New York ISO
Independent System Operator

NYSRC Fall Forecast Update –

Preliminary 2022 Weather Normalization

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Demand Forecasting & Analysis

Load Forecasting Task Force

September 16, 2022, Teleconference

Agenda

- **Summary of 2022 Preliminary Weather Normalized Peaks**
- **Weather Normalization Models**
- **Additional IRM Forecast Information**
  - Locality and Zonal Non-Coincident to Coincident Peak Ratios
  - Sub-zonal Load Shares
  - 2022 Zonal Non-Coincident Peak Day Weather
  - Preliminary Regional Load Growth Factors

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Summary of 2022 Preliminary Weather Normalized Peaks

Actual and 20-Year Normal Peak-Producing CTHI Statistics – 2003-2022

NYCA Coincident Peak-Producing CTHI Stats (20 years)									
Statistic	**CE**	**CH**	**LI**	**N Grid**	**NYPA**	**NYSEG**	**OR**	**RGE**	**NYCA**
Max	90.73	89.42	89.21	85.52	85.87	85.91	89.60	86.53	87.74
Average	85.43	85.48	84.77	82.38	82.24	82.53	84.67	82.88	83.80
Min	82.80	81.18	80.18	77.35	77.13	78.22	81.59	77.80	80.38
Std Dev	2.19	2.13	2.38	2.05	2.85	2.03	2.29	2.12	2.06
Percentile									
50th	85.43	**85.48**	**84.77**	**82.38**	**82.24**	**82.53**	84.67	**82.88**	83.80
57th	85.81	85.85	85.19	82.74	82.74	82.88	85.07	83.25	**84.16**
67th	**86.38**	86.40	85.80	83.27	83.47	83.40	**85.66**	83.80	84.69
90th	88.24	88.21	87.82	85.01	85.90	85.12	87.61	85.60	86.44
2022 CP									
CTHI	***84.74***	***85.78***	***85.12***	***82.44***	***82.26***	***82.35***	***83.85***	***82.63***	***83.55***
Percentile	38%	56%	56%	51%	50%	47%	36%	45%	45%
z-score	-0.32	0.14	0.15	0.03	0.01	-0.09	-0.36	-0.12	-0.12
CTHI Delta (wrt 50)	-0.69	0.30	0.35	0.06	0.02	-0.18	-0.82	-0.25	-0.25

Notes:

- Cumulative Temperature & Humidity Index (CTHI) is a three-day weighted average of maximum temperature and humidity
- The NYCA design condition of the 57th percentile is based upon a load-weighted average of the TD design conditions.
- The 2022 NYCA peak occurred on July 20, Hour Beginning 17.

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Weather Normalization Models

Pooled Regression

- Pooled years 2018, 2019 and 2022 data
  - 2021 excluded due to below design condition peak weather
- June through August weekdays
- Regress daily Transmission District Peak MW against Cumulative Temperature and Humidity Index (CTHI) and binary variables as appropriate
- 2022 single year models were developed for comparative purposes, and showed similar results

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Weather Normalization Method

- **Weather Normalization Method Summary**

1. Develop load weather relationship through regression.
2. From the regression equation, evaluate load at peak producing design condition.
3. From the regression equation, evaluate load at CTHI observed on 7/20/2022 (coincident peak day).
4. Calculate delta between the load evaluated at peak producing design condition (step 2) and CTHI observed on 7/20/2022 (step 3).
5. The delta (in step 4) is the weather adjustment. Dividing it by the difference of design CTHI and 2022 peak producing CTHI gives average slope (expected increase in MW per degree CTHI) between design CTHI and 2022 peak producing CTHI.
6. Add the calculated weather adjustment to the actual Coincident Peak MW value to calculate the Weather Normalized Coincident Peak.

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Weather Normalization Method

- **Weather Normalization Method Summary:**

$$\boldsymbol{WN\ CP = CP_{2022} + \underbrace{f(CTHI_{design}) - f(CTHI_{2022\ CP\ date})}_{\text{weather adjustment}}}$$

$Where,$
$WN\ CP =$ weather adjusted coincident peak
$CP_{2022} = load\ during\ NYCA\ coincident\ peak\ hour\ (July\ 20, 2022\ HB\ 17)$
$f = regression\ function$
$f(CTHI_{design}) = load\ evaluated\ at\ CP\ design\ conditon$
$f(CTHI_{2022\ CP\ date}) = load\ evaluated\ at\ CTHI\ obseved\ on\ 2022\ NYCA\ peak\ day$

$\frac{f(CTHI_{design}) - f(CTHI_{2022\ CP\ date})}{CTHI_{design} - CTHI_{2022\ CP\ date}}$ is the averge slope of regression line within $CTHI_{design}\ and\ CTHI_{2022\ CP\ date}$

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Summary of 2022 Preliminary Weather Normalization

2022 Weather Adjustment Summary					
(1)	(2)	(3)	(4)	(5) = (4) - (3)	(6)
TD	**Actual CP 7/20 HB 17 (MW)***	**CTHI at CP**	**Design CTHI**	**Delta CTHI**	**Weather Adjustment (MW)**
Con Ed	11,457.1	84.74	86.38	1.64	427.6
Cen Hud	1,020.0	85.78	85.48	-0.30	-8.4
LIPA	5,121.6	85.12	84.77	-0.35	-33.5
Nat Grid	6,789.3	82.44	82.38	-0.06	-6.3
NYPA	475.5	82.26	82.24	-0.02	0.0
NYSEG	3,084.9	82.35	82.53	0.18	9.6
O&R	1,038.7	83.85	85.66	1.81	39.5
RG&E	1,506.6	82.63	82.88	0.25	9.3
NYCA	**30,493.7**				**437.8**

