



Duration Limited Resource Modeling

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ICS Discussion

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Purpose and Agenda

- This presentation will provide information on NYISO's proposed modeling of Energy Limited Resources (ELR) and seeks approval from the ICS on the modeling approach in the 2021 IRM
- The following slides will cover:
 - Background of ELR
 - The modeling capability in MARS and NYISO's modeling proposal
 - Next Steps

Background

- **The NYISO has received ELR elections with the effective period starting 2021**
 - Under the Tariff definition, ELRs can operate at least 4 consecutive hours, but not continuously on a daily basis
 - The specific operational constraints and characteristics of the ELR will be provided by the resource(s)
- **Therefore, the ELR impact will need to be reflected in the 2021 IRM**
- **At this time, new tools that can model ELRs are available in MARS; NYISO intends to utilize the available modeling tools and welcome learning opportunities for future improvement**
- **Once approved, the NYISO plans to adopt the new modeling of ELR in the Final Base Case of the 2021-2022 Capability Year IRM**

The Modeling Tools in MARS

- **Two unit types (EL3 and EL4) are available in MARS that could replicate the behavior of resources with energy and/or duration limitations; these models allow for:**
 - Minimum and maximum hourly generation (MW)
 - Maximum energy injection per day and per month (MWh)
 - Maximum # of days the resource can be dispatched per month and per year
 - Maximum # of hours the resource can be effective per day, per month and per year
 - EL4 has the added feature to model charging which is specific to energy storage
- **Energy and/or duration limited resources can also be modeled as Emergency Operating Procedures (EOPs). This approach allows the resources to be dispatched only when there is a need.**
 - EOPs are currently being used to model SCRs in the IRM. This approach will not be appropriate to model ELRs as they can also be dispatched economically

EL3 and EOP functions were discussed in [ICS Meeting #221](#);
EL4 was used to model energy storage in [2020 RNA 70x30 Scenario](#)

Unit Type Modeling in MARS

- Using EL3 or EL4, the resource is dispatched according to the supply stack, and is subject to its energy and duration limitations (user input)
- When LOLE occurs, the effect of an EL3 or EL4 resource on addressing the LOLE will depend on its duration and energy limit compared to the duration and magnitude of the system need

#	Modeling Cases	Loss of Load Event
1	Starting Point (No EL3 modeled)	<p>LOLE with 1000 MWh & max need of 180 MW in Hr 16</p>
2	Add EL3 @ 200 MW + 4 hr / day limit	<p>LOLE shortened; Hr 16 not relieved</p>
3	Add EL3 @ 200 MW + 800 MWh / day limit	<p>LOLE with 200 MWh not relieved</p>

Case #2 &3
did not
address LOLE



IRM Modeling Proposal

- Resources with energy limitations will be modeled starting with the 2021 IRM Final Base Case
- Along with the duration limitation, the recharging capabilities will also be modeled
 - Resources with duration limitation AND recharging capabilities will be modeled using the MARS unit type EL4
 - Resource with duration limitation but NO recharging capabilities will be modeled using the MARS unit type EL3
- This modeling approach (i.e. using MARS unit type EL4 or EL3) will not apply to SCRs, for which a separate modeling approach is being discussed at ICS

Next Steps

- If the ICS Stakeholders are comfortable with the ELR modeling, the NYISO will include the modeling of the elected duration limited resources and have the results available for ICS review at the September 28th meeting
- If the results of the ELR modeling is satisfactory to the ICS Stakeholders, the NYISO plans to include the planned modeling as part of the 2021-2022 Capability Year IRM Final Base Case
- The NYISO also plans to continue the collaboration with planning on modeling improvement for future IRM studies

Questions?

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

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

