

Demand Response: Final Model Values for 2020 IRM Studies & SCR Performance Analysis

Jeremiah Brockway

Senior Distributed Resources Operations Engineer

NYSRC – Installed Capacity Subcommittee

July 30, 2019, Krey Corporate Center



Agenda

- Background
- Updated Final SCR model values for 2020 IRM studies
- **SCR Performance Analysis: Event & Test data vs. Event data Only**
- Appendix
 - Description of ICS adjustment factors
 - Preliminary SCR Model Value MW for 2020 IRM Studies

Background

Overview of the SCR zonal performance factor calculation methodology as accepted at the 5/4/2016 ICS meeting

Background

- **NYISO calculates SCR zonal performance factors for IRM studies based on historical SCR performance. The data set includes:**
 - 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)
 - All performance test hours accumulated during the above timeframe even when there were no mandatory events
 - 2020 IRM study data set includes all event hours from mandatory events and performance tests from Summer 2012 through Summer 2018
- **ICS applies additional adjustment factors (see Appendix for details)**
 - Translation Factor
 - Fatigue Factor

Effective Performance Factor = Zonal Performance Factor * Translation Factor * Fatigue Factor
SCR Model Value MW = SCR ICAP MW * Effective Performance Factor

Updated Final SCR Model Values

This is an update to the SCR Model Values using the July 2019 enrollment data, based on the presentation from June 5, 2019

FOR 2020 IRM - Final SCR Model Values

Program	Super Zone	Superzone Performance Factor	ICS Adjustment Factors		Effective Performance Factor	SCR ICAP MW based on July 2019 Enrollment	Final Model Value MW
			ACL to CBL Factor	Fatigue Factor			
SCR	A-F	86.8%	94.1%	100%	81.7%	629.3	514.2
SCR	G-I	75.6%	85.1%	100%	64.3%	125.5	80.7
SCR	J	69.1%	75.3%	100%	52.0%	478.9	249.0
SCR	K	71.8%	82.3%	100%	59.1%	48.2	28.5
Total						1281.9	872.4
							68.2%

Comparison of 2020 with 2019 SCR Values

FOR 2020 IRM - Final SCR Model Values					2019 IRM - Final SCR Model Values			Comparison of 2020 with 2019 IRM		
Program	Super Zone	Effective Performance Factor	July 2019 Enrollment Data	Final Model Value MW	Effective Performance Factor	July 2018 MW	Final Model Value MW	Effective Performance Factor	July 2019 to July 2018 MW	Model Value MW
SCR	A-F	81.7%	629.3	514.2	80.6%	655.1	528.2	1.1%	-25.8	-14.0
SCR	G-I	64.3%	125.5	80.7	63.9%	111.4	71.1	0.4%	14.1	9.6
SCR	J	52.0%	478.9	249.0	55.5%	494.1	274.5	-3.5%	-15.2	-25.5
SCR	K	59.1%	48.2	28.5	59.7%	48.5	28.9	-0.6%	-0.3	-0.4
Total			1281.9	872.4		1309.1	902.8		-27.2	-30.4
				68.2%			69.0%			-0.8%

No significant change in Effective Performance Factor since 2019 IRM studies

SCR Performance Analysis: Event & Test Data vs. Event Data Only

Introduction

- **NYISO calculates SCR zonal performance factors for IRM studies based on historical SCR performance. The data set includes:**
 - 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)
 - All performance test hours accumulated during the above timeframe even when there were no mandatory events
- **The ICS has requested that NYISO investigate the impact using data from only mandatory SCR Events, in lieu of the Event & Test data, would have on the SCR Model Value MWs**

Overview – Event & Test

■ Event:

- Called when Operating Reserves shortages are forecasted or during an actual Operating Reserve shortage
- Events have typically ranged between 4 to 6 hours
 - For IRM Analysis: Performance from all event hours are used
 - For Market Participation: Best 4 consecutive hours are used

■ Test:

- Resources must demonstrate their maximum enrolled Declared Value once every Capability Period
- Mandatory 1 hour performance per Capability Period

Inputs for Analysis

- Same data set used for calculating SCR Model Values
- Event & Test:
 - All event hours, by zone, from mandatory events from summer 2012 through summer 2018
 - Range from 20 event hours for Zone A to 64 event hours for Zone J
 - All performance test hours from summer 2012 through summer 2018
 - 13 performance test hours
- Event Only:
 - All event hours, by zone, from mandatory events from summer 2012 through summer 2018
 - Range from 20 event hours for Zone A to 64 event hours for Zone J
 - 13 Performance test hours not included in analysis

