New York ISO
Independent System Operator

Capacity Accreditation: Straw Proposal

Zach T. Smith

Manager, Capacity Market Design

ICAPWG

August 9, 2021

Agenda

- Background
- Guiding Principles
- Straw Proposal
- Next Steps

New York ISO

Background

Background

- **The resource mix is evolving and the NYISO's markets need to continue to accurately value resources for the attributes they provide in meeting system reliability**
  - Specifically for the Installed Capacity (ICAP) Market, a review of how reliability contributions are valued in the market is needed
  - Currently, resources receive payment for their Unforced Capacity (UCAP) value, which is generally based on their historic availability or performance that is used to approximate the resource's reliability value
  - These resource reliability values are then used to meet system resource adequacy requirements
- **Properly valuing each resource's contribution to reliability is vital to ensuring an efficient and well functioning ICAP Market that supports reliability**
  - As the resource mix evolves to include more intermittent and energy duration limited resources, the reliability contribution of all resources can change over time
  - The reliability contribution of specific resources will become more dependent on the diversity and performance of the overall resource mix

New York ISO

Background

- **At the ICAPWG on August 5th, the NYISO reviewed the current capacity accreditation rules currently in effect for ICAP Suppliers**
  - In general, a resource's contribution to reliability is based on the specific resource's derating factor that considers historic availability or performance
    - Derating factor calculations do not consider how the reliability contribution of a resource may be affected by other resources
  - The Capacity Value study implemented in 2018 was the first attempt by the NYISO to measure the incremental capacity contribution of resources with Energy Duration Limitations (EDLs)
    - The study resulted in Duration Adjustment Factors (DAFs) for resources with different EDLs to account for the incremental reliability benefit that each resource provides
- **The purpose of this presentation is to kick off the discussion on future changes to capacity accreditation rules**

New York ISO

Guiding Principles

Guiding Principles

- **Since devising the Capacity Value study rules in 2018 that produced Duration Adjustment Factors for resources with Energy Duration Limitations, New York State established the Climate Leadership and Community Protection Act (CLCPA)**
  - The CLCPA includes mandates for a significant amount of intermittent power and energy storage resources
  - The NYISO believes that the current capacity accreditation rules are not sufficient to keep pace with the changes to the resource mix envisioned by the CLCPA
    - Four years, as established by the Capacity Value study, is not sufficiently frequent enough to properly value the reliability contribution of capacity suppliers given this rapid pace of change
    - Additionally, accurately determining a capacity supplier's reliability contribution is becoming more dependent on the relationship between a specific resource's capabilities and rapidly changing, overall resource mix
  - The NYISO believes that more resources (in addition to those with EDLs) should be evaluated for the incremental reliability contribution they provide in their capacity accreditation
    - This incremental reliability contribution is separate from the resource-specific derating factor

New York ISO

Guiding Principles

- **In devising a new set of capacity accreditation rules the NYISO is considering the following guiding principles. Capacity accreditation rules:**
  - Should establish comparable capacity accreditation values for resource types with the similar characteristics
  - Should send efficient market signals to procure needed characteristics
  - Should consider the impact of other resources and the reliability of the resource fleet as a whole
  - Should be evaluated frequently enough to account for rapid changes in the resource mix or system conditions
  - Should be transparent, predictable, and understandable
  - Should be aligned with resource adequacy studies

New York ISO

Guiding Principles

- **The NYISO is proposing to implement a revised study process to determine the incremental reliability contribution of capacity resource types in order to establish, and then update, capacity accreditation values**
  - This study would not replace resource-specific derating factors, though some derating factor calculations may need to be reexamined as part of this market design effort
- **Effective Load Carrying Capability (ELCC) or Marginal Reliability Improvement (MRI) studies are two potential vehicles to achieve this**
  - ELCC studies have been adopted by California ISO and PJM
    - An ELCC study measures the capacity contribution of resources in terms of equivalent "perfect" capacity
    - ELCC studies rely on loss of load expectation modeling currently in use by the IRM and LCR studies
    - ELCC studies are inherently technologically agnostic
  - The NYISO's MMU, Potomac Economics, has also put forward an MRI methodology
- **ELCC and MRI studies will produce capacity accreditation values that are dependent on the inputs that will be updated each time the study is run**
  - Inputs can include the resource mix, load levels and shapes, and changes to the transmission system
  - The NYISO anticipates that capacity accreditation values will change as these inputs are updated
  - This is a desired result for the NYISO's prompt ICAP Market, and will result in capacity accreditation values that are better aligned with system needs and ICAP Market requirements

