



# **Clean Power Plan Assessment Final Report**

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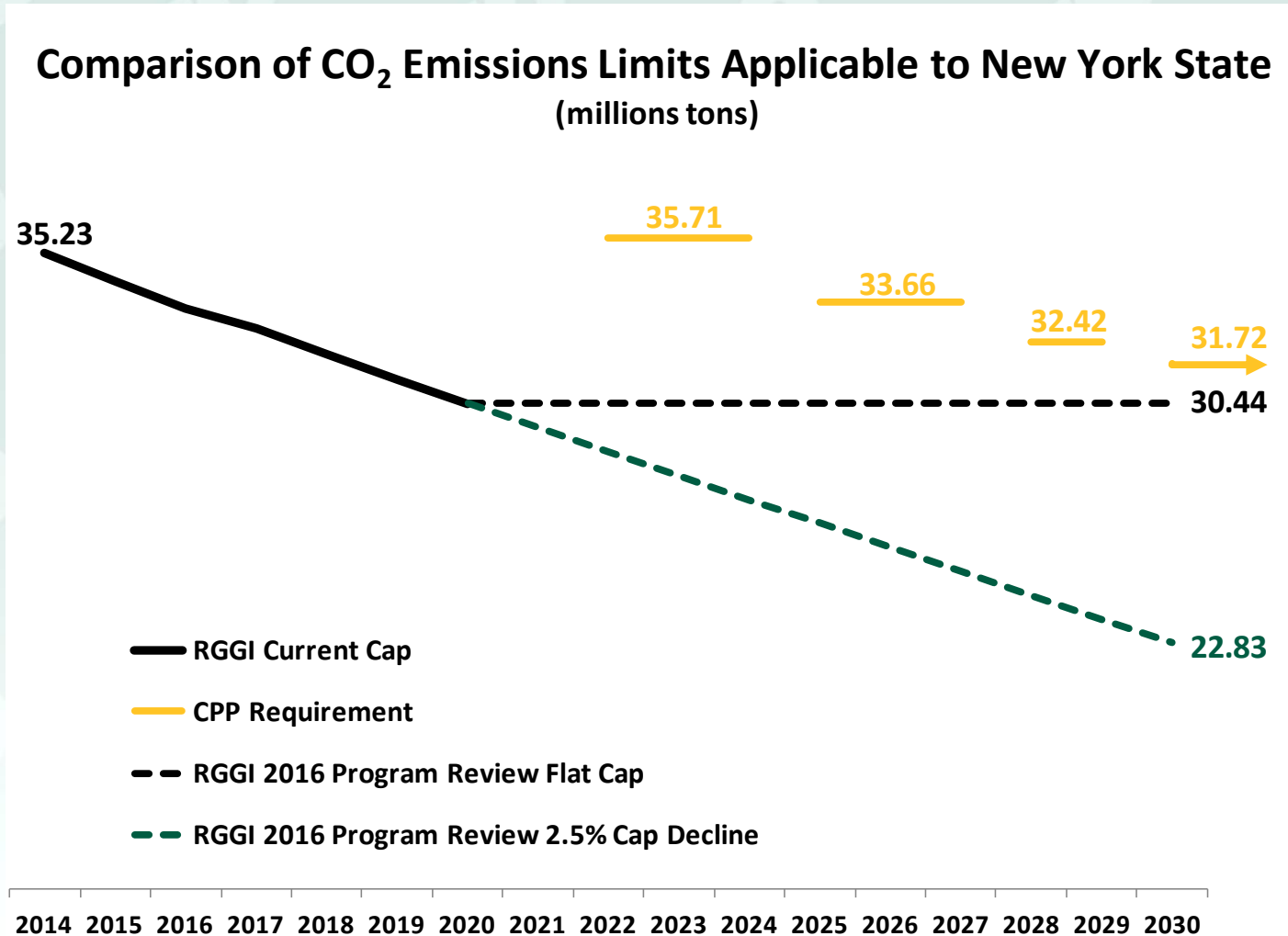
# Agenda

- ◆ Objectives
- ◆ RGGI
- ◆ Clean Power Plan
- ◆ Assessment Approach
- ◆ Summary of Findings
- ◆ Resource Adequacy Findings

