



# Highlights from the 2020 State of the Market Report for the NYISO Markets

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## Introduction

- As the Market Monitoring Unit for NYISO, we produce an annual State of the Market (SOM) Report to:
  - ✓ Evaluate the performance of the markets;
  - ✓ Identify market flaws or market power concerns; and
  - ✓ Recommend improvements in the market design.
- Given the breadth of the report, this presentation covers only highlights from our 2020 SOM Report, including:
  - ✓ A summary of market outcomes and investment trends.
  - ✓ High priority recommended market enhancements for the:
    - Energy and ancillary services markets; and
    - Capacity market



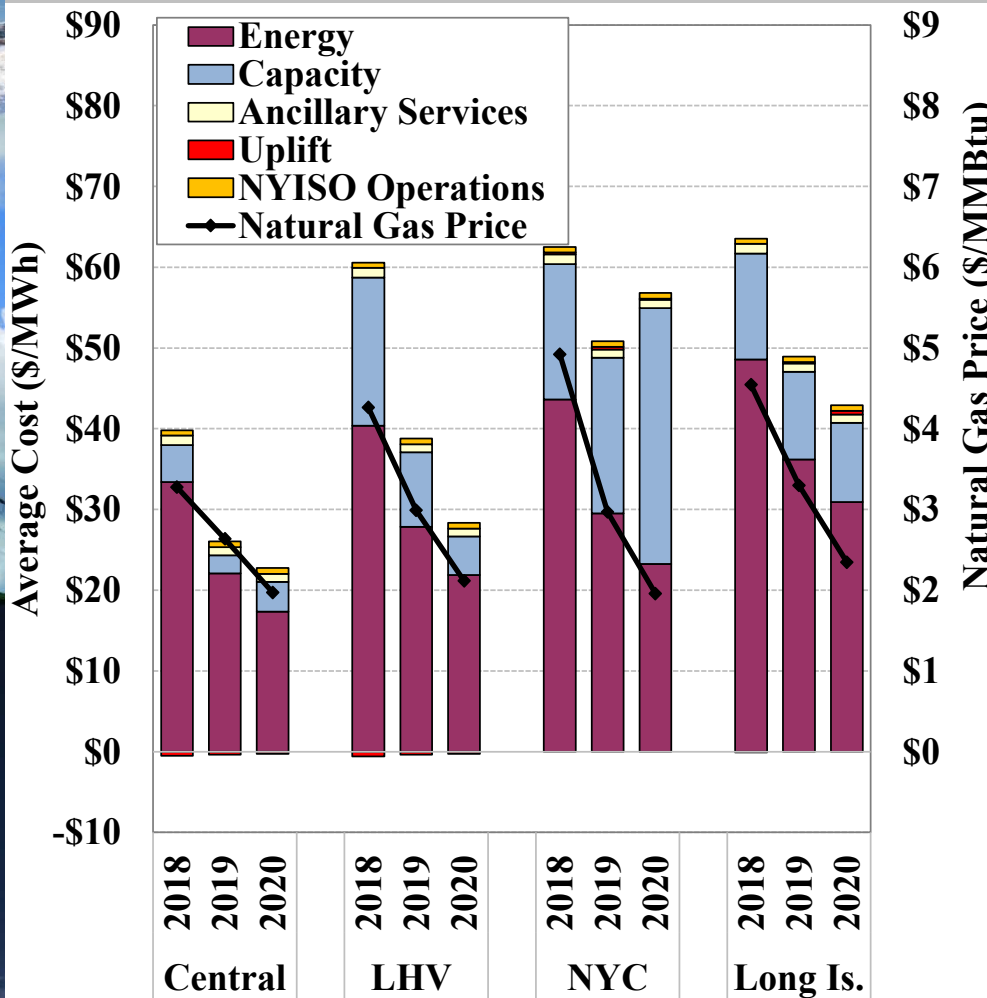
## Schedule

- The MMU will present its 2020 SOM at several stakeholder meetings:
  - ✓ May 26: Management Committee
    - Overview – 1 hour
  - ✓ June 3: MIWG/ICAPWG
    - Public Policy focus – 1 hour
  - ✓ June 9: MIWG/ICAPWG
    - Capacity Market focus – 1 hour
  - ✓ June 17: MIWG/ICAPWG
    - Energy and Ancillary Services focus – 1 hour
  - ✓ Additional slots can be scheduled if there is interest.



