Additional Discussion on Proposed Change to the Calculation of SCR Model Values for IRM Studies

Vijaya Ganugula

Manager, Demand Response Operations

NYSRC – Installed Capacity Subcommittee

May 4, 2016

NYISO, Rensselaer, NY

DRAFT – FOR DISCUSSION PURPOSES ONLY

Topics

- **Background**
  - *Problem statement & Proposed change as presented at the March 29th ICS meeting*

- **Stakeholder feedback**

- **Next steps**

DRAFT – FOR DISCUSSION PURPOSES ONLY

Problem Statement
(As presented at the March 29, 2016 ICS meeting)

- **The existing methodology to determine SCR model values using only the prior year's dataset results in year-to-year variability depending upon whether mandatory SCR events were called during the prior year**

- **To minimize year-to-year variability and better represent the expected SCR performance for reliability planning studies the NYISO is proposing one change to the existing methodology**

DRAFT – FOR DISCUSSION PURPOSES ONLY

Proposed Change

(As presented at the March 29, 2016 ICS meeting)

- Use five years of data rather than only one year of data to determine SCR zonal performance factors

    - *This proposed timeframe for SCRs aligns with the five-year timeframe used to determine generator availability for IRM studies*

    - *Using the five-year time period reduces the variations that occur based upon whether or not events are called during a given year and results in more accurate representation of SCR performance for the purpose of reliability planning studies*

    - *ACL baseline was solely used to measure performance starting with 2012, and therefore the NYISO is proposing to limit the look back window to Summer 2012*

    - *Considering performance during events and performance tests reflects SCR's performance during both peak and non-peak conditions*

DRAFT – FOR DISCUSSION PURPOSES ONLY

Stakeholder Feedback to March 29ᵗʰ Presentation

- **What is the impact to the proposed methodology if all mandatory event hour performance (instead of best four hour event performance), and performance tests is used, and the Effective Capacity Value factor is removed?**

- **Provide reasons for including the performance test hours along with mandatory event hours when determining the SCR model values for IRM studies**

- **Provide comparison of the proposed approach for IRM studies and the approach used for Comprehensive Scarcity Pricing (See Appendix)**

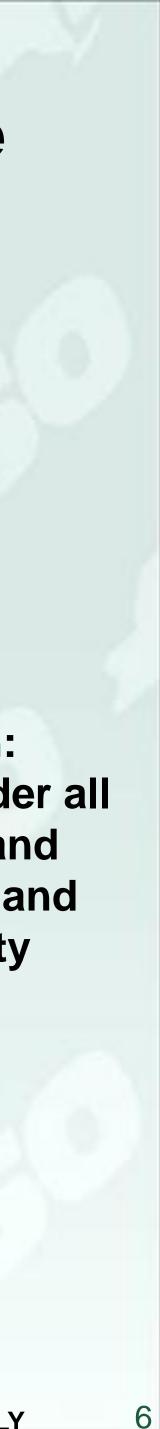# Impact of Using All Mandatory Event Hours, Performance Tests, and Removing Effective Capacity Value factor

- The table below shows the impact to the proposed methodology if all mandatory event hours (instead of best four mandatory event hours), performance tests are considered, and the Effective Capacity Value factor is removed

Zone	July 2015 ICAP MW	Option A: 2016: Best-Four Mandatory Event Hours, Performance Tests; ACL to CBL factor=0.90, Fatigue factor=1.0 AND Effective Capacity Value factor=0.95				Option B: 2016: All Mandatory Event Hours, Performance Tests; ACL to CBL factor=0.90, Fatigue factor=1.0 No Effective Capacity Value factor				Difference in SCR Model Values
		Zonal Performance Factor	ICS Adjustment Factor	Effective Performance Factor	SCR Model Value MW	Zonal Performance Factor	ICS Adjustment Factor	Effective Performance Factor	SCR Model Value MW	
A	317.1	91.4%	85.5%	78.1%	247.7	90.4%	90.0%	81.4%	258.2	10.4
B	81.8	81.2%	85.5%	69.4%	56.8	78.7%	90.0%	70.8%	57.9	1.2
C	113.1	85.7%	85.5%	73.3%	82.9	84.1%	90.0%	75.7%	85.6	2.7
D	59.4	78.3%	85.5%	66.9%	39.8	68.1%	90.0%	61.3%	36.4	-3.4
E	39.8	74.3%	85.5%	63.5%	25.3	71.9%	90.0%	64.7%	25.7	0.5
F	107.9	88.1%	85.5%	75.4%	81.3	86.0%	90.0%	77.4%	83.5	2.2
G	53.6	73.4%	85.5%	62.7%	33.7	70.8%	90.0%	63.7%	34.2	0.5
H	5.6	89.3%	85.5%	76.3%	4.3	87.9%	90.0%	79.1%	4.4	0.2
I	21.3	76.4%	85.5%	65.3%	13.9	72.5%	90.0%	65.3%	13.9	0.0
J	386.1	73.1%	85.5%	62.5%	241.2	69.9%	90.0%	62.9%	242.8	1.6
K	68.1	73.8%	85.5%	63.1%	43.0	70.4%	90.0%	63.4%	43.2	0.2
NYCA	1253.9	81.2%	85.5%	69.4%	870.5	78.4%	90.0%	70.5%	884.4	13.8

