

2021-2025 ICAP Demand Curve Reset: NYISO Staff Proposed 2021-2022 ICAP Demand Curves

Additional Information Regarding Winter-to-Summer Ratio, Gross CONE Escalation, and Net EAS Revenue Offset Details

NYISO

October 2, 2020

Agenda

- Background
- Winter-to-Summer Ratio Values
- Gross CONE Escalation
- Net Energy and Ancillary Services Revenue Offset Values
- Appendix



Background



Background

- Every four years, the NYISO initiates a process, referred to as the ICAP Demand Curve reset (DCR), to review the parameters, methodologies and assumptions that determine the ICAP Demand Curves for the years covered by the reset
 - This process results in the adoption of new demand curves that are used to determine the ICAP Spot Market Auction clearing prices in each Locality and the NYCA
- Consistent with tariff requirements, an independent consultant performs a study on the parameters, methodologies and assumptions used in setting the ICAP Demand Curves and delivers a report with recommendations to set new curves for the period covered by the reset
 - Analysis Group (AG), together with its subcontracted engineering consulting firm Burns & McDonnell (Burns), were selected to serve as the independent consultant for this reset



Background

- As part of the 2016 ICAP Demand Curve reset process a new annual update procedure was developed to update the ICAP Demand Curves formulaically for each of the remaining three years of the reset period
 - During each annual update, three components of the ICAP Demand Curve input parameters will be updated
 - Winter-to-summer ratio (WSR)
 - Gross cost of new entry (CONE) for peaking plants using a composite escalation factor
 - Net Energy and Ancillary Services (Net EAS) revenue offset
- In response to stakeholder requests, this presentation aims to provide additional details regarding the WSR, Gross CONE composite escalation factor, and Net EAS revenue offsets related to NYISO staff's proposed ICAP Demand Curves for the 2021-2022 Capability Year (CY)



Winter-to-Summer Ratio



2021-2022 WSR Values

- The NYISO operates a capacity market with two distinct six-month Capability Periods
 - In calculating the reference point price for each ICAP Demand Curve, the Services Tariff requires that seasonal differences in capacity availability be accounted for
 - This seasonal adjustment is intended to reflect the fact that differences in capacity availability between the Summer Capability Period and Winter Capability Period contribute to differences in capacity prices throughout the year
- The WSR for each capacity region is calculated as the average of the winter-to-summer ratio calculated for each 12-month period (i.e., September through the following August) encompassed by the historic data set used by the Net EAS revenues model
 - For the 2021-2022 CY, that period is September 1, 2017 August 31, 2020
 - For each 12-month period, the applicable winter-to-summer ratio is calculated as:
 - (i) the average total capacity available to be offered in the ICAP Spot Market Auctions for the six winter months included in the 12-month period (i.e., November through the following April); divided by
 - (ii) the average total capacity available to be offered in the ICAP Spot Market Auctions for the six summer months included in such 12-month period (i.e., September and October and May through August of the following year)
- The following two slides provide an overview of the WSR values used in determining the proposed 2021-2022 CYICAP Demand Curves
 - Additional details are provided in the WSR workbook that is posted with the meeting material



2020-2021 WSR Values

Three-year WSR	2021-2022 CY DCR	2020-2021 CY Annual Update
NYCA	1.038	1.040
GHIJ	1.059	1.058
NYC	1.076	1.078
LI	1.073	1.076

One-year WSR	2019- 2020 (Year 3)	2018- 2019 (Year 2)	2017- 2018 (Year 1)	2016-2017 Rolled Off
NYCA	1.027	1.046	1.040	1.034
GHIJ	1.060	1.059	1.059	1.055
NYC	1.074	1.080	1.075	1.079
LI	1.076	1.069	1.074	1.084