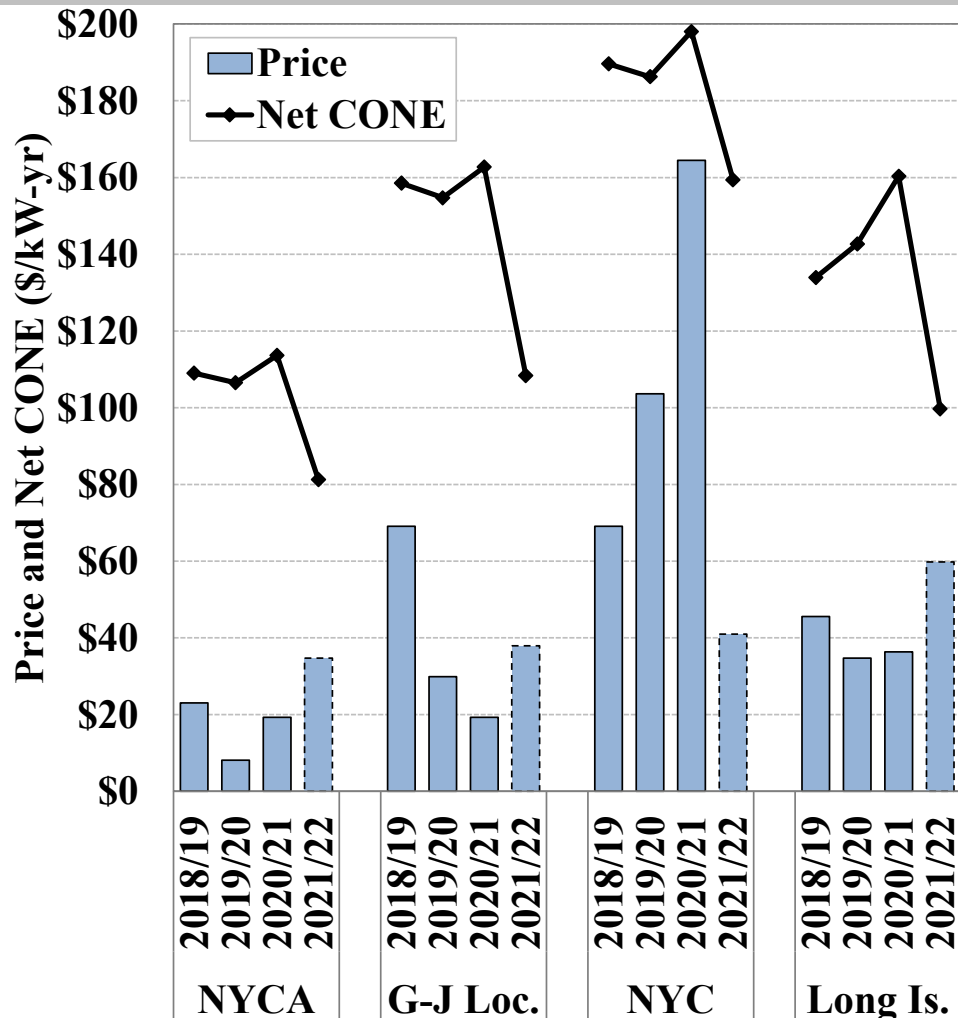
# Market Outcomes and Investment Trends

## All In Price Trends



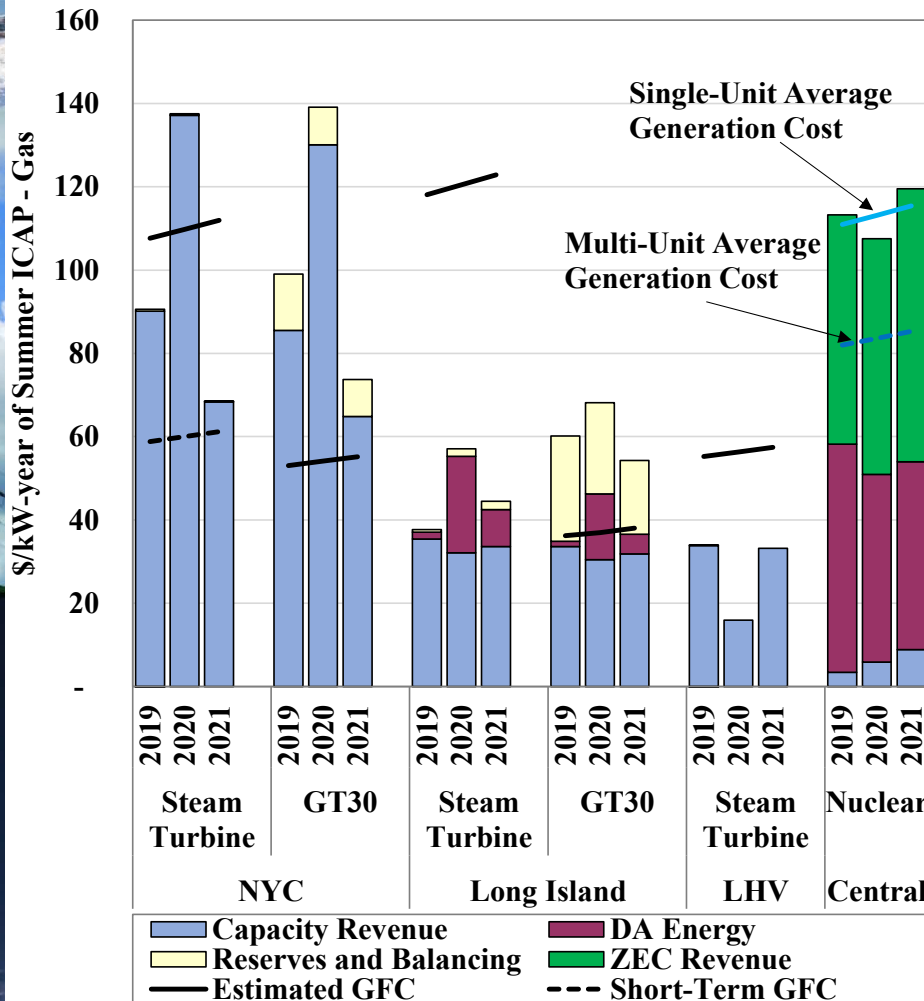
- Energy prices have fallen because of:
  - ✓ Gas prices; and
  - ✓ Lower demand due to weather, COVID, and long-term trends
- Capacity prices upstate reflect large surplus
- Capacity prices in NYC reflect small to moderate surplus

# Capacity Price Trends



- Upstate prices low because of:
  - ✓ Long-term demand trends
  - ✓ Retention of upstate nuclear
  - ✓ New entry ahead of Indian Point retirement
- NYC prices affected by:
  - ✓ Volatile IRM & LCRs
  - ✓ Retirements influenced by DEC peaker rule

# Investment Returns by Technology: Current Prices and Costs



- Net revenues varied by technology and location
- Capacity prices are the main driver:
  - ✓ Steam turbine outlook challenged, especially outside NYC
- Existing GTs appear more economic because:
  - ✓ Lower GFCs
  - ✓ Higher balancing energy and reserves revenue
- ZECs account for 52 percent of revenue for nukes.