Comparison: Event & Test vs Event Only

SCR Performance for 2020 IRM														
			Event & Test				Event Only				Comparison			
Program	Zone	July 2019 MW	Zonal PF	ACL to CBL Factor	Effective Performance Factor	Model Value MW	Zonal PF	ACL to CBL Factor	Effective Performance Factor	Model Value MW	Zonal PF	ACL to CBL Factor	Effective Performance Factor	Model Value MW
SCR	A-F	629.3	86.8%	94.1%	81.7%	514.2	80.1%	94.3%	75.4%	474.3	-6.74	0.19	-6.34	-39.9
SCR	G-I	125.5	75.6%	85.1%	64.3%	80.7	65.5%	84.3%	55.2%	69.3	-10.11	-0.81	-9.07	-11.4
SCR	J	478.9	69.1%	75.3%	52.0%	249.0	64.7%	76.8%	49.6%	237.7	-4.44	1.48	-2.36	-11.3
SCR	K	48.2	71.8%	82.3%	59.1%	28.5	65.6%	85.0%	55.7%	26.9	-6.23	2.69	-3.38	-1.6
Total		1281.9				872.4				808.2				-64.2
						68.2%				63.0%				-5.0%

5.0% decrease in Effective Performance Factor when using Event data only, versus Event & Test data

Observations from Comparison

■ Zonal Performance Factor:

- Using Event data only to measure performance decreases the Zonal Performance Factor in all zones (ranging from -4.44 in J to -10.11 in G-I) compared to current Event & Test methodology

■ ACL to CBL Translation Factor:

- Using Event data only had a minimal impact (ranging from a decrease of 0.81 in G-I to an increase of 2.69 in K) on Translation Factor
- In general, the Translation Factor slightly increased, with the exception of zones G-I, where there was a slight decrease

■ Effective Performance Factor

- Using Event only data to measure performance decreases the Effective Performance Factor by 5% compared to current Event & Test methodology

