

Annual Update for 2018-2019 ICAP Demand Curves

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Agenda

- Background
- Process Overview
- 2018-2019 Net Energy and Ancillary Services Revenue Offset values
- 2018-2019 ICAP Demand Curves

Background

Annual Updates

- 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 each reset period

Overview of Process

Annual Update Process

- **3 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 (EAS) revenue offset**

Annual Update Process (Continued)

- **2018-2019 ICAP Demand Curves will use data from September 1, 2014 – August 31, 2017 for updating the WSR and net EAS revenue offset**
 - In effect, the change from 2017-2018 will be removing the September 1, 2013 – August 31, 2014 period, and replacing it with relevant data from September 1, 2016 – August 31, 2017

Annual Update Process Timeline

- **August – Updated WSR values available**
 - Reviewed at the 8/22/2017 ICAPWG meeting
- **October – Updated Gross CONE values available**
 - Reviewed at the 10/24/2017 ICAPWG meeting
- **November – Updated net EAS revenue offset values and ICAP Demand Curve reference point values available**
 - See the following slides

2018-2019 Net EAS Revenue Offset Values

Process

- **Collect data from September 1, 2016 – August 31, 2017**
 - NYISO LBMPs, Ancillary Services prices, and Rate Schedule 1 (RS1) charges
 - Fuel costs
 - Emissions costs
- **Run Net EAS model with new data**
 - Model runs for three-year historic period from September 1, 2014 – August 31, 2017
 - Detailed results available in the Appendix of this presentation

2018-2019 Raw Net EAS Values

ICAP Demand Curve	2017-2018 Net EAS Revenues (\$/kW-year)	2018-2019 Raw Net EAS Revenues (\$/kW-year)
NYCA	\$34.84	\$28.13
G-J	\$39.42	\$28.56
NYC	\$53.94	\$34.79
LI	\$101.69	\$71.30

Net EAS Escalation

- Net EAS revenues are escalated using the unweighted annual change in the general component (GDP Deflator) from the Gross CONE Composite Escalation Factor
 - For the 2018-2019 curves, value is 1.60%
 - Applied twice to move from 2016 to 2018

2018-2019 Net EAS Revenue Values

ICAP Demand Curve	2017-2018 Net EAS Revenues (\$/kW-year)	2018-2019 Raw Net EAS Revenues (\$/kW-year)	2018-2019 Escalated Net EAS Revenues (\$/kW-year)
NYCA	\$34.84	\$28.13	\$29.04
G-J	\$39.42	\$28.56	\$29.48
NYC	\$53.94	\$34.79	\$35.91
LI	\$101.69	\$71.30	\$73.60

2018-2019 ICAP Demand Curves

2018-2019 WSR Values

	2016/2017	2015/2016	2014/2015	2013/2014
NYCA 1 Yr WSR	1.034	1.042	1.038	1.032
G-J 1 Yr WSR	1.055	1.062	1.046	
NYC 1 Yr WSR	1.079	1.089	1.078	1.064
LI 1 Yr WSR	1.084	1.076	1.078	1.071

	2017 WSR	2018 WSR
NYCA WSR	1.037	1.038
G-J WSR	1.054	1.054
NYC WSR	1.077	1.082
LI WSR	1.075	1.079

2018-2019 Gross CONE Values

ICAP Demand Curve	2017-2018 Gross CONE (\$/kW-year)	2018-2019 Gross CONE (\$/kW-year)
NYCA	\$126.79	\$129.23
G-J	\$174.79	\$178.15
NYC	\$209.11	\$213.13
LI	\$194.96	\$198.71

2018-2019 Net EAS Revenue Values

ICAP Demand Curve	2017-2018 Net EAS Revenues (\$/kW-year)	2018-2019 Escalated Net EAS Revenues (\$/kW-year)
NYCA	\$34.84	\$29.04
G-J	\$39.42	\$29.48
NYC	\$53.94	\$35.91
LI	\$101.69	\$73.60

2018-2019 ICAP Demand Curve Reference Point Collars

ICAP Demand Curve	2017-2018 ICAP Demand Curve Reference Point (\$/kW-month)	2018-2019 Lower Collar Value (\$/kW-month) minimum (-8%)	2018-2019 Upper Collar Value (\$/kW-month) maximum (+12%)
NYCA	\$9.08	\$8.35	\$10.17
G-J	\$14.84	\$13.66	\$16.63
NYC	\$18.61	\$17.12	\$20.84
LI	\$12.72	\$11.70	\$14.25