## Capacity Market Performance

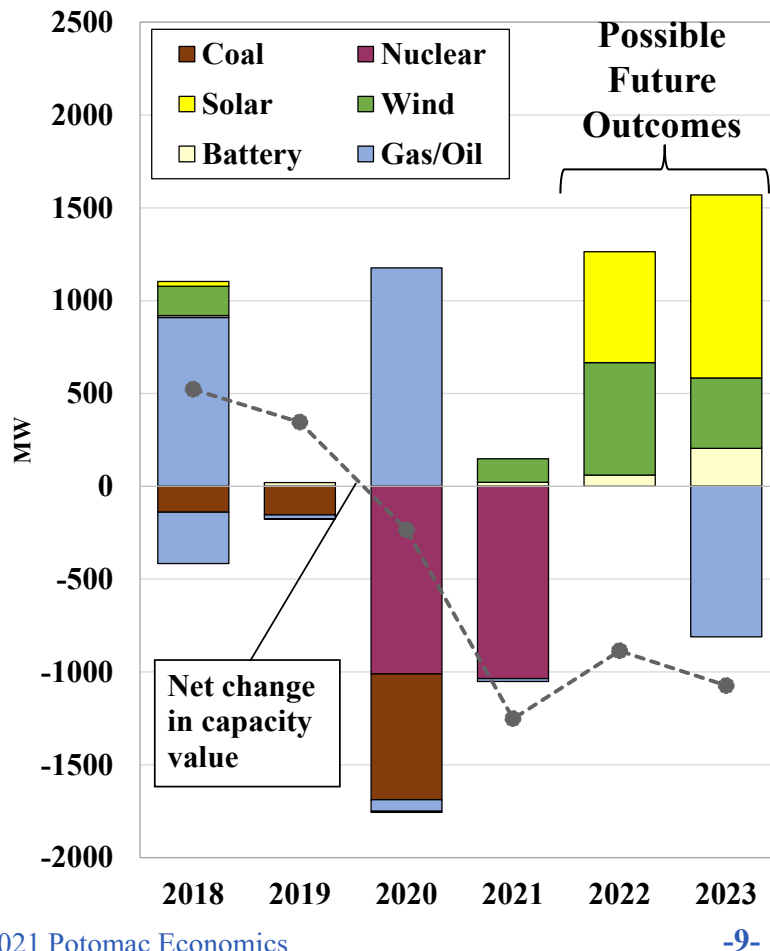
- The capacity market has been instrumental in maintaining reliability with minimal OOM investment over the last 20 years. However, the changing resource mix creates major challenges:
  - ✓ Capacity prices do not provide adequate locational signals:
    - For example, the lack of a Zone A-B capacity region has contributed to a higher IRM and low LCRs in 2021/22
    - Deliverability constraints can be a barrier to new investment
  - ✓ Some resource types are under or over-compensated:
    - Duration-Limited & Intermittent Generation - Their value falls with penetration, but they complement each other
    - Slow-start low-capacity factor units – Their value will fall as intermittent penetration increases.
    - Flexible units receive same price as slow start units