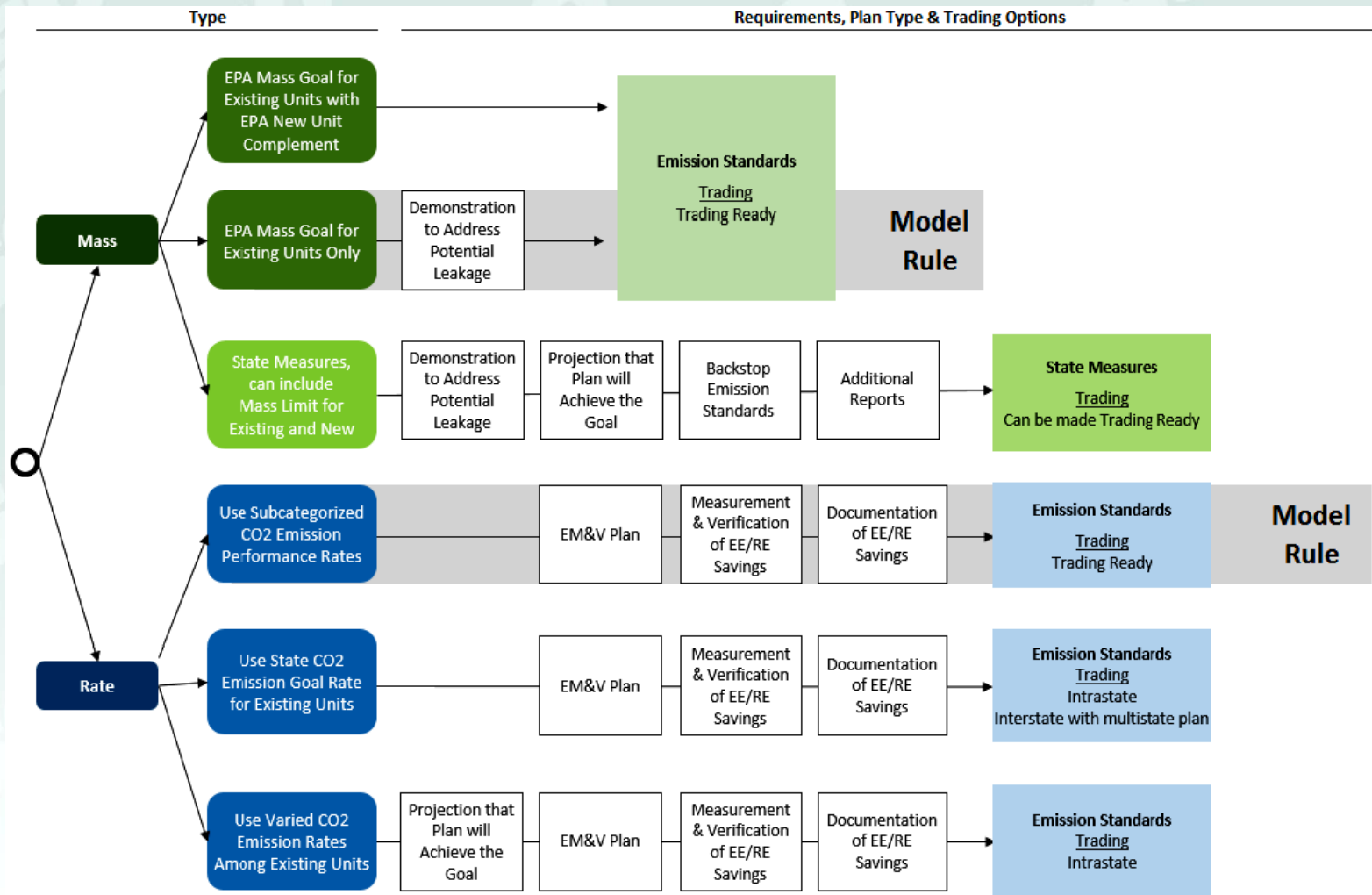
# Objectives

- ◆ **Understand how potential New York compliance approaches interact with existing market rules and system reliability criteria under various scenarios for RGGI and CPP**
  - *Identify approaches that can achieve environmental goals while maintaining electric system reliability, including adequacy of capacity and energy resources*
  - *Assess the impact of various future fuel mix assumptions on environmental compliance, system reliability and the markets*
  - *Advise New York State implementation for CPP and RGGI on approaches for maintaining reliability*