Adjustments for Qualifying Generators

- The annual update process requires adjustments for certain qualifying resource entry and exit circumstances
- Entry adjustments for Year 3 WSR:
 - Cricket Valley CCs 1, 2 & 3
- Exit Adjustments for Year 3 WSR:
 - Albany LFGE
 - Auburn State St.
 - Cayuga 1
 - Hudson Ave GT 3
 - Indian Point 2
 - Kintigh
 - Monroe Livingston
 - Steuben County LF



Gross CONE Escalation



Gross CONE Escalation Factor for Proposed 2021-2022 CY ICAP Demand Curves

- Utilize a composite escalation factor similar to the annual updates
 - Materials, Labor, Storage Battery and Turbine costs
 - Source: Bureau of Labor Statistics
 - General/non-EPC cost index
 - Source: Bureau of Economic Analysis
- For the first year ICAP Demand Curves, use most recently available data published as of the date of the NYISO Staff Final DCR Recommendations to escalate the values determined during the DCR to 2021 dollars
 - This is different than the escalation methodology used in the annual updates
 - For annual updates, the calculation will use the most recently available data published as of October 1 of the year prior to when the updated ICAP Demand Curves become effective to measure the growth rate from the baseline values



Martial Cost Index

Materials Cost Index

Source: BLS Producer Price Index - Commodities

Seasonal: Not Seasonally Adjusted

Series Id: WPUID612

Group: (ID6) Intermediate demand by commodity type **Item:** (12) Materials and components for construction

Base Date: 198200

Years: 2007 to 2020

Access: http://data.bls.gov/cgi-bin/dsrv?wp

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2010	202.3	203.5	204.6	206.1	207.4	206.6	206.3	206.2	205.9	205.9	206.3	207.0
2011	208.3	209.5	210.9	212.1	212.8	213.7	214.7	214.6	214.5	214.4	214.2	214.2
2012	215.3	216.9	217.4	218.3	219.1	219.2	218.5	218.7	219.2	219.1	219.5	219.9
2013	221.2	222.2	222.7	223.4	222.9	222.6	222.4	223.0	222.9	222.9	223.0	223.1
2014	224.8	225.8	226.6	226.9	227.4	227.4	227.7	228.2	228.5	228.6	228.5	228.4
2015	229.0	229.1	229.1	229.4	229.1	229.0	228.8	228.0	227.5	227.7	227.6	227.2
2016	227.5	227.5	227.8	228.3	228.7	229.1	229.7	230.3	230.0	229.7	229.7	230.1
2017	231.5	232.5	233.2	234.4	234.6	234.8	234.7	235.6	236.0	237.0	237.5	237.7
2018	239.7	241.2	244.3	245.4	248.1	249.0	249.4	249.2	249.6	249.6	249.1	249.7
2019	250.7	251.5	251.2	251.9	251.7	251.2	252.3	251.3	251.1	250.8	250.8	250.8
2020	252.1	252.8	254.3	253.1	253.0	253.9	255.1					



Construction Labor Cost Index

Construction La	abor Cost Index	Year	Annual
		2010	78,635
Source:	BLS Quarterly Census of Employment and Wages	2011	79,665
Series Id:	ENU360005052371	2012	87,406
State:	New York	2013	88,850
Area:	New York Statewide	2014	92,531
Industry:	NAICS 2371 Utility system construction	2015	97.529
Owner:	Private	2016	102,788
Size	All establishment sizes	2017	101,108
Type	Average Annual Pay	2018	105,039
Years:	2007 to 2019	2019	107,893
Access:	http://data.bls.gov/cgi-bin/dsrv?en		



