

Modeling Improvements for Capacity Accreditation: SCR Modeling

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Agenda

- **Background**
- **Current IRM Modeling vs Historical SCR Performance**
- **Proposed SCR Modeling**
- **Next Steps**

Background

Background

- In 2022, the NYISO filed, and FERC approved, the NYISO's marginal capacity accreditation market design
- As part of that market design, each ICAP Supplier will be valued in the ICAP Market based on marginal Capacity Accreditation Factors (CAFs)
- These CAFs reflect the marginal reliability contribution of the ICAP Suppliers within each Capacity Accreditation Resource Class (CARC) toward meeting NYSRC resource adequacy requirements
 - Because the CAFs reflect the marginal reliability contribution toward meeting NYSRC resource adequacy requirements, the NYISO is required to use the IRM/LCR model to calculate CAFs ahead of each Capability Year

Background

- **For CAFs to accurately reflect the marginal reliability contributions of the ICAP Suppliers within each CARC, the modeling of those ICAP Suppliers in the IRM/LCR model must align with the expected performance and obligations that those ICAP Suppliers have in the NYISO's market**
- **Because of how SCRs are currently modeled in the IRM/LCR study, performing the CAF calculation using the same model will not properly reflect SCR's marginal reliability contribution**
 - This is due to the misalignment between the current modeling and the expected performance and obligations of SCRs
 - SCRs are currently modeled as available for an entire day if called but can only be activated up to 5 times per month. However, in the NYISO's market, SCRs have a minimum 4-hour performance obligation and are not expected to reduce load for an entire day. Additionally, there is no maximum number of SCR activations per month in the NYISO's market
- **Therefore, SCRs currently cannot be treated as a separate CARC for which to separately calculate CAFs using the current modeling of SCRs**
- **Until changes are made to the SCR modeling in the IRM/LCR base case, SCRs will be valued in the ICAP Market using the CAF of the 4-hour Energy Duration Limitation CARC**

Background

- **To 1) better reflect the expected performance and obligations of SCRs in the IRM, LCR, and capacity accreditation studies and 2) move toward valuing SCRs based on their specific marginal reliability contribution in the ICAP Market, the Modeling Improvements for Capacity Accreditation project has developed a new proposed modeling of SCRs for use in the IRM, LCR, and capacity accreditation studies**

Current IRM Modeling vs Historical SCR Performance

Current IRM Modeling vs Historical SCR Performance

- **In the current IRM modeling, SCRs are modeled as an EOP step with the following characteristics:**
 - Subject to a maximum of 5 activations per month
 - Available for the whole day when called
 - Modeled by zone at a derated capacity based on zonal performance factors and zonal Average Coincident Load (ACL) to Customer Base Load (CBL) factors
 - Zonal performance factors and ACL to CBL factors are based on historical SCR performance during all event hours, by zone, for each mandatory event from the most recent five years in which a mandatory event was initiated by the NYISO (but not older than summer 2012) and all performance test hours accumulated during the same timeframe even when there were no mandatory events¹
 - The look back window is limited to summer 2012 because an alternative capacity baseline methodology was in place to measure SCR performance prior to 2012

¹For more details on the zonal performance factor and ACL to CBL factor calculations, please see the “[Demand Response: Final Model Values for 2024 IRM Studies](#)” presentation to the August 2nd, 2023, meeting of the NYSRC Installed Capacity Subcommittee

Current IRM Modeling vs Historical SCR Performance

For 2024 IRM - Final SCR Model Values

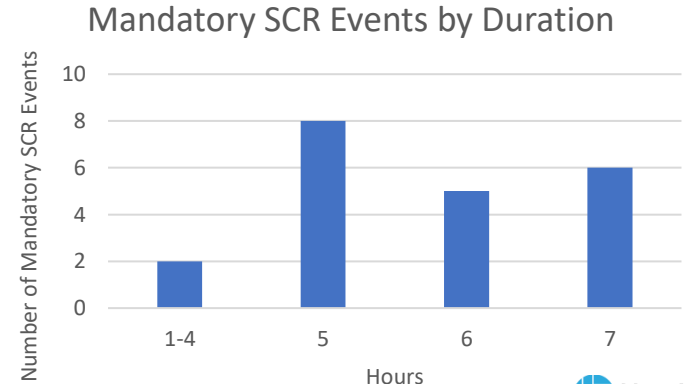
Program	Super Zone	Superzone Performance Factor	ICS Adjustment Factors		Effective Performance Factor	SCR ICAP MW based on July 2023	Final Model Values MW
			ACL to CBL Factor	Fatigue Factor			
SCR	A-F	87.3%	92.9%	100%	81.1%	719.1	583.4
SCR	G-I	77.4%	84.2%	100%	65.1%	84.3	54.9
SCR	J	70.6%	74.5%	100%	52.6%	442.4	232.7
SCR	K	69.8%	76.2%	100%	53.2%	35.3	18.8
Total						1281.0	889.7
							69.5%

Source: "Demand Response: Final Model Values for 2024 IRM Studies" presentation to the August 2nd, 2023, meeting of the NYSRC Installed Capacity Subcommittee

Current IRM Modeling vs Historical SCR Performance

- In the NYISO's market, curtailment duration requests have ranged from 1 to 7 hours in mandatory SCR events since 2012
 - There are no restrictions on the length of a curtailment request, the time periods in which a curtailment request may be initiated, or the number of times during a month or Capability Period that a curtailment request may be executed by the NYISO
 - However, the NYISO must follow the advanced notification procedures, as detailed in Section 4.12.4 of the ICAP Manual, before a mandatory curtailment request can be implemented