2018-2019 ICAP Demand Curve Reference Points

ICAP Demand Curve	2017-2018 ICAP Demand Curve Reference Point (\$/kW-month)	2018-2019 Raw ICAP Demand Curve Reference Point (\$/kW-month)	2018-2019 Final ICAP Demand Curve Reference Point (\$/kW-month)
NYCA	\$9.08	\$10.04	\$10.04
G-J	\$14.84	\$16.42	\$16.42
NYC	\$18.61	\$21.90	\$20.84
LI	\$12.72	\$17.89	\$14.25

Current Year (2018-2019)					
	Source	F - Capital	G - Hudson Valley (Dutchess)	J - New York City	K - Long Island
Gross Cost of New Entry (\$/kW-Year)	[1]	\$129.23	\$178.15	\$213.13	\$198.71
Net EAS Revenue (\$/kW-Year)	[2]	\$29.04	\$29.48	\$35.91	\$73.60
Annual ICAP Reference Value (\$/kW-Year)	[3] = [1] - [2]	\$100.19	\$148.67	\$177.22	\$125.11
ICAP DMNC (MW)	[4]	217.0	218.0	217.6	219.1
Total Annual Reference Value	[5] = [3] * [4]	\$21,741,061	\$32,404,052	\$38,557,410	\$27,414,763
Level of Excess (%)	[6]	100.6%	101.5%	102.3%	103.9%
Ratio of Summer to Winter DMNCs	[7]	1.038	1.054	1.082	1.079
Summer DMNC (MW)	[8]	224.6	226.8	226.9	224.9
Winter DMNC (MW)	[9]	230.3	230.3	228.7	230.3
Assumed Capacity Prices at Tariff Prescribed Level of Excess Conditions					
Summer (\$/kW-Month)	[10]	\$9.58	\$14.79	\$19.11	\$14.01
Winter (\$/kW-Month)	[11]	\$6.40	\$8.88	\$9.14	\$6.16
Monthly Revenue (Summer)	[12] = [10]*[8]	\$2,150,384	\$3,355,095	\$4,336,551	\$3,151,024
Monthly Revenue (Winter)	[13] = [11]*[9]	\$1,473,111	\$2,045,583	\$2,089,686	\$1,418,098
Seasonal Revenue (Summer)	[14] = 6 * [12]	\$12,902,302	\$20,130,569	\$26,019,305	\$18,906,144
Seasonal Revenue (Winter)	[15] = 6 * [13]	\$8,838,668	\$12,273,495	\$12,538,119	\$8,508,588
Total Annual Reference Value	[16] = [14]+[15]	\$21,740,970	\$32,404,064	\$38,557,424	\$27,414,732
Raw ICAP Demand Curve Parameters					
Raw ICAP Monthly Reference Point Price (\$/kW-Month)		\$10.04	\$16.42	\$21.90	\$17.89
ICAP Max Clearing Price (\$/kW-Month)		\$16.15	\$22.27	\$26.64	\$24.84
Demand Curve Length		112%	115%	118%	118%
Final ICAP Demand Curve Parameters					
ICAP Monthly Reference Point Price (\$/kW-Month)		\$10.04	\$16.42	\$20.84	\$14.25
ICAP Max Clearing Price (\$/kW-Month)		\$16.15	\$22.27	\$26.64	\$24.84
Demand Curve Length		112%	115%	118%	118%

Next Steps

- Data and results posted on the NYISO website
 - Available on the ICAP Market Data site at http://www.nyiso.com/public/markets_operations/market_data/icap/index.jsp under Reference Documents -> Demand Curve Reset Annual Updates -> 2018

Feedback/Questions?