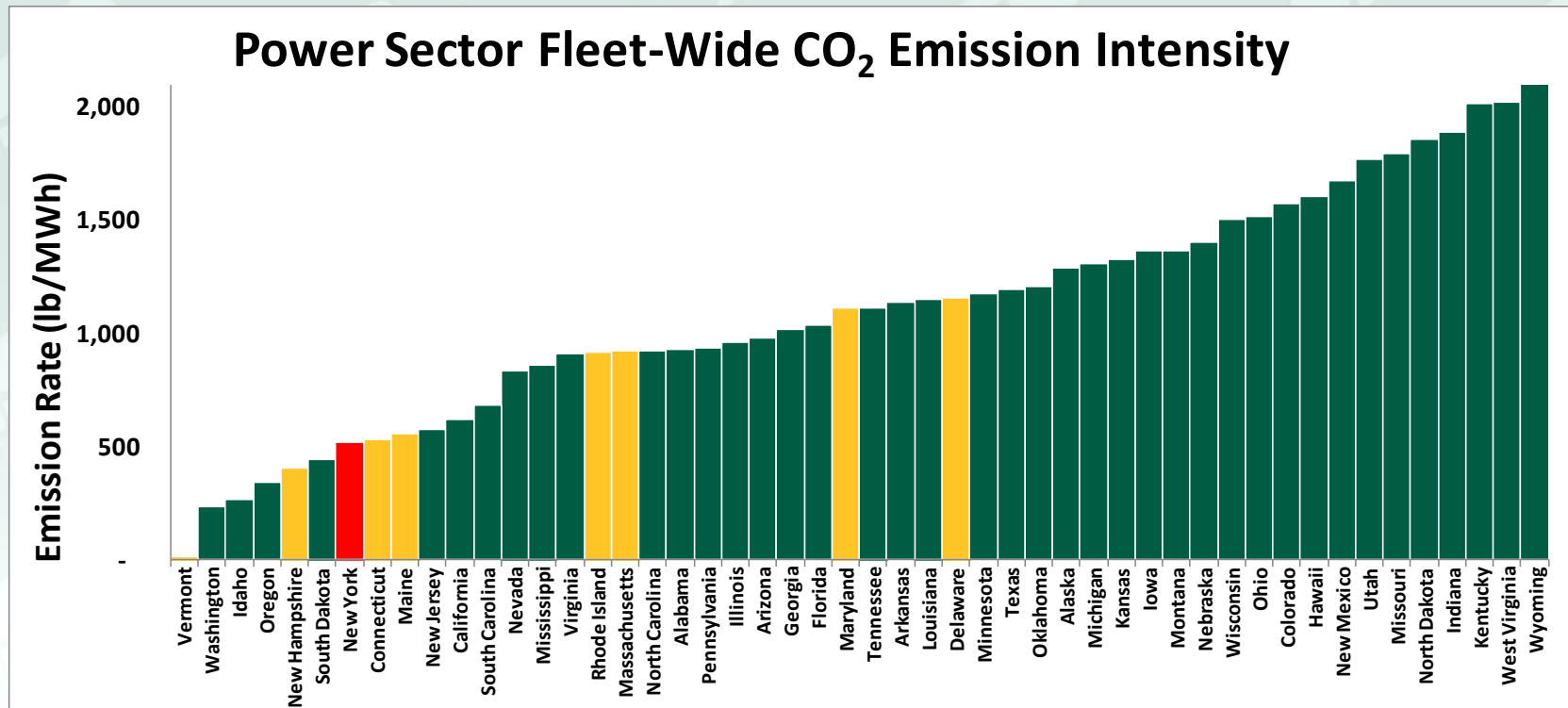
# RGGI Program Review Options



# State Plan Compliance Pathways



# NY is already amongst the cleanest states, thus trading either allowances or emission rate credits outside of NY and outside of RGGI makes sense.

