bank or purchased at the CCR trigger price.



Note: Model assumes that any allowance bank is fully exhausted in 2031.

Source: http://rggi.org/docs/ProgramReview/2016/06-17-16/2016_PR_IPM_Modeling_Draft_Results_Overview.pdf

RGGI Generation Mix



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

Program Review Schedule

Draft Proposed Meeting Schedule	Proposed Location
Nov. 17, 2015 Stakeholder Meeting	New York, NY
Feb. 2, 2016 Stakeholder Meeting	Wilmington, DE
Apr. 29, 2016 Stakeholder Meeting	Boston, MA
Jun. 17, 2016 Stakeholder Meeting	Webinar
Early Fall 2016 Stakeholder Meeting	TBD
Fall 2016 Stakeholder Meeting	TBD or Webinar

Questions?

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