Turbine Cost Index

Gas and Steam Turbine Index

Source: BLS Producer Price Index - Commodities

Seasonal: Not Seasonally Adjusted

Group: (11) Machinery and Equipment

Item: (97) Turbines and Turbine Generator Sets

 Series ID:
 WPU1197

 Base Date:
 198706

Years: 2007 to 2020

Access: http://data.bls.gov/cgi-bin/dsrv?wp

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
2010	222.9	221.2	220.2	220.5	221.6	221.5	221.8	222.1	221.9	223.0	223.0	223.8	
2011	225.5	224.9	224.5	225.7	227.7	228.8	225.9	224.2	226.0	223.7	221.7	223.5	
2012	218.9	220.0	222.1	222.3	224.3	225.2	225.4	224.4	222.9	225.1	226.2	225.7	
2013	225.4	225.4	226.3	226.4	227.2	226.6	228.8	227.8	229.1	229.0	232.0	231.7	
2014	230.8	231.2	232.7	232.2	231.7	232.2	231.6	233.6	236.1	237.2	237.5	238.5	
2015	229.7	230.9	234.4	230.9	231.7	227.9	233.5	230.0	232.9	232.8	232.4	233.1	
2016	231.9	232.2	232.5	231.2	231.4	233.2	233.5	232.7	232.5	NA	NA	NA	
2017	NA	224.3	223.9	223.4	223.5	227.7	225.6	225.8	225.8	224.5	217.5	211.6	
2018	210.1	215.1	221.0	221.0	219.4	219.7	219.8	221.4	221.0	224.4	225.9	228.8	1
2019	229.4	231.0	231.1	231.6	232.7	233.3	233.7	234.4	234.8	234.3	234.9	236.3	_
2020	237.8	238.4	238.9	239.0	239.6	241.3	242.0						



Storage Battery Index

Storage Battery Index

Source: BLS Producer Price Index - Commodities

Seasonal: Not Seasonally Adjusted

Group: (11) Machinery and Equipment **Item:** (7901) Storage Batteries

Series ID: WPU117901 Base Date: 198200

Years: 2007 to 2020

Access: http://data.bls.gov/cgi-bin/dsrv?wp

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2010	167.6	168.4	168.6	169.2	169.4	169.4	166.6	167.6	167.7	168.2	168.2	171.7
2011	173.1	173.6	174.6	175.0	175.5	176.8	178.7	179.5	179.3	179.9	178.8	178.2
2012	179.2	179.1	179.3	179.7	183.8	183.4	183.2	183.4	183.6	183.2	183.4	183.0
2013	183.0	184.3	185.4	185.5	184.6	183.7	183.7	183.7	185.4	185.6	185.1	185.1
2014	184.0	184.4	184.1	184.5	184.5	184.6	184.1	184.6	184.9	184.5	184.5	184.6
2015	184.5	184.4	184.5	184.0	184.2	185.1	185.2	185.2	185.1	185.1	185.1	185.0
2016	184.9	182.3	182.6	182.6	182.6	182.9	182.9	182.9	182.9	183.9	183.9	184.2
2017	188.0	188.9	188.9	192.8	192.8	193.2	193.5	194.4	195.0	196.3	198.5	198.5
2018	202.9	203.2	203.5	207.2	208.3	208.5	207.2	207.5	207.8	206.7	206.3	206.3
2019	204.9	205.1	203.5	203.2	203.2	204.7	204.3	204.3	204.3	205.1	204.6	204.6
2020	205.1	205.2	205.2	204.6	204.7	204.2	202.0					



General/Non-EPC Cost Index

Non-EPC Cost Index

Source: Bureau of Economic Analysis: Gross Domestic Product

Seasonal: Seasonally Adjusted

Timing: Quarterly
Table: 1.1.9
Table Location: Line 1

Access: https://apps.bea.gov/iTable/index_nipa.cfm

		Quarter		
Year	1	II	III	IV
2010	95.499	95.943	96.222	96.763
2011	97.283	97.922	98.553	98.703
2012	99.32	99.713	100.225	100.737
2013	101.139	101.431	101.918	102.517
2014	102.937	103.512	103.957	104.123
2015	104.031	104.596	104.926	104.937
2016	104.865	105.592	105.95	106.469
2017	107.01	107.34	107.872	108.598
2018	109.237	110.176	110.614	111.14
2019	111.424	112.141	112.531	112.95
2020	113.415	112.755		