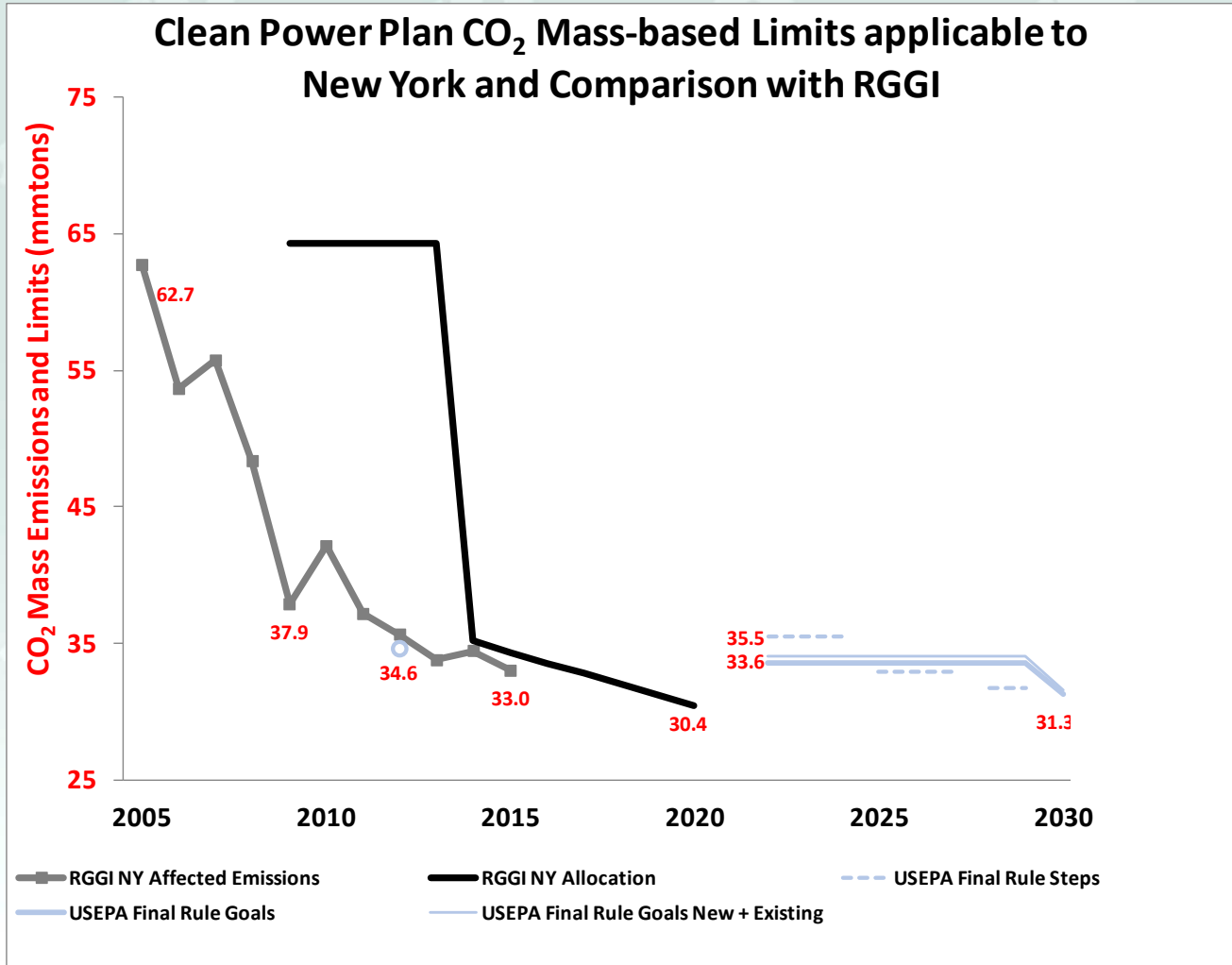


# Mass and Rate

- ◆ **CPP mass pathways are similar to RGGI where CO<sub>2</sub> allowances are traded with other states, however, the RGGI cohort of units includes new units and gas turbines**
- ◆ **CPP rate pathways are similar to RPS programs where credit is given for generation from new renewables:**