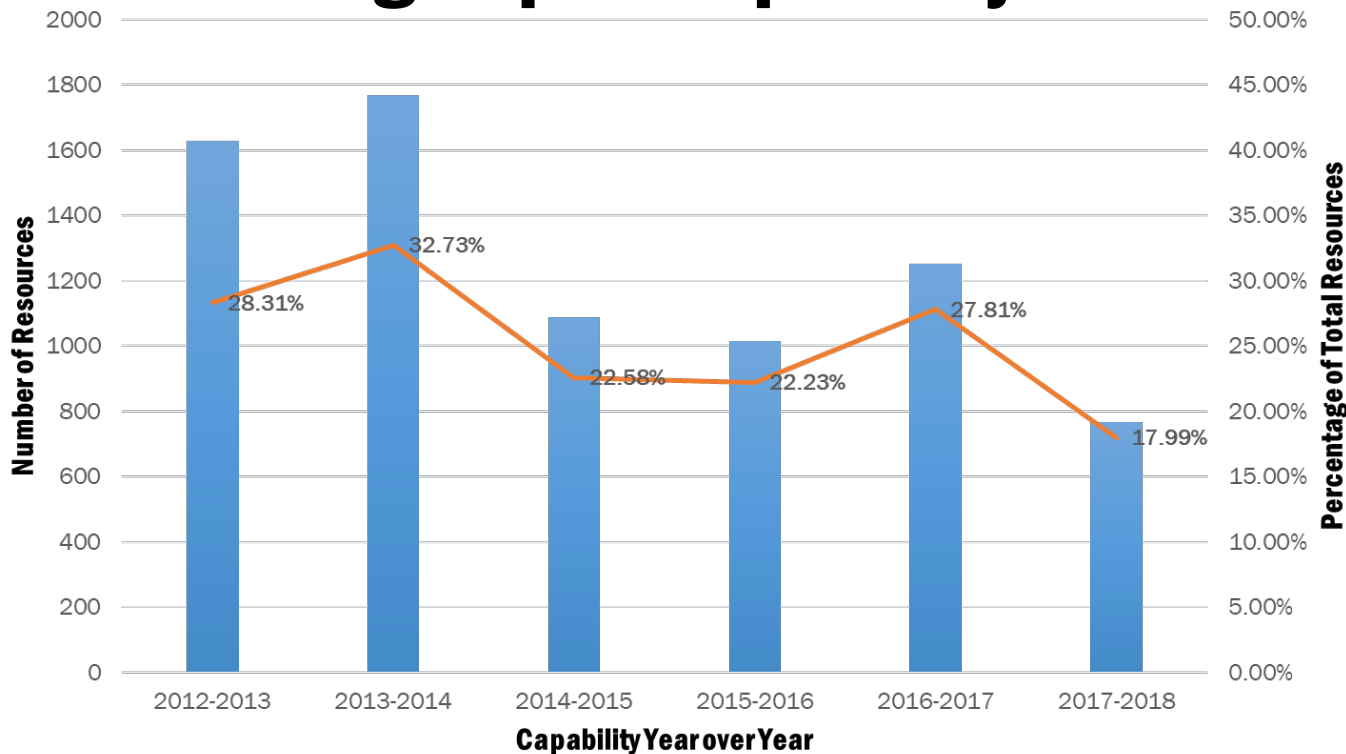
Additional Considerations

- **Event Frequency**
 - SCR Events occur at random intervals, and may not occur for several consecutive years
- **Resource Changes**
 - Resources are able enter or leave the SCR Program every Auction Month

SCR Events by Zone per Capability Year

	2012	2013	2014	2015	2016	2017	2018
A	✓	✓	✗	✗	✓	✗	✗
B	✓	✓	✗	✗	✓	✗	✗
C	✓	✓	✗	✗	✓	✗	✗
D	✓	✓	✗	✗	✓	✗	✗
E	✓	✓	✗	✗	✓	✗	✗
F	✓	✓	✗	✗	✓	✗	✗
G	✓	✓	✗	✗	✓	✗	✗
H	✓	✓	✗	✗	✓	✗	✗
I	✓	✓	✗	✗	✓	✗	✗
J	✓	✓	✗	✗	✓	✗	✓
K	✓	✓	✗	✗	✓	✗	✗

Resource Changes per Capability Year



*Calculated by counting unique Resources enrolled each Capability Year, then removing Resources that were enrolled in both of the compared Capability Years

Resources Changes* Percent of Total Resources



Observations

- **Gaps in data due to years without events:**
 - 4 years with no events in Zones A-I & K
 - 3 years with no events in Zone J
 - Performance of resources that are entering the market during Capability Years with no Events would not be included in an Event data only calculation
- **Resource changes:**
 - On average, roughly 25% of resources are either entering or leaving the SCR Program every capability year

NYISO's Recommendation

NYISO's Recommendations

- **For 2020 IRM Analysis:**
 - Use current approach using Event & Test data for calculation of Zonal Performance and ACL to CBL Translation Factors
 - Run a sensitivity study using the Event data only to assess impact
- **Continue discussions with ICS on SCR modeling for future IRM studies**

Appendix

SCR Baselines

- **Average Coincident Load (ACL):**
 - Capacity Baseline for resources participating in the SCR program
 - Required for all resources participating in the SCR Program
 - Used for Capacity Market participation
- **Customer Baseline Load (CBL):**
 - Energy Baseline for resources participating the SCR programs
 - Optional submission following a NYISO Test or Event
 - Used for Energy Payments

SCR Adjustment Factors used in IRM Studies

- **Translation Factor (ACL to CBL)**
 - The Translation Factor is used to adjust performance based on ACL baseline to a CBL equivalent
 - Transition from fixed to calculated Translation Factor established during 9/5/2018 ICS Meeting
 - Calculated value from same data set used for Zonal Performance Factors
 - Only uses responses from resources reporting their CBL
- **Fatigue Factor**
 - The Fatigue Factor is applied to address concerns that fatigue may occur if SCRs are deployed frequently
 - Current value of Fatigue Factor is 1.00

Inputs for 2020 IRM Studies

- **Additional inputs since 2019 IRM studies**
 - Winter 2017-2018 and Summer 2018 SCR performance test hours – total of 2 hours
 - Summer 2018 Zone J SCR Events hours –13 hours
- **The data set consists of**
 - All event hours, by Zone, from mandatory events from summer 2012 through summer 2018
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FOR 2020 IRM - Preliminary SCR Model Values

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