Composite Escalation Factors Used for NYISO Staff's Proposed 2021-2022 CY ICAP Demand Curves

NYCA ICAP Demand Curve

Escalation Factor for Currently Selected Zone, Technology, and Capability Year

Technology: 1x0 GE 7

1x0 GE 7HA.02 15ppm

Capability Year: 2021-2022

		Construction Labor Cost	Materials Cost	Gas and Steam Turbine or Battery Cost	GDP Deflator
Base Year	[A]	101,108	250	228	111.4
Escalation Year	[B]	107,893	253	239	112.8
Growth Rate	[B]/[A]-1	4.14%	1.43%	4.71%	1.19%
Weights (By Technology)	24%	19%	32%	25%
Escalation Fa	24%*4.14%	+ 19%*1.43	% + 32%*4.71% + 3.06%	25%*1.19% =	

G-J, NYC, LI ICAP Demand Curves

Escalation Factor for Currently Selected Zone, Technology, and Capability Year

Technology: 1x0 GE 7HA.02 25ppm

Capability Year: 2021-2022

		Construction Labor Cost	Materials Cost	Gas and Steam Turbine or Battery Cost	GDP Deflator
Base Year	[A]	101,108	250	228	111.4
Escalation Year	[B]	107,893	253	239	112.8
Growth Rate	[B]/[A]-1	4.14%	1.43%	4.71%	1.19%
Weights (By Technology)		27%	23%	26%	24%
Escalation Fac	27%*4.14%	+ 23%*1.43%	% + 26%*4.71% + 2.95%	24%*1.19% =	

Note 1: Values in the table for each index are rounded; calculation uses unrounded values



Net Energy and Ancillary Services Revenue Offset



Net EAS Revenue Offset for Proposed 2021-2022 CY ICAP Demand Curves

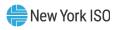
- Collect data from September 1, 2017 August 31, 2020
 - NYISO DAM and RTM LBMPs
 - NYISO DAM and RTM Time-Weighted Ancillary Services prices
 - NYISO Rate Schedule 1 charges
 - Fuel costs
 - Emissions costs
- Run Net EAS model with applicable historic data
 - Year 1: September 1, 2017 August 31, 2018
 - Year 2: September 1, 2018 August 31, 2019
 - Year 3: September 1, 2019 August 31, 2020
 - Detailed results for NYISO Staff's proposed ICAP Demand Curves for the 2021-2022 CY are available in the Appendix of this presentation



Net EAS Escalation

- The three-year average net EAS revenue offset values are escalated using the unweighted change in the general component from the Gross CONE composite escalation factor (GDP Deflator)
 - This represents an update from the previous methodology where the most recent annual change in the general component was applied twice
 - For more information on this change, see the meeting materials for the October 28, 2019 ICAPWG
 - For the 2021-2022 net EAS revenues, the escalation value is 2.34%. The table below shows the determination of the net EAS revenue offset values for NYISO staff's proposed 2021-2022 CY ICAP Demand Curves

Locality	2021-2022 Raw Net EAS Revenues (\$/kW-year)	2021-2022 GDP Deflator	2021-2022 Escalated Net EAS Revenues (\$/kW-year)
NYCA	\$32.16		\$32.92
G-J	\$34.35		\$35.15
NYC	\$32.65	2.34%	\$33.42
LI	\$52.91		\$54.15



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





Appendix

 Detailed Net EAS Revenue Results for NYISO Staff's Proposed 2021-2022 CY ICAP Demand Curves



Net EAS Overview: NYISO Staff's Proposed 2021-2022 CY ICAP Demand Curves

		Annual Average Net EAS	Annual Average Run	Annual Average	Annual Average	
Load Zone		Revenues (\$/kW-year)	Hours	Unit Starts	Hours per Start	
C	Central	\$32.16	660	51	13.0	
G	Hudson Valley (Rockland)	\$34.35	1,355	85	15.9	
J	New York City	\$32.65	1,134	94	12.1	
K	Long Island	\$52.91	2,321	162	14.3	



