

NYSRC Fall Forecast Update

2019 Weather Normalization and 2020

IRM Forecast

Arthur Maniaci
Demand Forecasting & Analysis

NYSRC – Installed Capacity Subcommittee
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DRAFT – FOR DISCUSSION PURPOSES ONLY

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Overview

1. Discussion at LFTF Meeting on 9/27/2019
2. Summary of 2019 Weather Normalized Peaks
3. 2020 IRM Study Forecast
4. Supporting Tables

1. Discussion at LFTF Meeting on 9/27/2019

Discussion Points at LFTF Meeting

1. NYCA Peak Day was on Saturday, 7/20, HB 16. Zone K peaked on Sunday. Zones J and G-to-J peaked on Wednesday, 7/17
2. Weather adjustment accounted for demand response, adjusted for normal versus actual weather, and accounted for the difference between a weekend peak and a weekday
3. Three issues required additional review:
 - LIPA peaks
 - National Grid peak
 - Impact of weekend peak on the ratio of Zone J load to ConEd TD load

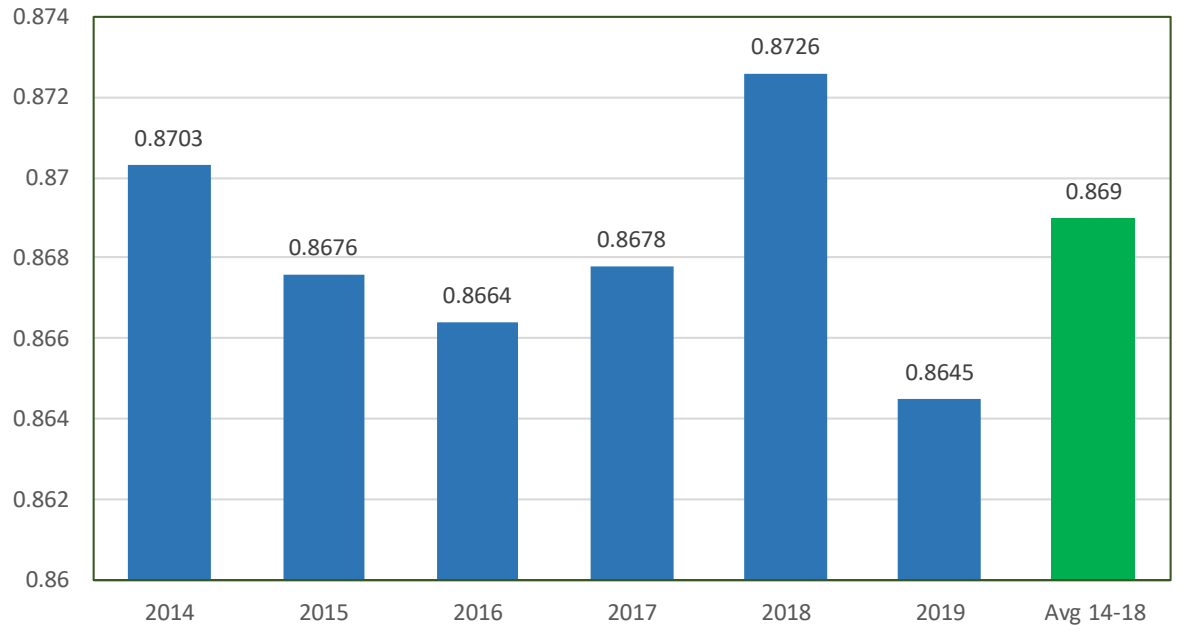
2. Summary of Weather Adjustments to 2019 Peaks