Notes:
Con-Edison & O&R are at 67th percentile design conditions
* DSS/TO Load Data (still under review and reconciliation)

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Summary of 2022 Preliminary Transmission District Weather Normalization
NYCA Coincident Peak

2022 Weather Normalized Load Summary									
(1)	(2)	(3)	(4)	(5) = (2) + (3) + (4)	(6)	(7) = (5) + (6)	(8)	(9) = (8) - (7)	(10) = (9) / (8) * 100%
Transmission District	2022 Actual MW, 7/20/2022 HB 17	Demand Response Estimate MW	Estimated Muni Self-Gen MW	2022 Actual MW, with Estimated DR and Muni Self Gen MW	Weather Adjustment MW	2022 Weather Normalized MW	2022 ICAP Forecast, Prior to BTM:NG Resources MW	TO Forecast, Over /Under MW	TO Forecast Delta, Percent Over /Under
Con Edison	11,457.1	241.0	0.0	11,698.1	427.6	12,125.7	12,401.7	276.0	2.23%
Cen Hudson	1,020.0	0.0	0.0	1,020.0	-8.4	1,011.6	1,077.3	65.7	6.10%
LIPA	5,121.6	16.0	0.0	5,137.6	-33.5	5,104.1	5,056.1	-48.0	-0.95%
Nat. Grid	6,789.3	243.0	39.0	7,071.3	-6.3	7,065.0	6,990.6	-74.4	-1.06%
NYPA	475.5	0.0	0.0	475.5	0.0	475.5	459.8	-15.7	-3.41%
NYSEG	3,084.9	53.0	0.0	3,137.9	9.6	3,147.5	3,102.8	-44.7	-1.44%
O&R	1,038.7	0.0	0.0	1,038.7	39.5	1,078.2	1,111.2	33.0	2.97%
RG&E	1,506.6	7.0	0.0	1,513.6	9.3	1,522.9	1,566.0	43.1	2.75%
NYCA	30,493.7	560.0	39.0	31,092.7	437.8	31,530.5	31,765.5	235.0	0.74%

Notes:
Peak load hours are defined by measurements from the NYISO EMS system (PI Historian).
Actual load data is from DSS/TO (still under review and reconciliation).
The Demand Response impacts are estimates and still under review.

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Summary of 2022 Preliminary Transmission District Weather Normalization Locality Peaks

2022 Weather Normalization Summary - Locality												
(1)	(2)	(3)	(4)	(5)	(6) = (3) + (4) + (5)	(7)	(8)	(9) = (7) * (8)	(10) = (9) - (6)	(11)	(12) = (11) - (9)	(13) = (12) / (11) * 100%
	2022 Locality Peak Information					2022 Locality Weather Normalization Calculation						
Locality	Locality Peak Date and Time	Actual Load at Locality Peak Date and Time MW	DR Estimate at Locality Peak Date and Time MW	Estimated Muni Self-Gen MW	2022 Actual MW, with Estimated DR and Muni Self-Gen MW	2022 Weather Normalized Coincident Peak Deamnd MW	NCP to CP Ratio (15 year avg. with outliers removed)	2022 Locality Weather Normalized MW	Locality Weather Adjustment MW	2022 ICAP Market Forecast MW	Forecast Over /Under MW	Forecast Delta, Percent Over /Under
Zone J - NYC	8/9/2022 HB 16	10,766.9	232.0	0.0	10,998.9	10,529.2	1.0196	10,735.6	-263.3	10,906.0	170.4	1.6%
Zone K - LIPA	8/9/2022 HB 17	5,214.6	16.0	0.0	5,230.6	5,104.1	1.0165	5,188.3	-42.3	5,137.5	-50.8	-1.0%
Zones G-to-J	8/9/2022 HB 17	14,884.0	258.0	0.0	15,142.0	14,597.6	1.0133	14,791.7	-350.3	15,125.2	333.5	2.2%

Notes:
Peak load hours are defined by measurements from the NYISO EMS system (PI Historian).
Actual load data is from DSS/TO (still under review and reconciliation).
The Demand Response impacts are estimates and still under review.