- Email: ztsmith@nyiso.com

The Mission of the New York Independent System Operator, in collaboration with its stakeholders, is to serve the public interest and provide benefits 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



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Appendix

- Detailed Net EAS Revenue Results

Final Net EAS Revenues Yearly Summary

		Annual Average Net EAS Revenues (\$/kW-year)	Annual Average Run Hours
Load Zone		Siemens SGT6-5000F5	Siemens SGT6-5000F5
F	Capital	\$28.13	777
G	Hudson Valley (Dutchess)	\$28.56	797
J	New York City	\$34.79	2,390
K	Long Island	\$71.30	3,363

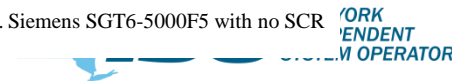
		Annual Average Unit Starts	Annual Average Hours per Start
Load Zone		Siemens SGT6-5000F5	Siemens SGT6-5000F5
F	Capital	118	6.6
G	Hudson Valley (Dutchess)	121	6.6
J	New York City	180	13.3
K	Long Island	182	18.5

Notes:

[1] Current modeling period is September 2014-August 2017. Zone F was modeled without SCR and only able to run on gas. All other zones were modeled with SCR and dual fuel capabilities.

[2] Assumes \$1.43/kW-year VSS Revenues for all units, based on Settlement data provided by NYISO.

[3] Run-time limits were applied based on New Source Performance Standards. Siemens SGT6-5000F5 was limited to capacity factor of 38.4%. Siemens SGT6-5000F5 with no SCR (Zone F Only) was limited to a capacity factor of 28.5%.



Fuel Type by Year

September, 2014 - August, 2015							
Load Zone		Run-Time Hours			Net Energy Revenues (\$/kW-year)		
		Gas	Oil	Total	Gas	Oil	Total
F	Capital	872	0	872	\$17.83	\$0.00	\$17.83
G	Hudson Valley (Dutchess)	863	21	884	\$16.45	\$1.13	\$17.58
J	New York City	2,242	39	2,281	\$24.57	\$1.71	\$26.28
K	Long Island	3,334	21	3,355	\$67.28	\$0.86	\$68.14

September, 2015 - August, 2016							
Load Zone		Run-Time Hours			Net Energy Revenues (\$/kW-year)		
		Gas	Oil	Total	Gas	Oil	Total
F	Capital	740	0	740	\$12.54	\$0.00	\$12.54
G	Hudson Valley (Dutchess)	845	0	845	\$14.41	\$0.00	\$14.41
J	New York City	2,633	0	2,633	\$29.46	\$0.00	\$29.46
K	Long Island	3,373	0	3,373	\$65.02	\$0.00	\$65.02

September, 2016 - August, 2017							
Load Zone		Run-Time Hours			Net Energy Revenues (\$/kW-year)		
		Gas	Oil	Total	Gas	Oil	Total
F	Capital	720	0	720	\$14.18	\$0.00	\$14.18
G	Hudson Valley (Dutchess)	663	0	663	\$11.85	\$0.00	\$11.85
J	New York City	2,256	0	2,256	\$23.08	\$0.00	\$23.08
K	Long Island	3,362	0	3,362	\$45.38	\$0.00	\$45.38

Run Hours by Year

Run Hours September, 2014 - August, 2015

Day-Ahead Commitment		Energy				Reserve					None			Total
Real-Time Dispatch		Energy	Reserve	Buyout	Limited	Energy	Reserve	Buyout	Limited	Energy	Reserve	None	Limited	
F	Capital	584	0	252	0	0	0	11	0	288	0	7,625	0	8,760
G	Hudson Valley (Dutchess)	625	0	371	0	21	0	304	0	238	0	7,201	0	8,760
J	NYC	2,122	0	504	0	22	0	305	0	137	0	5,670	0	8,760
K	Long Island	3,228	0	722	623	8	0	249	4	119	0	3,767	40	8,760

Run Hours September, 2015 - August, 2016

Day-Ahead Commitment		Energy				Reserve					None			Total
Real-Time Dispatch		Energy	Reserve	Buyout	Limited	Energy	Reserve	Buyout	Limited	Energy	Reserve	None	Limited	
F	Capital	340	0	175	0	343	9	5,785	0	57	0	2,075	0	8,784
G	Hudson Valley (Dutchess)	488	0	137	0	315	5	5,840	0	42	0	1,957	0	8,784
J	NYC	2,320	0	354	0	229	0	2,792	0	84	0	3,005	0	8,784
K	Long Island	3,179	0	572	766	62	0	770	25	132	0	3,236	42	8,784