Actual and 20-Year Normal Peak-Producing CTHI Statistics – 2000-2019

Peak - Producing CTHI

Statistic	CE	CH	LI	N Grid	NYPA	NYSEG	OR	RGE	NYCA
Max	90.73	89.63	89.71	86.42	87.72	87.44	89.60	87.75	88.06
20 Yr Avg	85.52	85.52	84.74	82.36	82.07	82.53	84.71	83.07	83.79
Min	80.76	81.18	79.12	77.35	77.13	77.94	81.17	77.80	78.87
StDev	2.56	2.42	2.91	2.46	3.16	2.52	2.53	2.55	2.52
50th	85.52	85.52	84.74	82.36	82.07	82.53	84.71	83.07	83.79
67th	86.63	86.57	86.00	83.42	83.44	83.62	85.80	84.17	84.88
90th	88.80	88.62	88.47	85.51	86.12	85.76	87.95	86.34	87.02
2019	86.69	86.72	86.74	83.22	85.87	83.84	86.32	84.60	84.96
Percentile	68%	69%	75%	64%	89%	70%	74%	73%	68%
z (2019)	0.46	0.50	0.69	0.35	1.20	0.52	0.64	0.60	0.46
CTHI Delta	1.17	1.20	2.00	0.86	3.80	1.31	1.61	1.53	1.17

Percent of Zone J Peak Day Load in Con-Ed TD
2014 to 2019



2019 Coincident Peak Weather Normalization by Transmission District

(1)	(2)	(3a)	(3b)	(4)	(5)	(6) = (3b)+(4)+(5)	(7)	(8) = (7)-(6)	(9) = (8)/(7)
Transmission District	2019 Actual MW, 7/20/2019 HB 16	Demand Response Estimate MW	2019 Actual MW, with DR Estimate	Estimated Muni Self-Gen	Total Weather Adjustment MW	2019 Weather Normalized MW	2019 ICAP Forecast, Without Loss Adjustment	TO Forecast, Over /Under MW	TO Forecast Error, Percent Over /Under
Con Edison	11,623	130	11,753	0	1,318	13,071	13,153	82	0.6%
Gen Hudson	1,125	0	1,125	0	1	1,126	1,093	-33	-3.0%
LIPA	5,316	22	5,338	7	-168	5,177	5,214	37	0.7%
Nat. Grid	6,497	0	6,497	53	317	6,867	6,805	-62	-0.9%
NYPA	362	0	362	0	6	368	352	-16	-4.5%
NYSEG	3,024	0	3,024	0	110	3,134	3,170	36	1.1%
O&R	1,004	0	1,004	0	41	1,045	1,102	57	5.2%
RG&E	1,452	0	1,452	0	59	1,511	1,491	-20	-1.3%
Grand Total	30,403	152	30,555	60	1,684	32,299	32,380	81	0.3%

2019 Locality Peak Weather Normalization

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Locality	Date and Time (Hr Beginning)	2019 Actual MW	Demand Response Estimate MW	Estimated Muni Self-Gen	Locality Weather Adjustment MW	2019 Adjusted MW	2019 ICAP Market Forecast MW	Over/Under MW	Percent Over/Under
Zone J - NYC	7/17/2019 HB 17	10,769	10	0	690	11,469	11,607	138	1.2%
Zone K - LI	7/21/2019 HB 17	5,446	22	7	-164	5,311	5,240	-71	-1.3%
Zone GHIJ	7/17/2019 HB 17	14,132	10	0	1,609	15,751	15,846	95	0.6%

G-to-J Locality Peak Statistics - 2010 to 2019

Period	Zone G	Zone H+I	Zone J	G-to-J NCP
3 Yr Avg	2,059	1,925	10,843	14,827
5 Yr Avg	2,061	1,953	10,842	14,856
10 Yr Avg	2,190	2,045	11,137	15,372

Period	Zone G	Zone H+I	Zone J	G-to-J NCP
3 Yr Avg	(74)	(8)	414	333
5 Yr Avg	(47)	9	293	255
10 Yr Avg	(22)	5	149	132

Period	Zone G	Zone H+I	Zone J	G-to-J NCP
3 Yr Avg	0.9653	0.9960	1.0397	1.0229
5 Yr Avg	0.9779	1.0044	1.0277	1.0174
10 Yr Avg	0.9902	1.0023	1.0135	1.0087
			2018	1.0074