Fuel Type by Year: NYISO Staff's Proposed 2021-2022 CY ICAP Demand Curves

	September, 2017 - August, 2018										
Run-Time Hours Net Energy Reven					gy Revenues (\$/	kW-year)					
	Load Zone	Gas	Oil	Total	Gas	Oil	Total				
С	Central	1,060	0	1,060	\$33.51	\$0.00	\$33.51				
G	Hudson Valley (Rockland)	2,510	91	2,601	\$28.43	\$4.86	\$33.29				
J	New York City	1,574	78	1,652	\$24.48	\$3.74	\$28.23				
K	Long Island	2,960	106	3,066	\$50.77	\$5.42	\$56.19				

September, 2018 - August, 2019													
]	Run-Time Hours	S	Net Energy Revenues (\$/kW-year)								
	Load Zone	Gas	Oil	Total	Gas	Oil	Total						
C	Central	603	0	603	\$8.35	\$0.00	\$8.35						
G Hudson Valley (Rockland)		1,022	0	1,022	\$11.31	\$0.00	\$11.31						
J New York City		1,013	0	1,013	\$13.27	\$0.00	\$13.27						
K Long Island		2,382	5	2,387	\$30.60	\$0.24	\$30.84						

		Se	ptember, 2019 -	August, 2020									
Run-Time Hours Net Energy Revenues (\$/kW-year)													
	Load Zone	Gas	Oil	Total	Gas	Oil	Total						
С	Central	316	0	316	\$3.12	\$0.00	\$3.12						
G	Hudson Valley (Rockland)	443	0	443	\$3.92	\$0.00	\$3.92						
J	New York City	738	0	738	\$6.98	\$0.00	\$6.98						
K	Long Island	1,509	0	1,509	\$22.96	\$0.00	\$22.96						

New York ISO

Run Hours by Year: NYISO Staff's Proposed 2021-2022 CY ICAP Demand Curves

Run Hours September, 2017 - August, 2018														
Day-	Ahead Commitment		Ene	rgy		Reserve					Total			
Real	Time Dispatch	Energy	Reserve	Buyout	Limited	Energy	Reserve	Buyout	Limited	Energy	Reserve	None	Limited	
C	Central	782	0	197	662	251	11	6,312	181	27	0	331	6	8,760
G	Hudson Valley (Rockland)	2,300	42	356	0	294	38	5,704	0	7	0	19	0	8,760
J	NYC	1,441	0	98	0	210	73	6,910	0	1	0	27	0	8,760
K	Long Island	2,867	18	331	18	197	40	5,263	4	2	0	20	0	8,760

Run Hours September, 2018 - August, 2019														
Day-	Ahead Commitment		Ene	rgy		Reserve					Total			
Real-	Time Dispatch	Energy	Reserve	Buyout	Limited	Energy	Reserve	Buyout	Limited	Energy	Reserve	None	Limited	
С	Central	330	11	176	0	258	35	7,024	0	15	0	911	0	8,760
G	Hudson Valley (Rockland)	861	89	291	0	161	75	7,273	0	0	0	10	0	8,760
J	NYC	851	15	142	0	162	107	7,472	0	0	0	11	0	8,760
K	Long Island	2,183	14	246	0	202	71	6,037	0	2	0	5	0	8,760

	Run Hours September, 2019 - August, 2020													
Day-	Ahead Commitment	Ene	rgy			Rese	erve			Total				
Real	Time Dispatch	Energy	Reserve	Buyout	Limited	Energy	Reserve	Buyout	Limited	Energy	Reserve	None	Limited	
С	Central	158	0	82	0	158	35	8,312	0	0	0	39	0	8,784
G	Hudson Valley (Rockland)	313	14	39	0	119	46	8,006	0	11	0	236	0	8,784
J	NYC	614	0	53	0	121	81	7,663	0	3	0	249	0	8,784
K	Long Island	1,303	0	200	0	204	22	6,876	0	2	0	177	0	8,784