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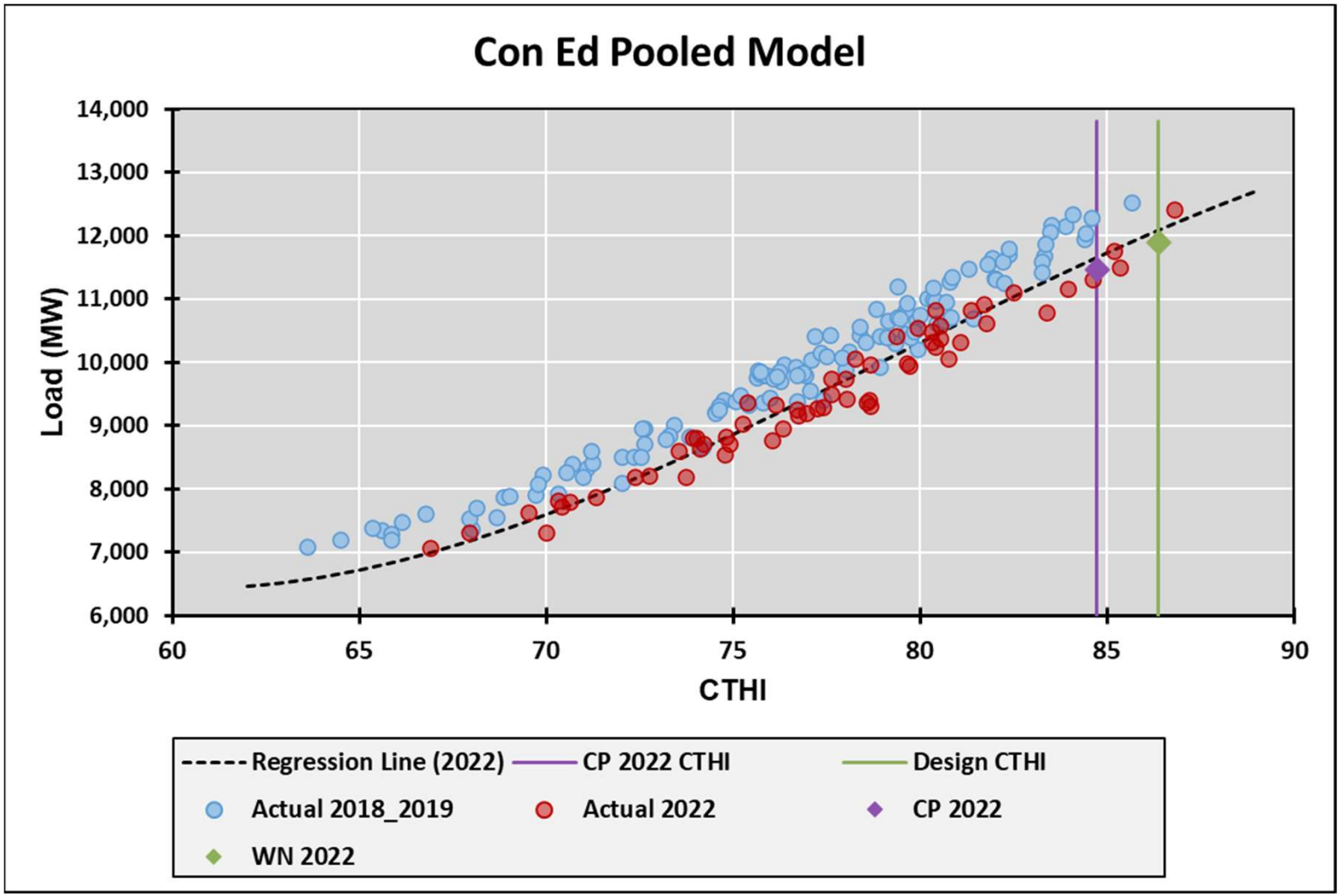
Weather Normalization Models



Design condition is 67th percentile.

Purple dot shows 2022 coincident peak.

Green dot shows 2022 weather normalized coincident peak.

Dotted black line shows model fit during 2022 July-Aug design conditions.

2022 CP	11,457.1
2022 CTHI	84.74
Design CTHI	86.38
Avg MW / CTHI	261.2
Weather Adj	427.6
2022 WN CP	**11,884.7**

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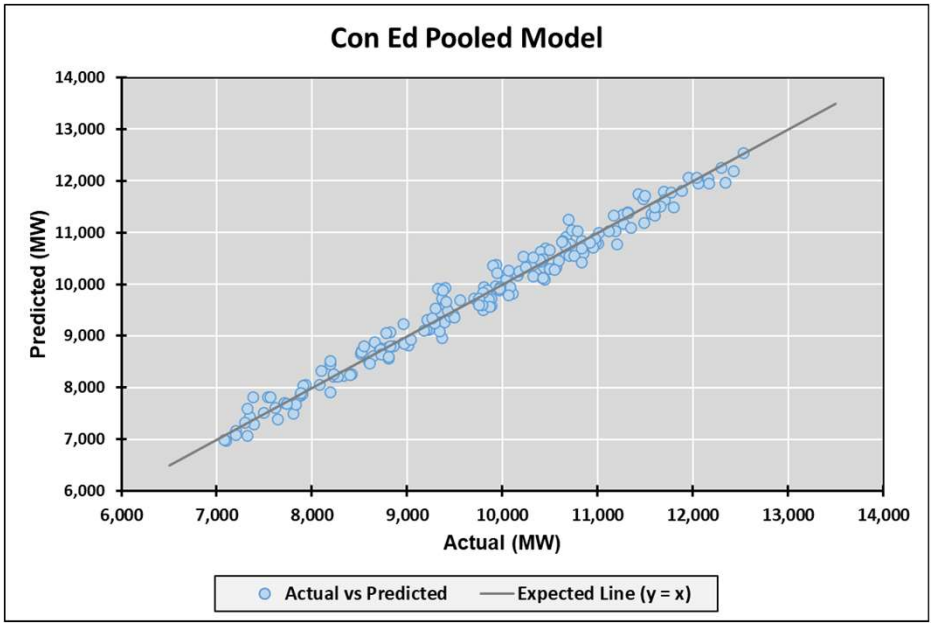
Con Ed Pooled Model