## New Entry and Retirement Trends

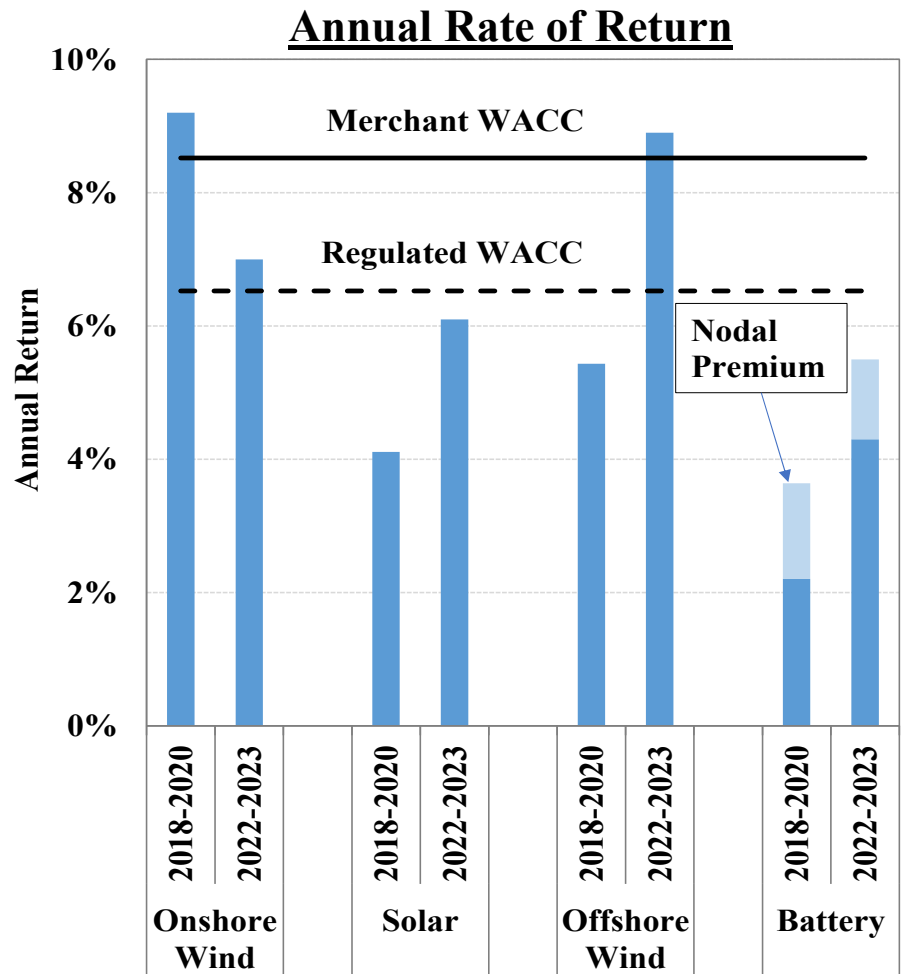
**New Entry & Retirement (2018-2023)**



- Coal/nuclear/gas retirements driven by State regulation
- New CC/GT entry driven by Indian Point retirement
- Battery investment driven by mix of E&AS, capacity, and State incentives
- Renewable entry behind schedule and uncertain
  - ✓ Figure assumes 2017-18 contracted projects online in 2022-23

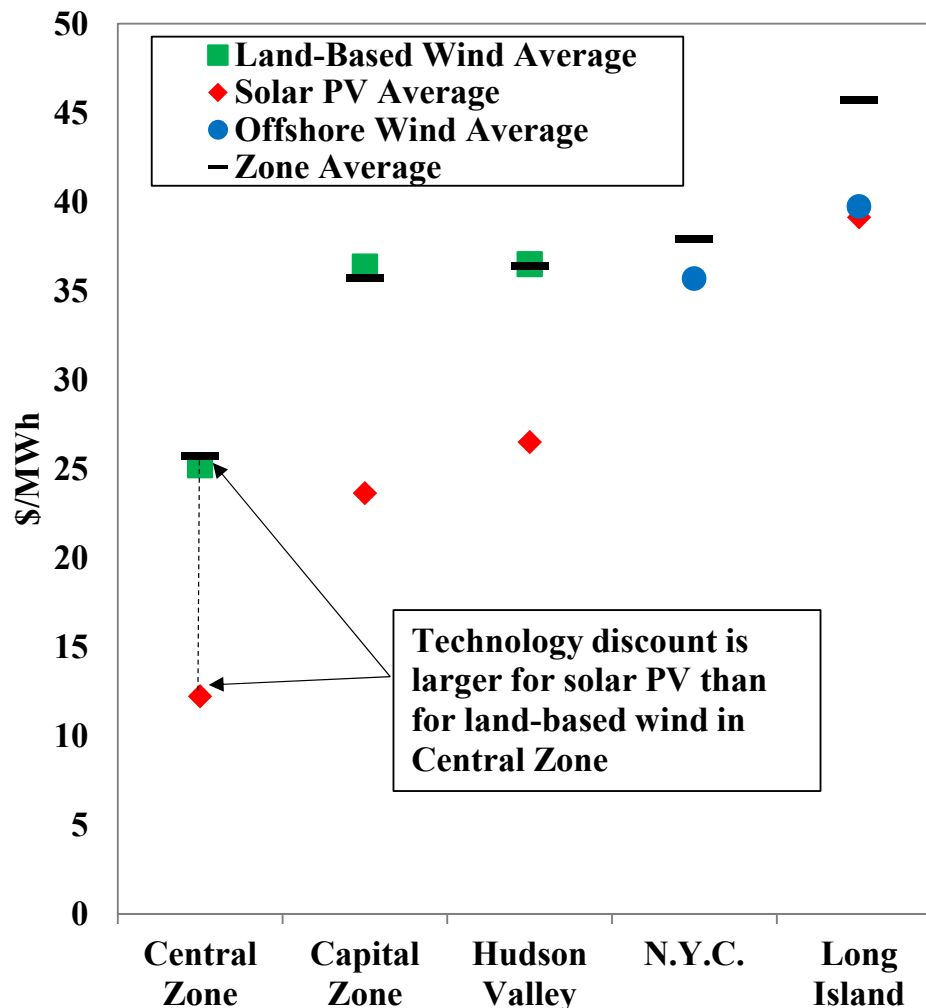


## Investment Incentives for New Clean Resources



- Wholesale markets guide PPR investment
- Onshore wind profits falling as PTC expires.
- Solar/OSW/battery outlook improving as costs fall.
  - ✓ Nodal premiums can be significant.
- Solar & battery outlook poor through 2023 without higher subsidies, capacity prices, and/or LBMPs.