Zone J Locality Peak Statistics - 2010 to 2019

Period	Zone G	Zone H+I	Zone J	G-to-J NCP
3 Yr Avg	2,059	1,925	10,843	14,827
5 Yr Avg	2,061	1,953	10,842	14,856
10 Yr Avg	2,162	2,025	11,143	15,330

Period	Zone G	Zone H+I	Zone J	G-to-J NCP
3 Yr Avg	(74)	(8)	414	333
5 Yr Avg	(47)	9	293	255
10 Yr Avg	(50)	(15)	155	90

Period
3 Yr Avg
5 Yr Avg
10 Yr Avg

Zone J
1.0397
1.0277
1.0141

2018	1.0097
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G-to-J Locality Peak Weather Normalization Details

(1) 2019 Actual Coincident Peak in G to J Locality

7/20/2019 HB 16

(1)	(2)	(3)	(4)	(5)	(6)
Transmission District	G	H	I	J	G-to-J Total
Con Edison		254.5	1,268.1	10,100.5	11,623.1
Cen Hudson	1,121.1				1,121.1
LIPA					
Nat. Grid					
NYPA					
NYSEG	24.1	359.7			383.8
O&R	1,004.4				1,004.4
RG&E					
Grand Total	2,149.6	614.2	1,268.1	10,100.5	14,132.4

(2) 2019 Weather-Adjusted Coincident Peak in G to J Locality

(1)	(2)	(3)	(4)	(5)	(6)
Transmission District	G	H	I	J	G-to-J Total
Con Edison		286.3	1,426.0	11,358.7	13,071.0
Cen Hudson	1,122.0				1,122.0
LIPA					
Nat. Grid					
NYPA					
NYSEG	25.0	372.8			397.8
O&R	1,045.0				1,045.0
RG&E					
Grand Total	2,192	659	1,426	11,359	15,635.8

G-to-J Locality Peak Weather Normalization Details

(3) 2019 Weather-Adjusted Locality Peak for G-to-J

(1)	(2)	(3)	(4)	(5)	(6)
Transmission District	G	H	I	J	G-to-J Total
Con Edison		287.8	1,436.6	11,442.8	13,167.2
Cen Hudson	1,130.3				1,130.3
LIPA					
Nat. Grid					
NYPA					
NYSEG	25.2	375.5			400.7
O&R	1,052.7				1,052.7
RG&E					
Grand Total	2,208	663	1,437	11,443	15,750.9
NCP/CP ratio	1.0074	1.0074	1.0074	1.0074	

(4) 2020 Peak Forecast for G-to-J Locality

(1)	(8)	(9)	(10)	(11)	(12)	
Transmission District	G	H	I	J	G-to-J Total	RLGF
Con Edison		288.9	1,442.1	11,486.3	13,217.3	1.0038
Cen Hudson	1,124.6				1,124.6	0.9950
LIPA						
Nat. Grid						
NYPA						
NYSEG	25.1	374.3			399.4	0.9968
O&R	1,034.0				1,034.0	0.9822
RG&E						
Grand Total	2,184	663	1,442	11,486	15,775.3	1.00155

3. 2020 IRM Study Forecast

2020 IRM Coincident Peak Forecast by Transmission District for NYSRC

(1)	(2)	(3)	(4)	(5)	(6)			(7)	(8)=(6)*(7)	(9)	(10)=(8)+(9)
Transmission District	2019 Actual MW	Demand Response Estimate MW	2019 Estimated Muni Self-Gen	Total Weather Adjustment MW	2019 Weather Normalized MW	Loss Reallocation MW	2019 WN MW, Adj for Losses	Regional Load Growth Factors	2020 Forecast, Before Adjustments	BTM:NG and Other Adjustments to Load	2020 IRM Final Forecast
Con Edison	11,623	130	0	1,318	13,071	0	13,071	1.0038	13,121		13,121.0
Cen Hudson	1,125	0	0	1	1,126	0	1,126	0.9950	1,120		1,120.0
LIPA	5,316	22	7	-168	5,177	0	5,177	0.9748	5,047	39.0	5,086.0
NGrid	6,497	0	53	317	6,867	0	6,867	0.9920	6,812		6,812.0
NYPA	362	0	0	6	368	0	368	1.0000	368		368.0
NYSEG	3,024	0	0	110	3,134	0	3,134	0.9968	3,124	10.2	3,134.2
O&R	1,004	0	0	41	1,045	0	1,045	0.9822	1,026		1,026.0
RG&E	1,452	0	0	59	1,511	0	1,511	0.9940	1,502		1,502.0
Total	30,403	152	60	1,684	32,299	0	32,299	0.9945	32,120	49.2	32,169.2
									2020 Forecast from 2019 Gold Book	32,202	
									Change from 2019 Gold Book	-82	