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	124509.25	37277.65	3.34	0.10%
CTHI_CE	-4911.91	1490.45	-3.30	0.12%
CTHI_2_CE	65.61	19.81	3.31	0.11%
CTHI_3_CE	-0.276	0.09	-3.15	0.19%
Y2018	635.29	37.18	17.09	0.00%
Y2019	498.59	37.62	13.25	0.00%
Fri	-251.12	39.05	-6.43	0.00%
Thu	-99.74	39.72	-2.51	1.29%

Regression Statistics	
Multiple R	98.8%
R Square	97.7%
Adjusted R Square	97.6%
Standard Error	206
Observations	186



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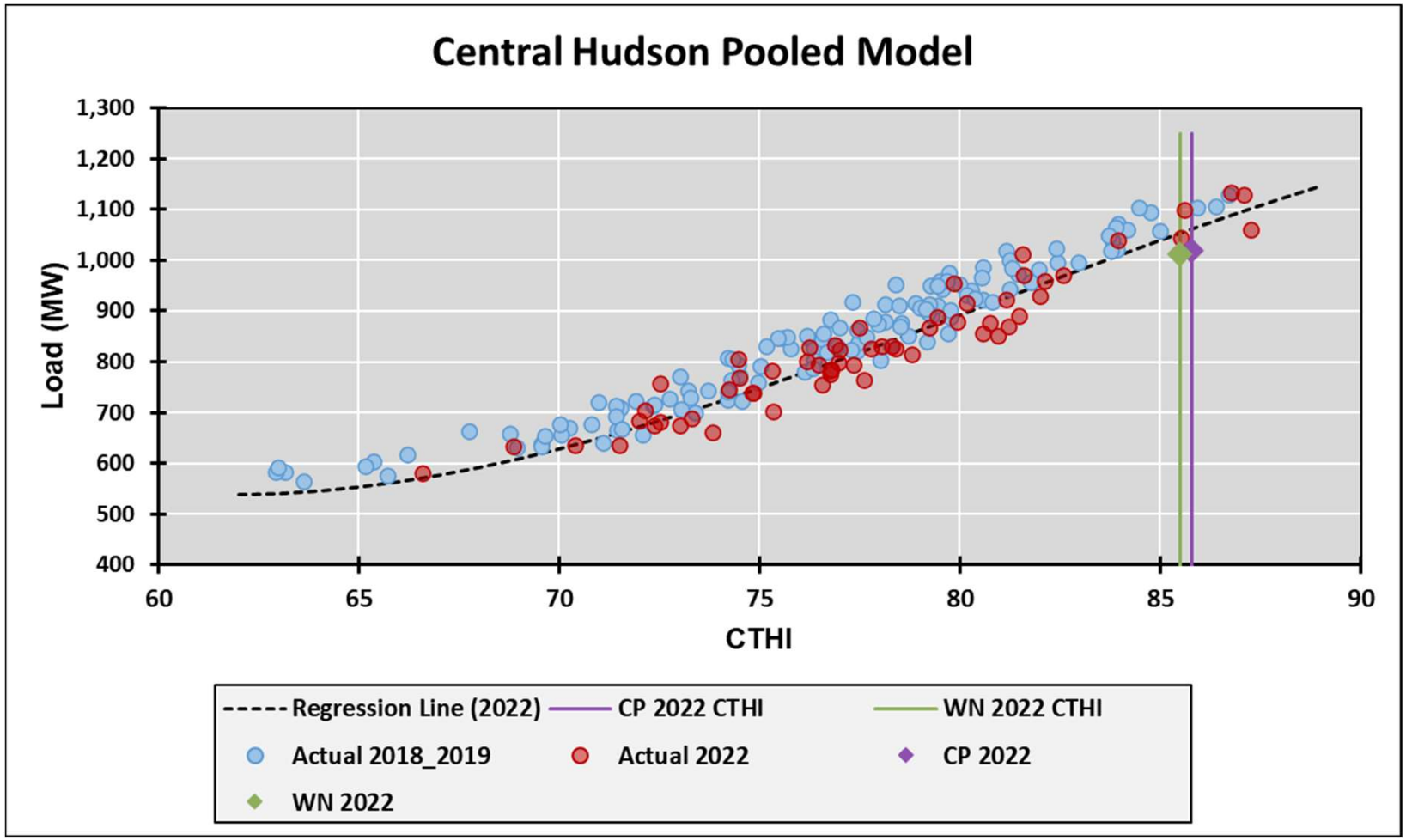

Design condition is 67th percentile.

Purple dot shows 2022 coincident peak.

Green dot shows 2022 weather normalized coincident peak.

Dotted black line shows model fit during 2022 July-Aug design conditions.