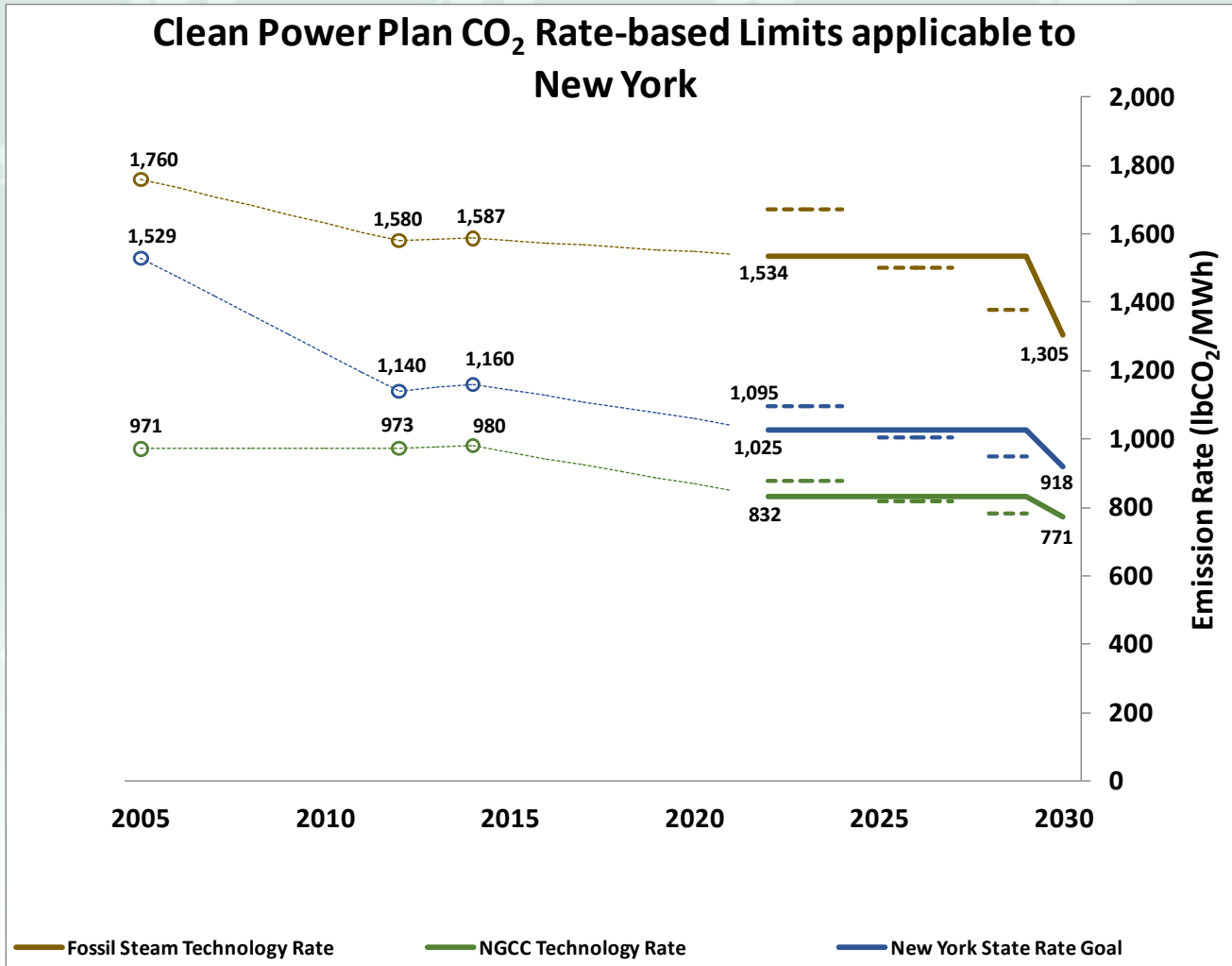
$$Rate = \frac{Emissions (lb)}{Generation (MWh) + ERCs}$$