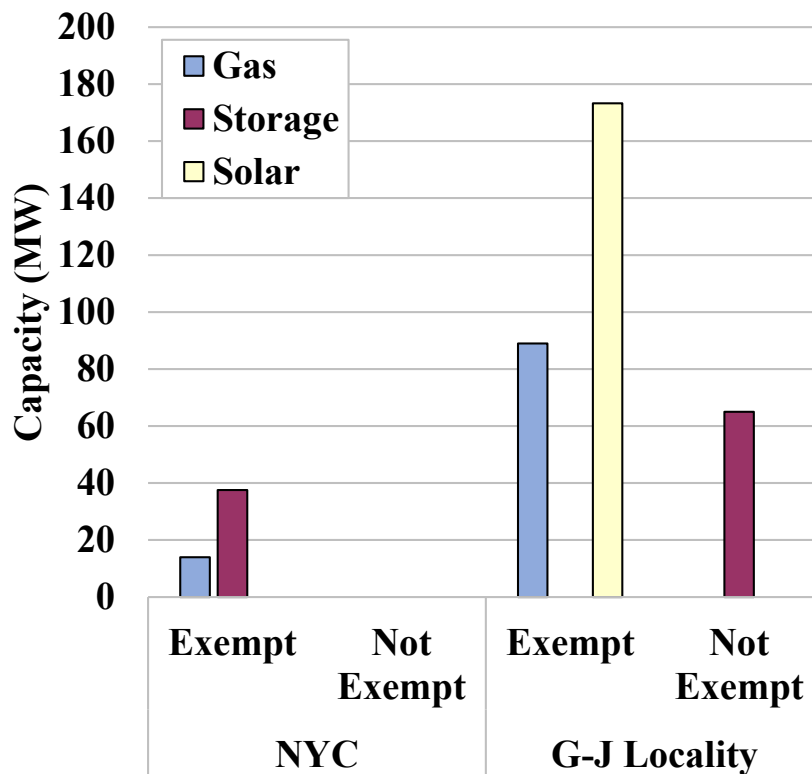
## Markets Guide Clean Energy Investment: Evaluation of 2030 High Renewable Scenario



- Realized prices depend on generation timing
- High penetration (18 GW) of solar in scenario
  - ✓ Large technology discount
  - ✓ Incentives for battery/hybrid storage
- One possible scenario: illustrates that markets guide investment to better uses.

## BSM Evaluations

BSM Results for CY19



- In CY19, BSM exemptions were granted to:
  - ✓ All renewable generators
  - ✓ All battery storage in NYC
  - ✓ All gas-fired generators
- In CY19, battery storage in the Hudson Valley were mitigated
- If BSM remains:
  - ✓ Renewables will not be mitigated in medium term
  - ✓ Battery storage depends on capacity surplus, cost, site-specific conditions