2022 CP	1,020.0
2022 CTHI	85.78
Design CTHI	85.48
Avg MW / CTHI	28.0
Weather Adj	-8.4
2022 WN CP	**1,011.6**

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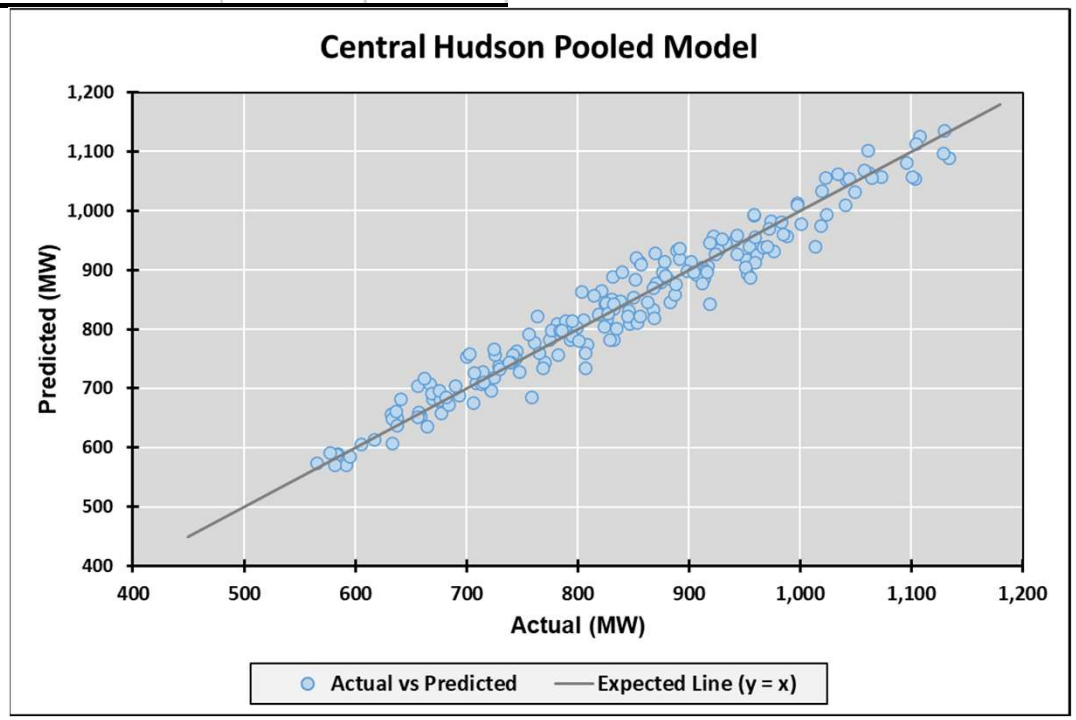
Central Hudson Pooled Model

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	13034.75	3851.52	3.38	0.09%
CTHI_CH	-509.39	154.30	-3.30	0.12%
CTHI_2_CH	6.67	2.05	3.25	0.14%
CTHI_3_CH	-0.028	0.01	-3.03	0.28%
Y2018	47.87	5.45	8.79	0.00%
Y2019	29.73	5.50	5.41	0.00%

Regression Statistics	
Multiple R	97.5%
R Square	95.2%
Adjusted R Square	95.0%
Standard Error	30
Observations	189



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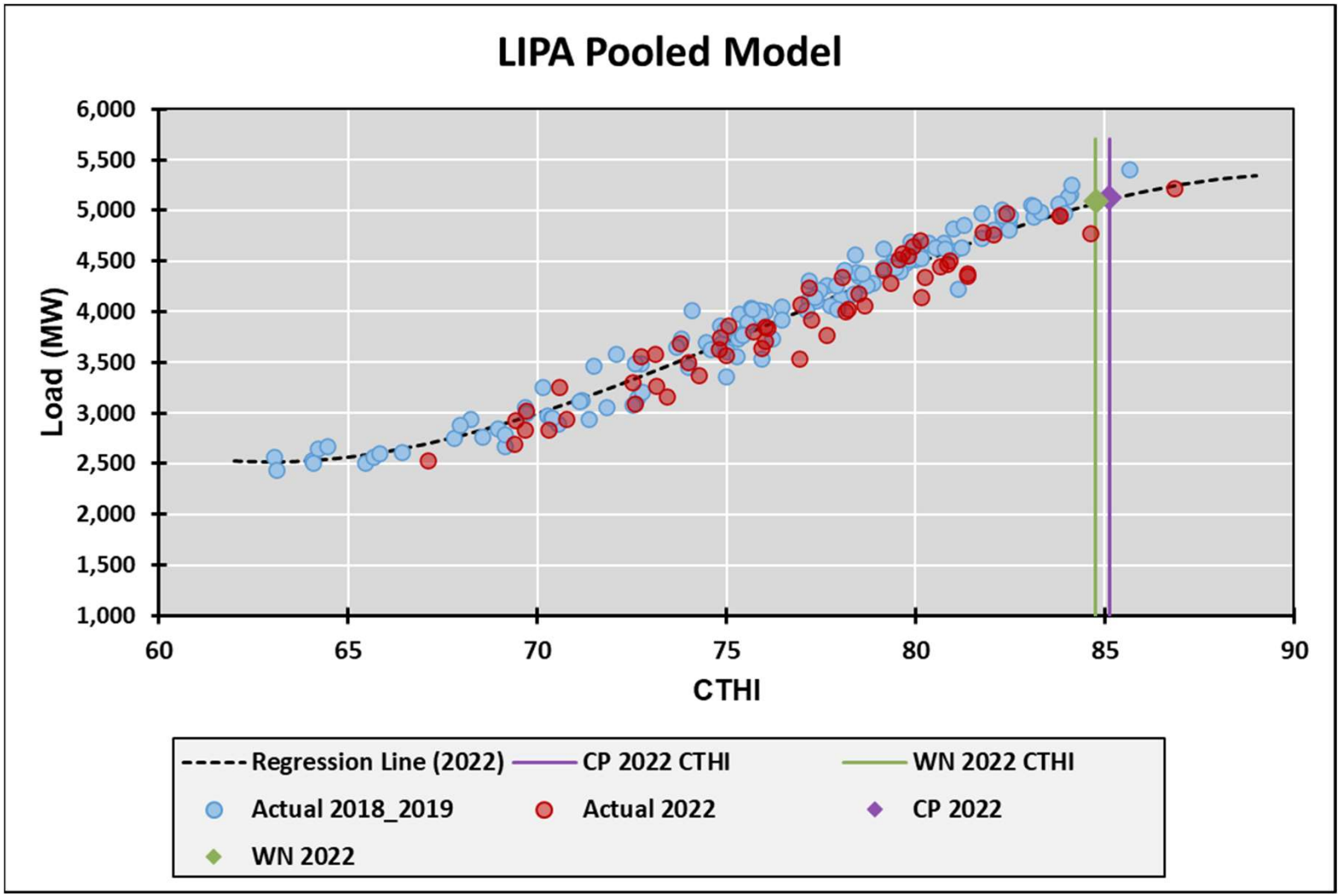