Annual Net EAS Revenue Estimates: NYISO Staff's Proposed 2021-2022 CY ICAP Demand Curves

	Net EAS Revenues September, 2017 - August, 2018 (\$/kW-yr)														
															Total with Adders
Day-	Ahead Commitment	Energy				Reserve					No	ne		Total	(VSS, AS)
Real-Time Dispatch		Energy	Reserve	Buyout	Limited	Energy	Reserve	Buyout	Limited	Energy	Reserve	None	Limited		
С	Central	\$25.61	\$0.00	\$3.04	\$1.87	\$7.24	\$0.03	\$10.82	\$0.26	\$0.66	\$0.00	\$0.00	\$0.00	\$49.53	\$51.57
G	Hudson Valley (Rockland)	\$27.47	\$0.71	\$3.98	\$0.00	\$5.79	\$0.13	\$13.09	\$0.00	\$0.02	\$0.00	\$0.00	\$0.00	\$51.21	\$53.25
J	NYC	\$22.09	\$0.00	\$1.09	\$0.00	\$6.13	\$0.22	\$15.13	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$44.67	\$46.71
K	Long Island	\$48.31	\$0.42	\$4.50	\$0.04	\$7.87	\$0.13	\$11.28	\$0.02	\$0.01	\$0.00	\$0.00	\$0.00	\$72.58	\$74.62

	Net EAS Revenues September, 2018 - August, 2019 (\$/kW-yr)														
													Total with Adders		
Day-	Ahead Commitment	Energy					Rese	erve			No	Total	(VSS, AS)		
Real	l-Time Dispatch	Energy	Reserve	Buyout	Limited	Energy	Reserve	Buyout	Limited	Energy	Reserve	None	Limited		
С	Central	\$3.17	\$0.04	\$2.87	\$0.00	\$4.71	\$0.11	\$11.44	\$0.00	\$0.48	\$0.00	\$0.00	\$0.00	\$22.80	\$24.84
G	Hudson Valley (Rockland)	\$8.23	\$2.63	\$3.25	\$0.00	\$3.08	\$0.28	\$13.75	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$31.21	\$33.25
J	NYC	\$9.56	\$0.10	\$1.79	\$0.00	\$3.71	\$0.42	\$14.56	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$30.14	\$32.18
K	Long Island	\$23.93	\$0.13	\$2.88	\$0.00	\$6.90	\$0.27	\$11.62	\$0.00	\$0.01	\$0.00	\$0.00	\$0.00	\$45.74	\$47.78

	Net EAS Revenues September, 2019 - August, 2020 (\$/kW-yr)														
														Total with Adders	
Day-	Ahead Commitment		Ene	Reserve					No	Total	(VSS, AS)				
Real	-Time Dispatch	Energy	Reserve	Buyout	Limited	Energy	Reserve	Buyout	Limited	Energy	Reserve	None	Limited		
С	Central	\$0.83	\$0.00	\$0.72	\$0.00	\$2.28	\$0.11	\$14.08	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$18.03	\$20.07
G	Hudson Valley (Rockland)	\$2.19	\$0.07	\$0.21	\$0.00	\$1.71	\$0.10	\$10.20	\$0.00	\$0.02	\$0.00	\$0.00	\$0.00	\$14.50	\$16.54
J	NYC	\$4.75	\$0.00	\$0.40	\$0.00	\$2.23	\$0.22	\$9.43	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$17.03	\$19.07
K	Long Island	\$17.41	\$0.00	\$2.54	\$0.00	\$5.54	\$0.04	\$8.76	\$0.00	\$0.01	\$0.00	\$0.00	\$0.00	\$34.29	\$36.33