# NY Emission History (Mass)

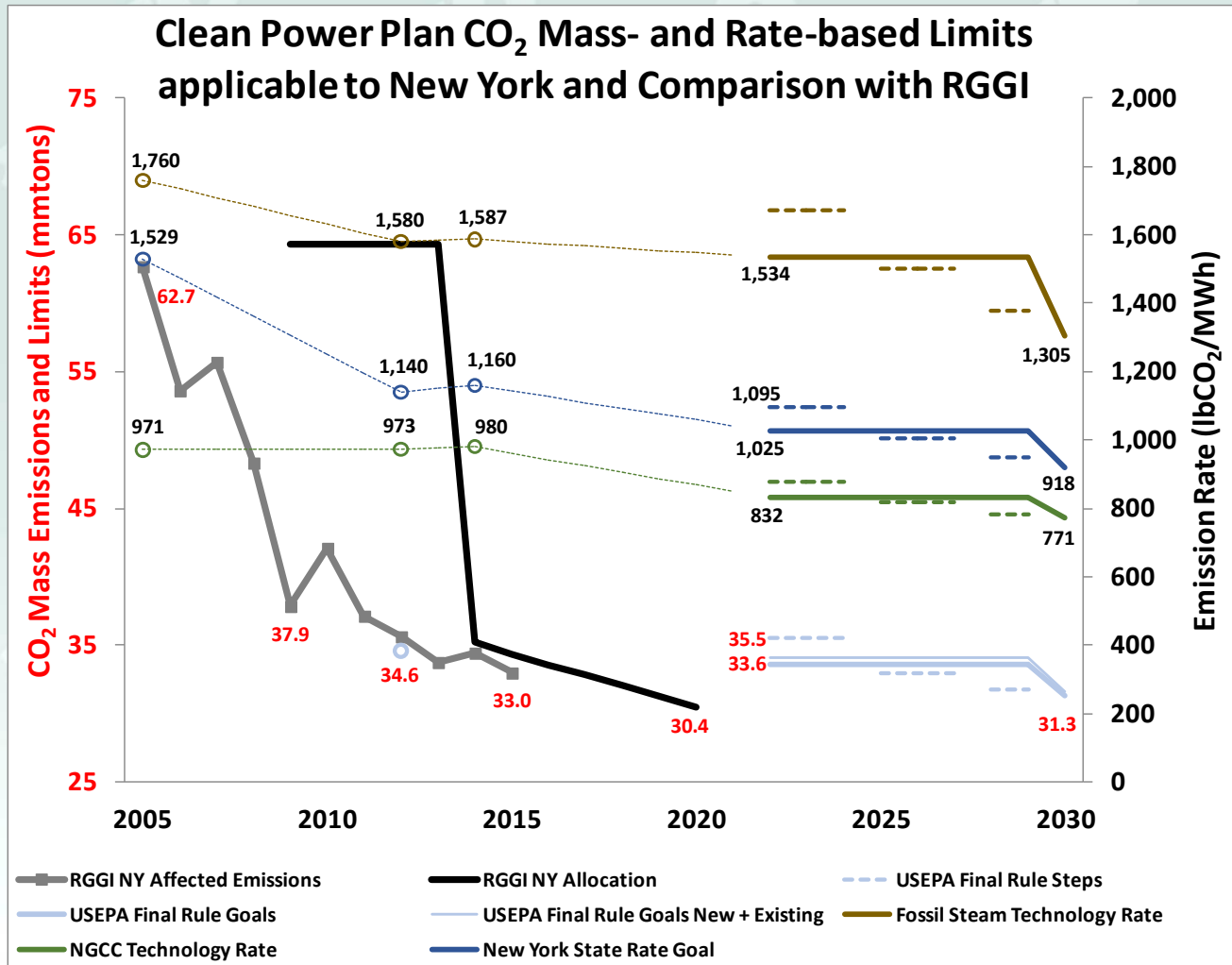




# NY Emission Rate History



# CPP Mass and Rate compared to RGGI



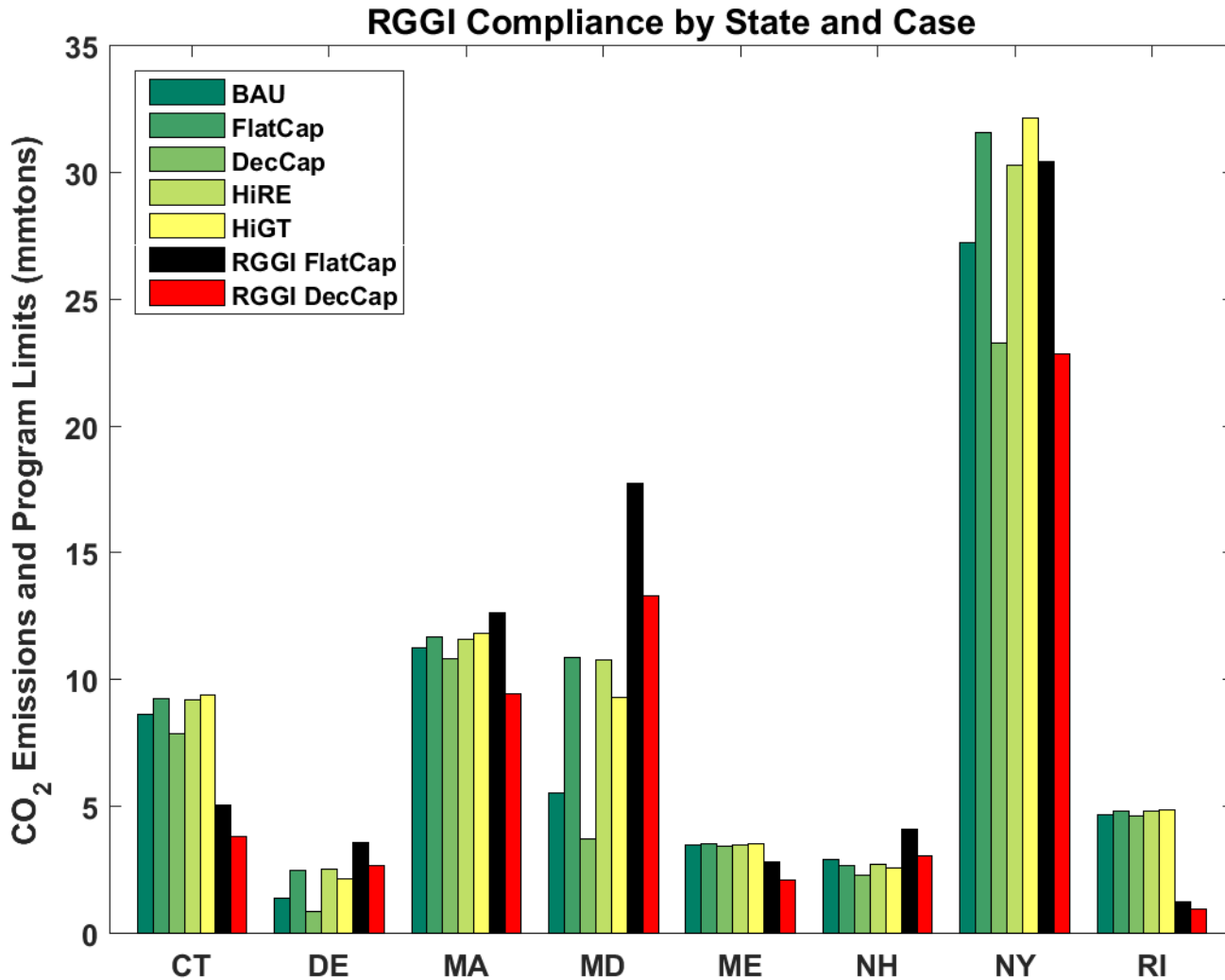
# Assessment Approach

- ◆ **Build on existing NYISO studies**
  - *2010 Wind Study*
  - *2015 Solar Photovoltaic (“PV”) Study*
  - *2015 CARIS*
  - *2016 RNA*
- ◆ **The assessment is focused on NY with limited external changes.**
  - *Net imports are held approximate to current levels by adjustment of RGGI price and adjustments for nuclear retirements*
- ◆ **Five scenarios developed to span potential futures**
  - *Production simulations employed to satisfy energy and emission requirements*
  - *Followed by Resource Adequacy analyses to identify additional needs*
  - *Clean Energy Standard not within the scope of this study*
- ◆ **Study Years**
  - *2024 last year of first compliance period of the CPP*
  - *2030 horizon year for CPP reductions*

# Summary of Findings

- ◆ Various combinations of additional renewable resources and fossil fuel-fired peaking generators can provide adequate supplies of energy while meeting the emission caps or emission rates of the CPP, as well as the RGGI caps under consideration.
  - *However, New York will need additional resources beyond those considered in this assessment to comply with the resource adequacy criterion in 2030*
- ◆ Increasing deployment of renewable resources increases CPP compliance margin.
- ◆ New York's compliance will on some occasions be dependent upon an adequate supply of emission allowances or emission rate credits from other affected states.