Design condition is 50th percentile.

Purple dot shows 2022 coincident peak.

Green dot shows 2022 weather normalized coincident peak.

Dotted black line shows model fit during 2022 July-Aug design conditions.

2022 CP	5,121.6
2022 CTHI	85.12
Design CTHI	84.77
Avg MW / CTHI	96.1
Weather Adj	-33.5
2022 WN CP	**5,088.1**

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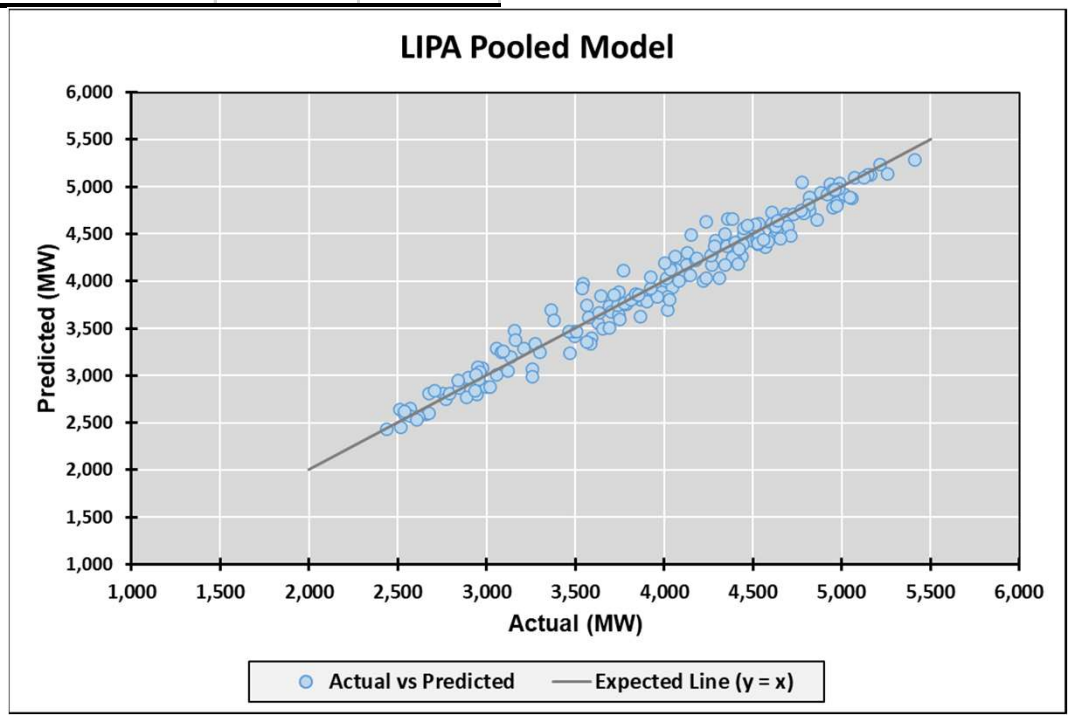
LIPA Pooled Model

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	118794.91	22592.63	5.26	0.00%
CTHI_LIPA	-4817.35	914.60	-5.27	0.00%
CTHI_2_LIPA	65.02	12.29	5.29	0.00%
CTHI_3_LIPA	-0.283	0.05	-5.16	0.00%
Y2018	135.85	22.93	5.92	0.00%
Jun	-77.12	32.10	-2.40	1.73%

Regression Statistics	
Multiple R	98.2%
R Square	96.4%
Adjusted R Square	96.3%
Standard Error	144
Observations	181