# Recommended Market Enhancements

## Prioritizing Market Enhancements

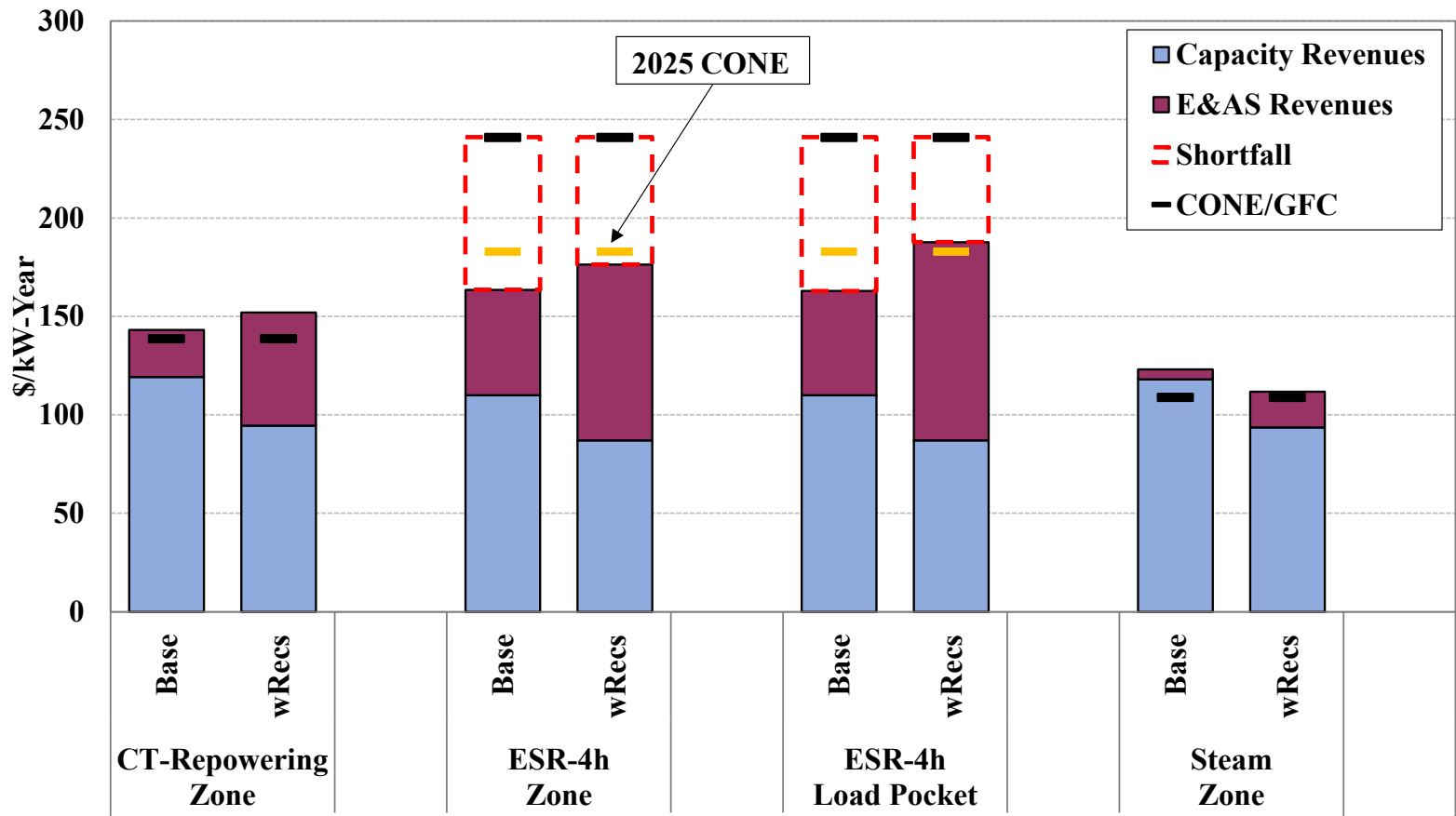
- Unprecedented levels of policy-driven investment expected over the coming decade
- The NYISO should focus on enhancements that:
  - ✓ Guide renewable investment to where it is most deliverable
  - ✓ Provide incentives for investment in flexible resources that help with:
    - Integrating intermittent renewables, while
    - Maintaining reliability
  - ✓ Encourage retirement of inflexible existing generators
- These enhancements will facilitate state policy goals at the lowest cost and minimize market disruption.

## Energy & Ancillary Services Market Enhancements

- Increasing E&AS net revenues for flexible units would:
  - ✓ Reduce the capacity revenues needed to maintain reliability
  - ✓ Encourage older inflexible units to retire
- The NYISO is working on addressing four recommendations:
  - ✓ 2015-16: Dynamic reserve requirements
  - ✓ 2017-1: NYC locational reserve requirements
  - ✓ 2016-1: Compensate reserves that increase transfer capability
  - ✓ 2017-2: Reserve demand curve increases
- The incentive effects are estimated in the following two slides based on system conditions from 2018 to 2020.
  - ✓ Increased penetration of intermittent generation will accentuate these incentive effects.