2020 IRM Locality Peak Forecast by Transmission District for NYSRC

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)=(8)+(11)
Locality	2019 Actual MW	Demand Response Estimate MW	2019 Estimated Muni Self-Gen	Locality Weather Adjustment MW	2019 Weather Normalized MW	Regional Load Growth Factors	2020 Forecast, Before Adjustments	2020 Forecast from 2019 Gold Book	Change from Gold Book Forecast	BTM:NG and Other Adjustments to Load	2020 IRM Final Forecast
Zone J - NYC	10,769	10	0	690	11,469	1.0038	11,512	11,651	-139		11,512.0
Zone K - LI	5,446	22	7	-164	5,311	0.9748	5,177	5,134	43	39.0	5,216.0
Zone GHIJ	14,132	10	0	1,609	15,752	1.0015	15,776	15,911	-135		15,775.9

4. Supporting Tables

2019 Actual Coincident Peak Load

	A	B	C	D	E	F	G	H	I	J	K	Total
Con Edison								254.5	1,268.1	10,100.4		11,623.1
Cen Hudson					4.0		1,121.1					1,125.1
LIPA											5,316.0	5,316.0
Nat. Grid	1,753.7	408.0	1,281.6	89.4	875.9	2,088.7						6,497.3
NYPA				362.1								362.1
NYSEG	557.8		1,393.4	104.5	432.2	152.3	24.1	359.7				3,024.0
O&R							1,004.4					1,004.4
RG&E		1,451.6										1,451.6
Total	2,311.5	1,859.6	2,675.0	556.0	1,312.1	2,241.0	2,149.6	614.2	1,268.1	10,100.4	5,316.0	30,403.6
Note: Shft Zone G losses to Zone J.												

Zonal Energy Fractions for each TD

	A	B	C	D	E	F	G	H	I	J	K	Total
Con Edison								0.0219	0.1091	0.8690		1.0000
Cen Hudson					0.0036		0.9964					1.0000
LIPA											1.0000	1.0000
Nat. Grid	0.2699	0.0628	0.1973	0.0138	0.1348	0.3215						1.0000
NYPA				1.0000								1.0000
NYSEG	0.1845		0.4608	0.0346	0.1429	0.0504	0.0080	0.1189				1.0000
O&R							1.0000					1.0000
RG&E		1.0000										1.0000

4. Demand Response & Municipal Generation

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Row Labels	A	B	C	D	E	F	G	H	I	J	K	Grand Total
Con Edison								2.8	14.2	113.0		130.0
Cen Hudson					0.0		0.0					0.0
LIPA											29.0	29.0
Nat. Grid	53.0	0.0	0.0	0.0	0.0	0.0						53.0
NYPA				0.0								0.0
NYSEG	0.0		0.0	0.0	0.0	0.0	0.0	0.0				0.0
O&R							0.0					0.0
RG&E		0.0										0.0
Grand Total	53.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	14.2	113.0	29.0	212.0

5. 2019 Weather Adjustment on Coincident Peak Day

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Row Labels	A	B	C	D	E	F	G	H	I	J	K	Grand Total
Con Edison								28.9	143.8	1,145.3		1,318.0
Cen Hudson					0.0		1.0					1.0
LIPA											-168.0	-168.0
Nat. Grid	85.6	19.9	62.5	4.4	42.7	101.9						317.0
NYPA				6.0								6.0
NYSEG	20.3		50.7	3.8	15.7	5.5	0.9	13.1				110.0
O&R							41.0					41.0
RG&E		59.0										59.0
Grand Total	105.9	78.9	113.2	14.2	58.4	107.4	42.9	42.0	143.8	1,145.3	-168.0	1,684.0