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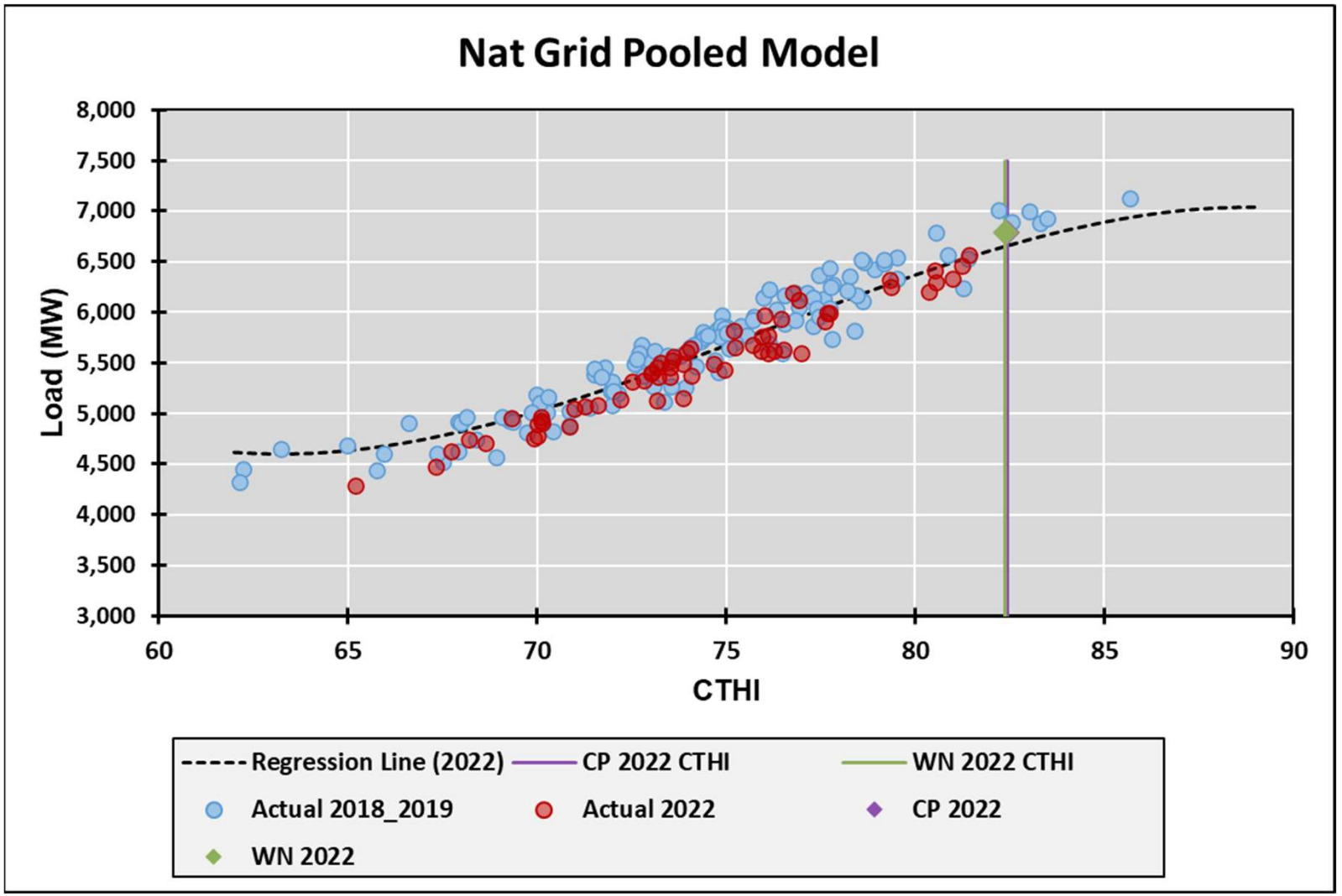

Design condition is 50th percentile.

Purple dot shows 2022 coincident peak.

Green dot shows 2022 weather normalized coincident peak.

Dotted black line shows model fit during 2022 July-Aug design conditions.

2022 CP	6,789.3
2022 CTHI	82.44
Design CTHI	82.38
Avg MW / CTHI	107.4
Weather Adj	-6.3
2022 WN CP	**6,783.0**

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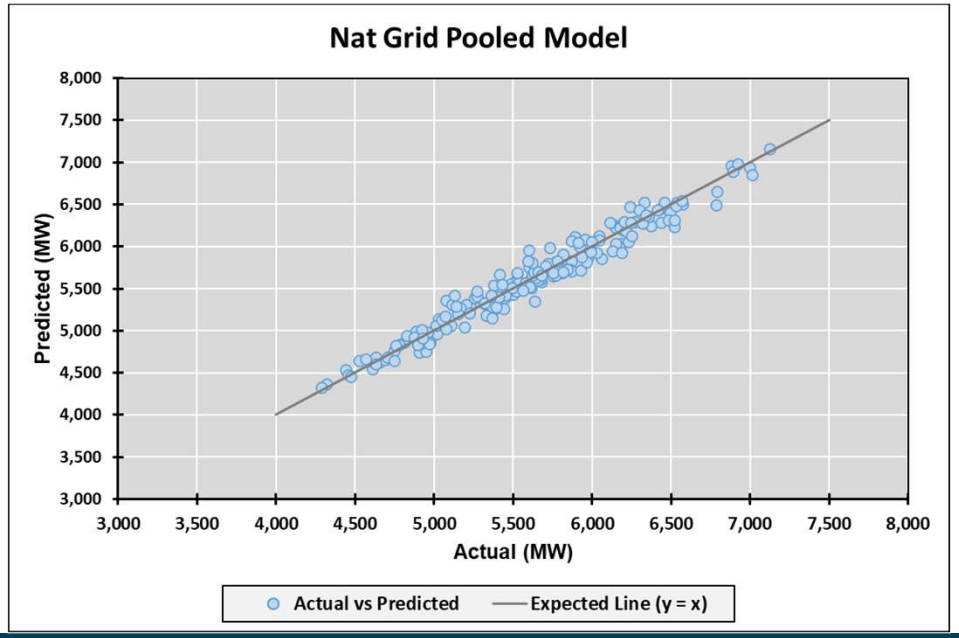
National Grid Pooled Model