Run Hours September, 2016 - August, 2017

Day-Ahead Commitment		Energy				Reserve					None			Total
Real-Time Dispatch		Energy	Reserve	Buyout	Limited	Energy	Reserve	Buyout	Limited	Energy	Reserve	None	Limited	
F	Capital	349	30	169	0	274	16	5,721	0	97	0	2,104	0	8,760
G	Hudson Valley (Dutchess)	361	23	151	0	273	5	5,772	0	29	0	2,146	0	8,760
J	NYC	2,020	0	338	0	84	1	1,146	0	152	0	5,019	0	8,760
K	Long Island	3,165	0	554	196	41	1	183	10	156	0	4,430	24	8,760

Net EAS Revenues by Year

Net EAS Revenues September, 2014 - August, 2015														
Day-Ahead Commitment		Energy				Reserve					None			Total
Real-Time Dispatch		Energy	Reserve	Buyout	Limited	Energy	Reserve	Buyout	Limited	Energy	Reserve	None	Limited	
F	Capital	\$8.13	\$0.00	\$6.23	\$0.00	\$0.00	\$0.00	\$0.01	\$0.00	\$9.70	\$0.00	\$0.00	\$0.00	\$24.06
G	Hudson Valley (Dutchess)	\$8.13	\$0.00	\$8.77	\$0.00	\$1.13	\$0.00	\$0.38	\$0.00	\$8.32	\$0.00	\$0.00	\$0.00	\$26.73
J	NYC	\$22.30	\$0.00	\$8.86	\$0.00	\$1.03	\$0.00	\$0.35	\$0.00	\$2.95	\$0.00	\$0.00	\$0.00	\$35.49
K	Long Island	\$61.03	\$0.00	\$13.84	\$0.00	\$0.51	\$0.00	\$0.26	\$0.00	\$6.60	\$0.00	\$0.00	\$0.00	\$82.25

Net EAS Revenues September, 2015 - August, 2016														
Day-Ahead Commitment		Energy				Reserve					None			Total
Real-Time Dispatch		Energy	Reserve	Buyout	Limited	Energy	Reserve	Buyout	Limited	Energy	Reserve	None	Limited	
F	Capital	\$4.03	\$0.00	\$2.39	\$0.00	\$7.47	\$0.04	\$14.85	\$0.00	\$1.04	\$0.00	\$0.00	\$0.00	\$29.81
G	Hudson Valley (Dutchess)	\$6.47	\$0.00	\$2.42	\$0.00	\$7.36	\$0.02	\$14.63	\$0.00	\$0.57	\$0.00	\$0.00	\$0.00	\$31.48
J	NYC	\$22.95	\$0.00	\$3.48	\$0.00	\$5.17	\$0.00	\$3.85	\$0.00	\$1.34	\$0.00	\$0.00	\$0.00	\$36.78
K	Long Island	\$58.72	\$0.00	\$9.60	\$0.33	\$1.24	\$0.00	\$0.73	\$0.04	\$5.06	\$0.00	\$0.00	\$0.00	\$75.73

Net EAS Revenues September, 2016 - August, 2017														
Day-Ahead Commitment		Energy				Reserve					None			Total
Real-Time Dispatch		Energy	Reserve	Buyout	Limited	Energy	Reserve	Buyout	Limited	Energy	Reserve	None	Limited	
F	Capital	\$3.97	\$0.55	\$2.16	\$0.00	\$6.93	\$0.09	\$9.25	\$0.00	\$3.28	\$0.00	\$0.00	\$0.00	\$26.23
G	Hudson Valley (Dutchess)	\$3.95	\$0.26	\$1.72	\$0.00	\$6.94	\$0.02	\$9.33	\$0.00	\$0.95	\$0.00	\$0.00	\$0.00	\$23.18
J	NYC	\$18.54	\$0.00	\$2.85	\$0.00	\$1.12	\$0.00	\$1.87	\$0.00	\$3.41	\$0.00	\$0.00	\$0.00	\$27.80
K	Long Island	\$40.65	\$0.00	\$5.79	\$0.05	\$0.43	\$0.00	\$0.39	\$0.02	\$4.30	\$0.00	\$0.00	\$0.00	\$51.63

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