6. 2019 Weather-Adjusted Coincident Peak

	A	B	C	D	E	F	G	H	I	J	K	Total
Con Edison								286.2	1,426.1	11,358.7		13,071.0
Cen Hudson					4.0		1,122.1					1,126.1
LIPA											5,177.0	5,177.0
Nat. Grid	1,892.3	427.9	1,344.1	93.8	918.6	2,190.6						6,867.3
NYPA				368.1								368.1
NYSEG	578.1		1,444.1	108.3	447.9	157.8	25.0	372.8				3,134.0
O&R							1,045.4					1,045.4
RG&E		1,510.6										1,510.6
Total	2,470.4	1,938.5	2,788.2	570.2	1,370.5	2,348.4	2,192.5	659.0	1,426.1	11,358.7	5,177.0	32,299.5

2020 IRM Coincident Peak Forecast by Transmission District and Zone, Before Adjustments

	A	B	C	D	E	F	G	H	I	J	K	NYCA
Con Edison								287.3	1,431.5	11,401.9		13,120.7
Cen Hudson					4.0		1,116.5					1,120.5
LIPA											5,046.5	5,046.5
Nat. Grid	1,877.2	424.5	1,333.3	93.0	911.3	2,173.1						6,812.4
NYPA				368.1								368.1
NYSEG	576.3		1,439.5	108.0	446.5	157.3	24.9	371.6				3,124.1
O&R							1,026.8					1,026.8
RG&E		1,501.5										1,501.5
Total	2,453.5	1,926.0	2,772.8	569.1	1,361.8	2,330.4	2,168.2	658.9	1,431.5	11,401.9	5,046.5	32,120.6

2020 IRM BTM:NG and Other Adjustments to Load

	A	B	C	D	E	F	G	H	I	J	K	NYCA
Con Edison												
Cen Hudson												
LIPA											39.0	39.0
Nat. Grid												
NYPA												
NYSEG			10.2									10.2
O&R												
RG&E												
Total			10.2								39.0	49.2

2020 IRM Final Coincident Peak Forecast by Transmission District and Zone, With BTM:NG Adjustments

	A	B	C	D	E	F	G	H	I	J	K	NYCA
Con Edison								287.3	1,431.5	11,401.9		13,120.7
Cen Hudson					4.0		1,116.5					1,120.5
LIPA											5,085.5	5,085.5
Nat. Grid	1,877.2	424.5	1,333.3	93.0	911.3	2,173.1						6,812.4
NYPA				368.1								368.1
NYSEG	576.3		1,449.7	108.0	446.5	157.3	24.9	371.6				3,134.3
O&R							1,026.8					1,026.8
RG&E		1,501.5										1,501.5
Total	2,453.5	1,926.0	2,783.0	569.1	1,361.8	2,330.4	2,168.2	658.9	1,431.5	11,401.9	5,085.5	32,169.8

2020 IRM Final Non-Coincident Peak Forecast by Transmission District and Zone, With Adjustments

	A	B	C	D	E	F	G	H	I	J	K
Con Edison								290.1	1,445.4	11,512.5	
Cen Hudson					4.2		1,133.2				
LIPA											5,216.0
Nat. Grid	1,983.1	439.1	1,383.2	98.4	950.9	2,235.3					
NYPA				389.5							
NYSEG	608.8		1,503.5	114.3	465.9	161.8	25.3	375.2			
O&R							1,042.2				
RG&E		1,553.2									
Total	2,591.9	1,992.3	2,886.7	602.2	1,421.0	2,397.1	2,200.7	665.3	1,445.4	11,512.5	5,216.0

NCP/CP Ratio	1.0564	1.0344	1.0374	1.0581	1.0435	1.0286	1.0150	1.0097	1.0097	1.0097	1.0336
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Questions?

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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