NYISO Recommendation:
It is reasonable to consider all mandatory event hours and performance test hours; and remove Effective Capacity Value factor

DRAFT – FOR DISCUSSION PURPOSES ONLY

Use of Performance Test Hours

- **NYISO continues to believe that inclusion of test performance along with the event performance is appropriate when determining the model values for the IRM studies**

  - *Considering SCR performance during events and performance tests for the determination of SCR model values for IRM studies reflects SCR's performance throughout the year*

  - *IRM studies evaluate 8,760 hours of the year, not just the peak days*

    - **2016 IRM base case study shows that SCRs were expected to be needed for 8.9 days/year (Table B-2 of the 2016 IRM Report)**

    - **If only the peak hours of the year were considered, two things would have happened:**

      - *The expected number of days SCRs were called upon would have been reduced by 0.256 days*

      - *The IRM is estimated to have been 16.9%[*]*

  - *Generator availability during all hours is considered in the IRM studies*

  - *This approach for SCRs aligns with generator availability determination for IRM studies*

  **The IRM estimate is the result of normal sensitivity methodology*

DRAFT – FOR DISCUSSION PURPOSES ONLY

Next Steps

- ✓ **March 29, 2016 ICS**
  - ✓ *Discuss proposed changes to the methodology for determining the SCR model values for IRM studies*

- ✓ **May 4, 2016 ICS**
  - ✓ *Continue discussion on the proposed changes*
  - ✓ *Seek ICS approval of the proposed changes*

- **June 1, 2016**
  - ▪ *Preliminary SCR Model Value MW based on Gold Book forecast*

- **August 3, 2016 ICS**
  - ▪ *Update the SCR Model Value MW based on the actual July 2016 enrollment data*

DRAFT – FOR DISCUSSION PURPOSES ONLY

Appendix

DRAFT – FOR DISCUSSION PURPOSES ONLY

	IRM Studies	**Comprehensive Scarcity Pricing**
Purpose & Background	•IRM studies are reliability planning studies •IRM studies analyze 8,760 hours of the year •IRM studies may use SCRs during any time of the year, not just on peak days	•Purpose of using Expected EDRP/SCR MW for Comprehensive Scarcity Pricing is to ensure the market model more accurately reflects load reductions during EDRP/SCR activations •Comprehensive Scarcity Pricing gets activated only during SCR/EDRP events; Not activated during SCR performance tests
Calculation Approach	Annual evaluation of performance based on SCR's resource performance factors during the mandatory events and performance tests, during the most recent five year period since Summer 2012	Annual evaluation of performance of EDRP/SCR resources, by zone and event type (voluntary or mandatory), during the most recent EDRP/SCR events since Summer 2012, up to a maximum of five events
Additional Notes	•Considering SCR performance during mandatory events, and performance tests for determining SCR model values for IRM studies aligns with the generator availability determination for the IRM studies •ICS applies additional adjustment factors to determine the SCR model value MW	•NYISO prefers to use a single approach for determining the Expected EDRP/SCR MW for: 1) EDRP events, 2) Voluntary SCR events, and 3) Mandatory SCR events •The only meaningful data for EDRP and SCR voluntary MW is past event data

IRM Studies & Comprehensive Scarcity Pricing

| Zone | July 2015 ICAP MW | 2016: Best-Four Mandatory Event Hours, Performance Tests; ACL to CBL factor=0.90, Fatigue factor=1.0 **AND** Effective Capacity Value factor=0.95 | | | | 2016: Expected SCR MW for Mandatory Events for Comprehensive Scarcity Pricing | | Difference in MW |
		Zonal Performance Factor	ICS Adjustment Factor	Effective Performance Factor	SCR Model Value MW	Average SCR performance during five most recent mandatory events	Expected SCR MW for Mandatory Events	
A	317.1	91.4%	85.5%	78.1%	247.7	89.7%	284.5	26.4
B	81.8	81.2%	85.5%	69.4%	56.8	79.5%	65.1	7.1
C	113.1	85.7%	85.5%	73.3%	82.9	82.2%	93.0	7.4
D	59.4	78.3%	85.5%	66.9%	39.8	56.4%	33.5	-2.9
E	39.8	74.3%	85.5%	63.5%	25.3	65.8%	26.2	0.4
F	107.9	88.1%	85.5%	75.4%	81.3	87.8%	94.8	11.2
G	53.6	73.4%	85.5%	62.7%	33.7	78.9%	42.3	8.1
H	5.6	89.3%	85.5%	76.3%	4.3	96.0%	5.4	0.9
I	21.3	76.4%	85.5%	65.3%	13.9	69.1%	14.7	0.8
J	386.1	73.1%	85.5%	62.5%	241.2	66.0%	254.8	12.0
K	68.1	73.8%	85.5%	63.1%	43.0	54.9%	37.4	-5.8
NYCA	**1253.9**	**81.2%**	**85.5%**	**69.4%**	**870.5**	**75.9%**	**951.5**	**67.2**