New York ISO

Straw Proposal

Straw Proposal

- **There are six elements to this initial straw proposal:**
  - Study base: how should the study be modeled?
  - As-found or at-criterion: at what level of excess should the study be run?
  - Frequency: how often should the study be run?
  - Resources: which resource types will be included in an study?
  - Locations: at what geographic granularity should the study produce results?
  - Marginal vs. Average: should resources be valued at their marginal or average incremental reliability value?
- **The NYISO believes that establishing these six elements in the broader Buyer-Side Mitigation (BSM) proposal will be important to demonstrating how reforming BSM will continue to result in just and reasonable ICAP Market outcomes**
  - After the BSM proposal has been approved by stakeholders, the NYISO will focus its efforts on developing further implementation details for executing a capacity accreditation study

New York ISO

Study Base

- **The NYISO proposes to use the IRM or LCR studies as a base for this study**
  - This would align the capacity accreditation study with other resource adequacy modeling and studies currently in effect
    - The NYISO believes it is important to derive capacity accreditation values from the models used to develop the IRM and LCRs to ensure consistency between capacity accreditation values and reliability requirements modeling
  - Use of the IRM or LCR study would preclude the need to develop more complicated inclusion rules specific to the capacity accreditation study
  - Use of the IRM or LCR study will likely depend on logistical considerations
    - The NYISO is not yet sure exactly how long it will take to perform one of these capacity accreditation studies
    - Results are not anticipated to differ greatly if the IRM or LCR study base is used

New York ISO

As-found vs. At-criterion

- **The NYISO proposes to run this study at-criterion**
  - This would align capacity accreditation for resources with other resource adequacy modeling and studies currently in effect
  - Running the study on the as-found system would produce very few loss of load events that could make calculating capacity accreditation values for specific resources difficult and prone to error
    - Many ELCC or MRI studies base the capacity value of resources on their ability to prevent loss of load events
  - At-criterion is a predetermined level of excess that will help to produce more stable capacity accreditation outcomes

New York ISO

Frequency

- **The NYISO proposes to perform this study annually**
  - This would align capacity accreditation for resources with other resource adequacy modeling and studies currently in effect
  - An annual capacity accreditation study would produce results that closely align with the current grid conditions and resource mix
    - This would also avoid the need to forecast resource entry and exit years in advance for multiple different resource types, which could have large implications for capacity accreditation results

New York ISO

Resources

- **The NYISO proposes to evaluate all resource types to determine whether they should be subject to this study**
  - The NYISO intends to evaluate the potential for all resources to be subject to this new capacity accreditation construct
  - The NYISO will then determine whether and how these new rules might apply to specific resource types, and how each resource type should be studied

New York ISO

Locations

- **The NYISO is proposing to perform this study for resource types at the capacity Locality level**
  - Performing this study at the Locality level will align results with the ICAP Market auctions and requirement setting process
    - The study may not produce different results for different Localities, but the NYISO believes implementing this structure from the outset will introduce sufficient flexibility as the resource mix changes

New York ISO

Marginal vs. Average

- **The NYISO is proposing to use the marginal values produced from this study for each resource type when measuring the capacity accreditation of ICAP Suppliers**
  - The NYISO believes that using marginal capacity accreditation values will result in better market efficiency and properly signal which resource types are best suited to support grid reliability
  - The NYISO also believes using marginal capacity accreditation values best aligns with the NYISO's prompt ICAP Market structure
- **Marginal values measure the incremental reliability contribution based on the addition of the "next" MW, while average values measure the incremental reliability contribution of the total fleet of a resource type**
  - More discussion on the following slide

New York ISO

Marginal vs. Average: Example

- **Consider a fleet of resources that includes 500 MW of 4-hour storage within a single Locality:**
  - If a marginal capacity accreditation value is used, this class of resources will have their capacity accreditation based on the incremental reliability value provided by additional MW added to the system beyond the 500 MW already in service
    - That marginal capacity accreditation value would then be applied to the entire 500 MW class of resources in that class and location
  - If an average capacity accreditation value is used, this class of resources will have their capacity accreditation value based on the reliability value provided by the entire existing 500 MW class of resources
    - Most average calculations would also include some allocation of reliability benefits provided by the entire fleet of all resources, but not attributed to any one resource class; this is sometimes referred to as the "diversity benefit" or "portfolio effects"

New York ISO

Next Steps

Next Steps

- **Please send additional feedback to ztsmith@nyiso.com**
- **August 30, 2021 ICAPWG**
  - E3 will provide illustrative examples and technical information on capacity accreditation
  - The NYISO will respond to feedback received today
- **September 9, 2021 ICAPWG**
  - The NYISO will review tariff changes related to both BSM and capacity accreditation

New York ISO

Our mission, in collaboration with our 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 policymakers, stakeholders and investors in the power system

New York ISO

Questions?