# Results: RGGI

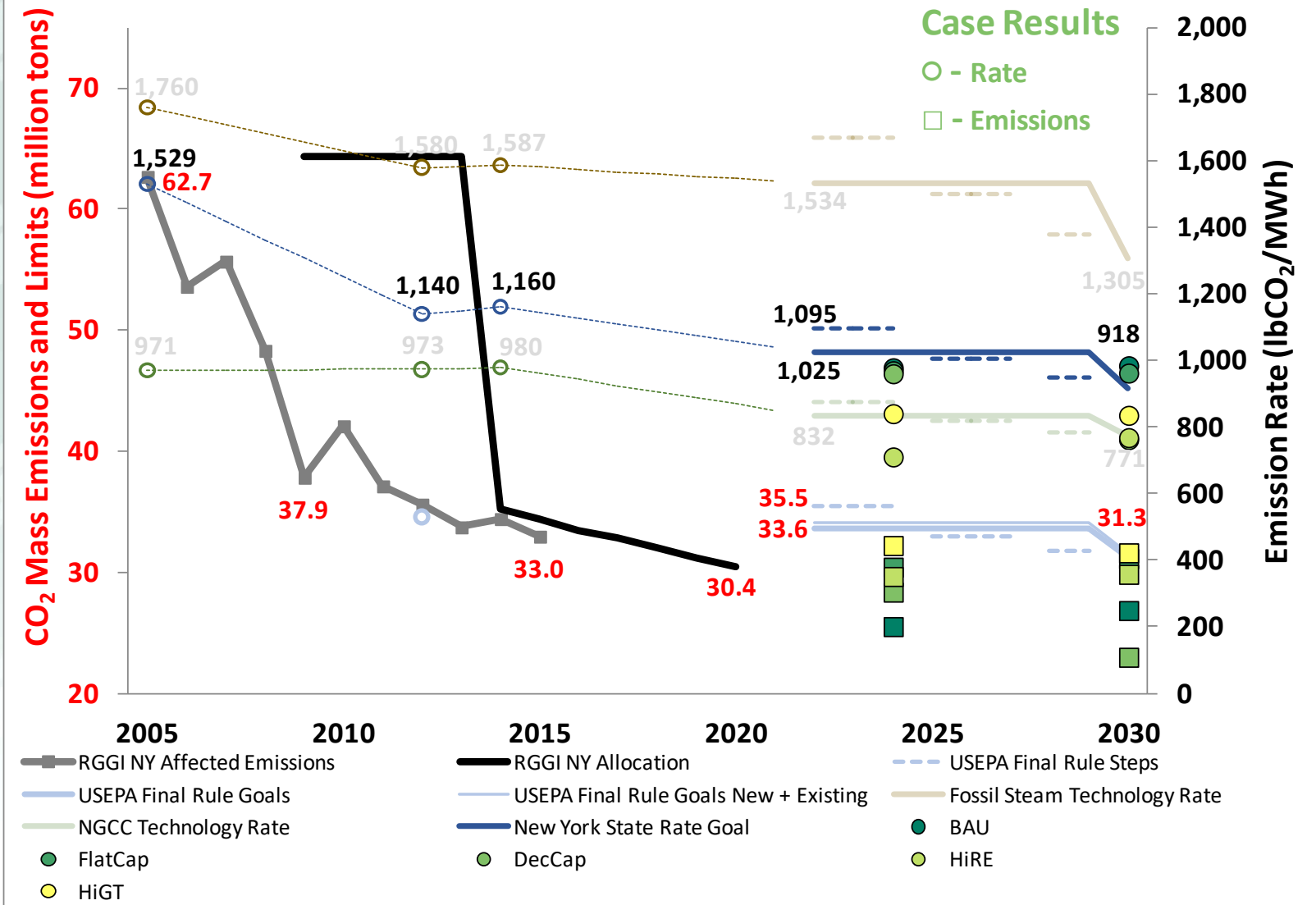


# Resource Adequacy Findings

- ◆ Resource Adequacy is the ability to deliver capacity when and where it is needed to meet system peak load in summer or winter.
- ◆ Resource Adequacy Criterion: The bulk power system shall be designed such that there will be no more than one unplanned loss of load event in ten years.
  - *This analysis takes full account of the probabilities that resources or transmission facilities may not always be available.*
- ◆ This study finds that sufficient replacement energy can be provided from the combinations of renewable resources and fossil fuel-fired peaking units in this study.
  - *The findings in this assessment should not be confused with a full retirement reliability impact evaluation conducted per the NYISO tariff for any specific unit that may cease operations.*
- ◆ [http://www.nyiso.com/public/webdocs/markets\\_operations/services/planning/Documents\\_and\\_Resources/Special\\_Studies/Special\\_Studies\\_Documents/Clean\\_Power\\_Plan\\_Assessment-Final\\_Report-December\\_2016.pdf](http://www.nyiso.com/public/webdocs/markets_operations/services/planning/Documents_and_Resources/Special_Studies/Special_Studies_Documents/Clean_Power_Plan_Assessment-Final_Report-December_2016.pdf)

# “The Chart”

## Clean Power Plan CO<sub>2</sub> Mass and Rate Limits applicable to New York and Comparison with RGGI



**The mission of the New York Independent System Operator, in collaboration with its stakeholders, is to serve the public interest and provide benefit to consumers by:**

- *Maintaining and enhancing regional reliability*
- *Operating open, fair and competitive wholesale electricity markets*
- *Planning the power system for the future*
- *Providing factual information to policy makers, stakeholders and investors in the power system*

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