DRAFT – FOR DISCUSSION PURPOSES ONLY

The Mission of the New York Independent System Operator, in collaboration with its 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 policy makers, stakeholders and investors in the power system*

www.nyiso.com

March 29, 2016 ICS Presentation

Topics

- **Overview of the existing methodology**

- **Problem statement**

- **Proposed change**

- **Next steps**

Overview of the Existing Methodology for Determining SCR Model Values

- ## The NYISO calculates the SCR zonal performance factors for IRM studies based on SCR performance from the prior year using

  - *Resource's best four hour performance during each mandatory event, if any*

  - *Performance during SCR performance tests*

    - For example: The upcoming IRM studies would consider SCR performance during Summer 2015 and Winter 2014-2015. During this timeframe there were two one-hour SCR performance tests and no mandatory events

- ## ICS applies additional adjustment factors (see Appendix for details)

  - *ICS adjusts these factors up/down based on SCR event response from the prior year (when data is available):*

    - *Translation Factor*

    - *Effective Capacity Value*

    - *Fatigue Factor*

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

Problem Statement

- **The existing methodology to determine SCR model values using only the prior year's dataset results in year-to-year variability depending upon whether mandatory SCR events were called during the prior year**

- **To minimize year-to-year variability and better represent the expected SCR performance for reliability planning studies the NYISO is proposing one change to the existing methodology**

Proposed Change

- **Use five years of data rather than only one year of data to determine SCR zonal performance factors**
    - *This proposed timeframe for SCRs aligns with the five-year timeframe used to determine generator availability for IRM studies*
    - *Using the five-year time period reduces the variations that occur based upon whether or not events are called during a given year and results in more accurate representation of SCR performance for the purpose of reliability planning studies*
    - *ACL baseline was solely used to measure performance starting with 2012, and therefore the NYISO is proposing to limit the look back window to Summer 2012*
    - *Considering performance during events and performance tests reflects SCR's performance during both peak and non-peak conditions*

Proposed Change – Preliminary Data for Zone J

SCR Model Values for IRM Studies for Zone J			
Methodology	July 2015 ICAP MW	Effective Performance Factor	SCR Model Value MW
2015: Effective Performance Factor - Existing Methodology	386.1	55.5%	214.3
2016: Existing Methodology	386.1	71.9%	277.6
2016: Proposed Methodology	386.1	62.5%	241.3
Impact of Proposed Change	0.0	-9.4%	-36.3

Notes:

1) July 2015 ICAP MW is used to enable better comparison of the changes

2) "2015: Effective Performance Factor - Existing Methodology": based on performance in 20 mandatory event hours and 2 one-hour tests during Summer 2013 and Winter 2012-2013

3) "2016: Existing Methodoloy": based on performance in 2 one-hour tests during Summer 2014 and Winter 2013-2014

4) "2016: Proposed Methodology": based on performance in 36 mandatory event hours and 7 one-hour tests from Summer 2012 through Summer 2015

DRAFT – FOR DISCUSSION PURPOSES ONLY

Next Steps

✓ **March 29, 2016 ICS**

  - ✓ *Discuss proposed changes to the methodology for determining the SCR model values for IRM studies*

- **May 4, 2016 ICS**

  - ▪ *Continue discussion on the proposed changes*

- **June 1, 2016 ICS**

  - ▪ *Seek ICS approval of the proposed changes*
  - ▪ *Present preliminary SCR Model Value MW based on Gold Book forecast*

- **August 3, 2016 ICS**

  - ▪ *Update the SCR Model Value MW based on the actual July 2016 enrollment data*

Appendix

SCR Adjustment Factors used in IRM Studies

- **Translation Factor (ACL to CBL)**
  - *The Translation Factor is used to adjust performance based on ICAP measures to a CBL equivalent*

- **Effective Capacity Value**
  - *The Effective Capacity Value adjustment factor is used to account for performance changes beyond the minimum required 4-hour performance period during an event*

- **Fatigue Factor**
  - *The Fatigue Factor adjustment factor is applied to address concerns that fatigue may occur if SCRs are deployed frequently*

The Mission of the New York Independent System Operator, in collaboration with its 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 policy makers, stakeholders and investors in the power system*

www.nyiso.com