	Number of Mandatory SCR Events	Average Length of Mandatory SCR Events
Since 2012	21	5.6 hours



Current IRM Modeling vs Historical SCR Performance

- **Individual SCR performance is required for a minimum of 4 consecutive hours during mandatory events**
 - Performance beyond 4 consecutive hours is voluntary
- **If an SCR was called to perform during one or more mandatory events in the last two like-Capability Periods, the SCR's best four hours of consecutive response during each event is included in calculating the SCR's performance factor used to determine the SCR's UCAP in the ICAP Market**
 - SCRs can choose which 4 hours to perform within a call to maximize their performance factors
- **Because 1) curtailment duration requests have historically been longer than the 4-hour minimum performance obligation and 2) SCRs can choose which 4 hours to perform within a call to maximize their performance factors, the NYISO generally sees some level of SCR response across all hours of mandatory calls**
- **The NYISO's proposed SCR modeling reflects this aggregated performance of the SCR fleet by modeling SCRs as duration limited resources with hourly response rates**

Proposed SCR Modeling

Proposed SCR Modeling

- **The NYISO proposes to model SCRs as zonal duration limited resources with hourly response rates, subject to a 1 call per day limit**
 - The 1 call per day limit restricts the use of the SCRs to be contiguous across its duration limitation
- **Under the proposed modeling, SCRs would continue to be deployed as the first EOP step but would not be subject to an annual or monthly limit on the maximum number of activations**

Proposed SCR Modeling

- **The maximum modeled capacities of the zonal SCRs would be calculated based on zonal SCR enrollments from the prior year and the zonal ACL to CBL factors**
 - This approach is the same as the current IRM methodology for calculating the SCR final model values, except performance factors will be captured in the hourly response rates rather than in setting the maximum modeled capacities
 - If the proposed SCR modeling was in place for the 2024 IRM, the July maximum modeled capacities of SCRs (aggregated by capacity region¹) would be:

Capacity Region	SCR ICAP MW based on July 2023	ACL to CBL Factor	July Max Modeled Capacity (MWs)
ROS	719.1	92.2%	663.0
GHI	84.3	84.2%	71.0
J	442.4	74.5%	329.6
K	35.3	76.2%	26.9

¹Aggregated by capacity region for illustrative purposes only. SCRs would continue to be modeled by load zone in GE MARS

Proposed SCR Modeling

- The duration limits would be based on the maximum mandatory event length that has occurred in the zone over the most recent five years in which a mandatory event was initiated in the zone (but not older than summer 2012)
 - If the proposed SCR modeling was in place for the 2024 IRM, the following duration limits would be applied:

	SCR Activation Duration Limit by Zone (hours)			
	A-E	F	G-J	K
Duration Limit	5	7	6	7

Proposed SCR Modeling

- In addition to the duration limitations, hourly response rates are needed to reflect the aggregate performance and staggered responses of individual SCRs across the duration of mandatory curtailment requests
- The hourly response rates will vary by zone and hour of activation based on historical hourly performance of all SCRs in the zone across all mandatory events over the most recent five years in which a mandatory event was initiated by the NYISO in the zone (but not older than summer 2012)
- For each hour of an activation, the response rate is the percentage of the zonal SCR duration limited resource's maximum modeled capacity that will be deployed in GE MARS

Proposed SCR Modeling

- If the proposed SCR modeling was in place for the 2024 IRM, the following hourly response rates (aggregated to protect potentially confidential market data) would be applied:

<u>Response Rate by Hour of SCR Activation</u>							
Zones	1	2	3	4	5	6	7
A-E ¹	79%	85%	83%	71%	70%		
F	75%	81%	84%	85%	84%	67%	64%
G-I ¹	59%	68%	70%	72%	74%	72%	
J	55%	61%	66%	68%	69%	66%	
K	50%	57%	62%	65%	65%	64%	53%

¹ Reflects capacity-weighted averages of zonal response rates to protect potentially confidential market data

Proposed SCR Modeling

■ Example – Zone J:

- If an SCR activation is triggered in GE MARS, the MWs available from the SCRs in Zone J will vary across the hours of the activation based on the maximum modeled capacity for the modeled month and the hourly response rates for Zone J

Zone J		Hour of SCR Activation					
		1	2	3	4	5	6
July Maximum Modeled Capacity (MWs) ¹	α	329.6					
Hourly Response Rates	β	55%	61%	66%	68%	69%	66%
MWs Available	$\gamma = \alpha * \beta$	181	201	218	224	227	218

¹ The maximum modeled capacities are calculated for each month using the total ICAP of SCRs enrolled in the zone in the same month of the prior year and the zonal ACL to CBL factor, as described on slide 14.

Proposed SCR Modeling

- **An enhanced ELR functionality was developed by GE to model SCRs under the proposed SCR modeling**
 - The enhanced functionality allows for the application of the hourly response rates to the hourly output of duration and/or energy limited resources
- **The ELR output restriction, which prevents ELRs from being used too early in the day before the majority of LOLE occurs, is also applied to SCRs under the proposed SCR modeling**
 - More information on the ELR output limitation can be found in the [“Recommended Approach to Update ELR Output Restriction Starting 2024-2025 IRM”](#) presentation to the August 2, 2023, meeting of the NYSRC Installed Capacity Subcommittee

Next Steps

Next Steps

- **The NYISO will return to the 11/01 ICS meeting to discuss the impact of the proposed SCR modeling on the IRM as well as considerations and appropriate action items for potential adoption of this modeling change**

Questions?

Our Mission & Vision



Mission

Ensure power system reliability and competitive markets for New York in a clean energy future



Vision

Working together with stakeholders to build the cleanest, most reliable electric system in the nation