New York ISO
Independent System Operator

Modeling for Elected Energy Limited Resources (ELRs)

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ICS Discussion

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Purpose and Agenda

- The purpose of this presentation is to discuss the modeling approach for the elected ELRs and the modeling outcome for the 2021-2022 IRM

- The following slides will cover:
  - Background
  - The simplified methodology and the modeling approach
  - Outcome of the ELR modeling
  - Next steps

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Clarify the Terminology

- According to the approved Expanding Capacity Eligibility rules, qualified resources can elect their Energy Duration Limitations to participate in the ICAP market, under the status of Energy Limited Resources (ELRs)
  - These ELRs elect the duration limitation for their availability, and are modeled accordingly in the IRM Study

- NYISO proposed to adopt the terminology of "ELR modeling" when referring to the modeling approach for the elected ELRs
  - There are other resources with duration limitations, such as SCRs and DERs, which require modeling for duration limitations, but may utilize a different modeling approach and/or modeling tools

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Background

- A duration limitation is elected by the facility owner for each ELR.

- The NYISO received ELR elections that will become effective in 2021.

- The ICS discussed available options to model these ELRs, and decided at the September 29th meeting to adopt the "simplified" methodology to model the elected ELRs in the Final Base Case of the 2021-2022 IRM Study

  - The ICS also decided that, under the simplified methodology, the modeled duration limitations of the ELRs should also reflect the resources' operational capabilities

- The ICS also recommended including an additional sensitivity case that uses the GE unit types EL3 and EL4 to model the elected ELRs

  - This sensitivity case will also help to inform the modeling frameworks for the ELRs in future IRM Studies

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The "Simplified" Methodology

- The "simplified" modeling approach refers to the methodology used to model a 5 MW battery resource in the Final Base Case of 2020 IRM (Modeling Whitepaper 2019)

- Under the simplified method, an ELR will be modeled with a pre-determined output shape
  - The length of the output window represents the resource's duration limitation
  - The hourly output within the shape will be aligned with the resource's UCAP value
  - For resources with charging requirements, a negative portion is included in the output shape representing the potential load increase due to charging

- During the MARS run, the resource under the simplified modeling will be dispatched according to its hourly output shape, which is developed according to system requirements and the NYISO's peak load window
  - With the simplified modeling, the MARS run does not try to "optimize" the output of the ELRs to provide best economic value in addressing the system LOLE

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The ELR Output Shape

- The NYISO believes it is reasonable to expect the ELRs to target their operations around the peak load periods. Therefore, the ELR output shapes will have output windows that are aligned with the Summer Peak Load Window from the Tailored Availability Metric Rules

Summer Peak Load Window	Hours within the Peak Load Window
Original 4-Hour Peak Load Window	HB 14 – HB17
6-Hour Peak Load Window	HB13 – HB18
8-Hour Peak Load Window	HB12 – HB19

- It is also reasonable to expect that resources with charging requirements will schedule to charge during off-peak hours, most likely during weekends and in the middle of the nights
  - The charging window within the ELR shape is modeled around HB1

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The ELR Modeling in 2021-2022 IRM

- The figure below shows the hourly output shape for a 120 MW ICAP ELR with 100 MW UCAP and 6-hour duration limitation, as well as 5-hour charging requirement

- In the September 29 meeting, the ICS also decided to model the elected ELRs based on their operating capabilities, rather than simply based on their elected limitations

- The NYISO worked with the NYSRC consultants, and determined the modeling for each elected ELRs based on information provided by facility owners and input from grid operations

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The ELR Modeling Outcome

- **The simplified modeling of the elected ELRs results in some increases of the overall IRM, as well as the locality requirements for Zones J and K**
  - Specific impacts from the elected ELRs are presented as part of the Final Base Case results (Agenda Item # 10) during today's meeting

- **The NYISO validated the simplified modeling approach through a number of Parametric tests with different duration limitations**
  - Longer duration of the output windows leads to smaller increases in the overall IRM
  - Moving the output windows away from the Peak Load Window period results in higher increases in the overall IRM

- **Compared with this simplified modeling, the GE MARS functionalities yield higher increases in the IRM. More testing is required to validate the GE MARS tools**
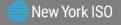
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Next Steps

- The NYISO recommends proceeding with the simplified methodology of modeling ELRs in the Final Base Case for the 2021-2022 IRM Study

- The NYISO plans to continue working on the test plan and to validate the GE MARS modeling functionalities, and recommends that the ICS prioritize additional ELR modeling and validation efforts as part of next year's IRM Study whitepapers

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Questions?

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Roles of the NYISO

- **Reliable operation of the bulk electricity grid**
  - Managing the flow of power on 11,000 circuit-miles of transmission lines from hundreds of generating units

- **Administration of open and competitive wholesale electricity markets**
  - Bringing together buyers and sellers of energy and related products and services

- **Planning for New York's energy future**
  - Assessing needs over a 10-year horizon and evaluating projects proposed to meet those needs

- **Advancing the technological infrastructure of the electric system**
  - Developing and deploying information technology and tools to make the grid smarter

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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

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