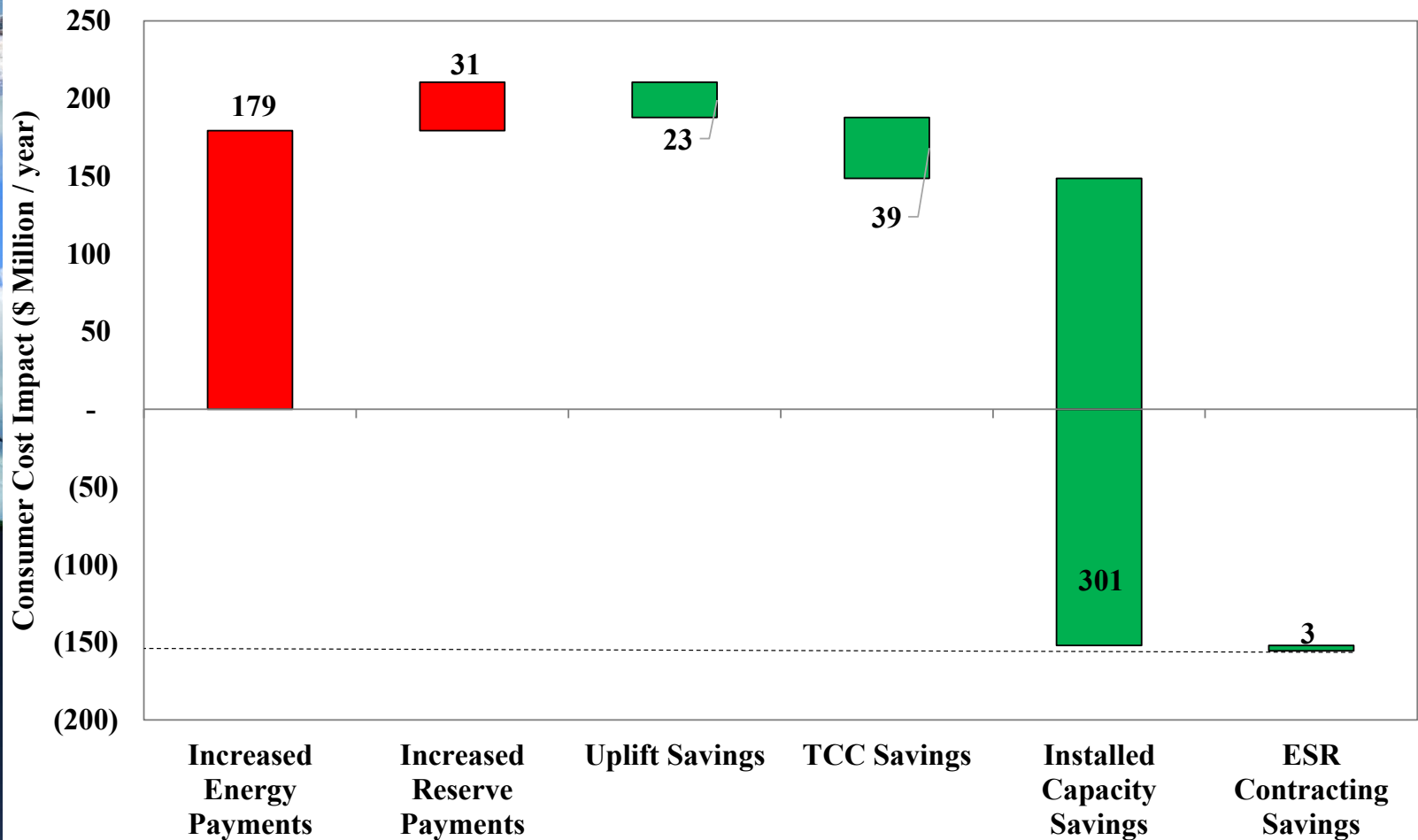


## Effects of Energy & Ancillary Services Market Enhancements in NYC





## Effects of Energy & Ancillary Services NYC Consumer Costs



## Capacity Market Enhancements

- In the short-term: Recommendation #2020-3 – *Revise capacity accreditation rules to compensate resources in accordance with marginal reliability value.* This would:
  - ✓ Provide efficient sustainable rules to guide future investment
  - ✓ Recognize diminishing value as penetration rises
  - ✓ Increase compensation for complementary technologies
  - ✓ Encourage retirements of low-value units, creating room for entry
    - Just 30% of the 10.7 GW of fossil steam turbines were online in at least half of NYCA & SENY reserve shortages in the last three years.
- In the long-term: Recommendation #2013-1c – C-LMP would provide appropriate incentives for investment in each area as transmission bottlenecks shift over time.
- Better alignment between the Reliability Council’s IRM-setting process and other capacity market inputs would be beneficial.