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	122494.48	20624.18	5.94	0.00%
CTHI_NG	-4889.76	844.92	-5.79	0.00%
CTHI_2_NG	66.20	11.51	5.75	0.00%
CTHI_3_NG	-0.290	0.05	-5.57	0.00%
Y2018	220.02	22.07	9.97	0.00%
Y2019	61.49	22.00	2.79	0.58%
Jun	-191.48	24.53	-7.80	0.00%
Fri	-115.86	22.08	-5.25	0.00%

Regression Statistics	
Multiple R	98.1%
R Square	96.3%
Adjusted R Square	96.1%
Standard Error	121
Observations	183



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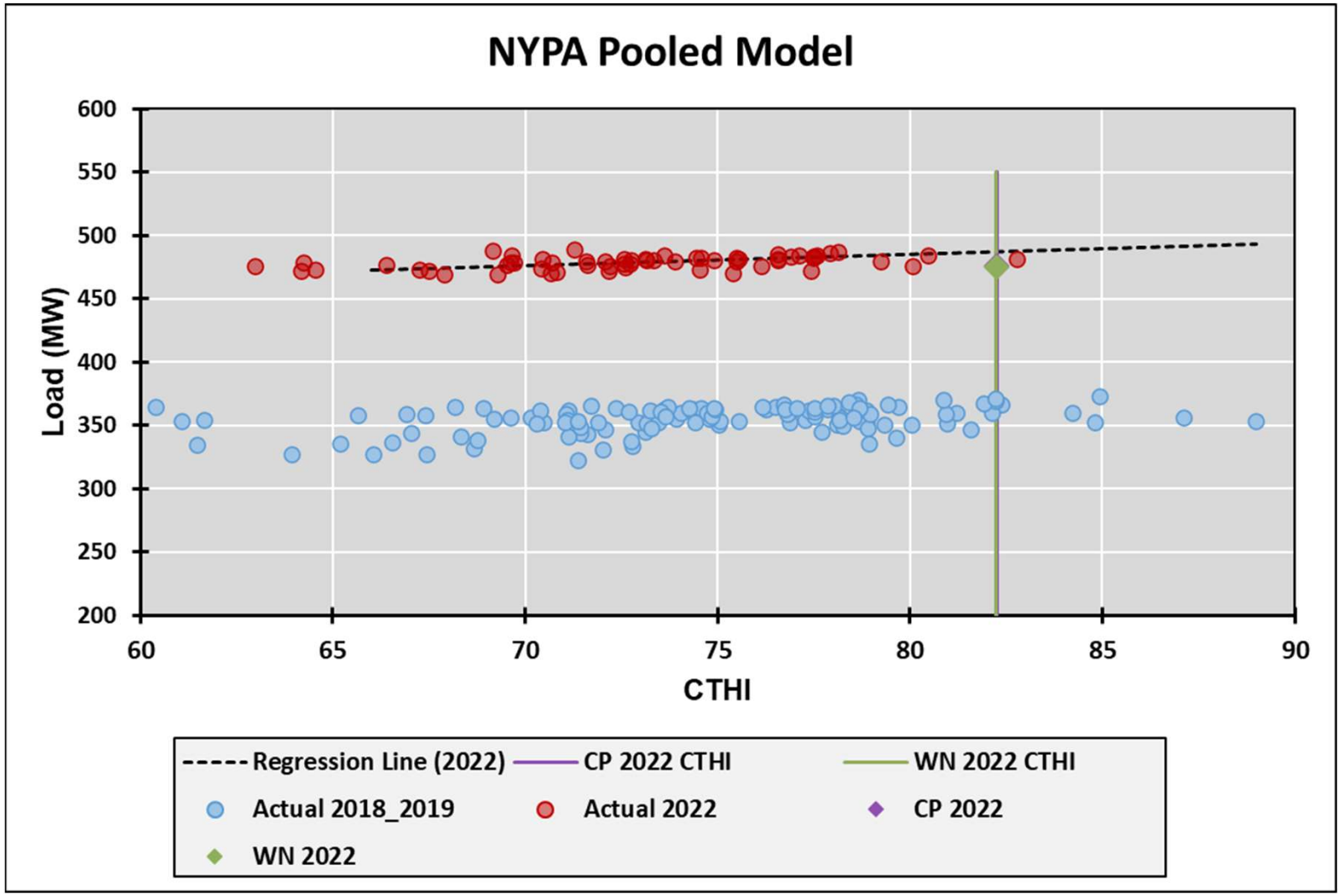

Design condition is 50th percentile.

Purple dot shows 2022 coincident peak.

Green dot shows 2022 weather normalized coincident peak.

Dotted black line shows model fit during 2022 July-Aug design conditions.

2022 CP	475.5
2022 CTHI	82.26
Design CTHI	82.24
MW / CTHI	0.9
Weather Adj	0.0
2022 WN CP	**475.5**

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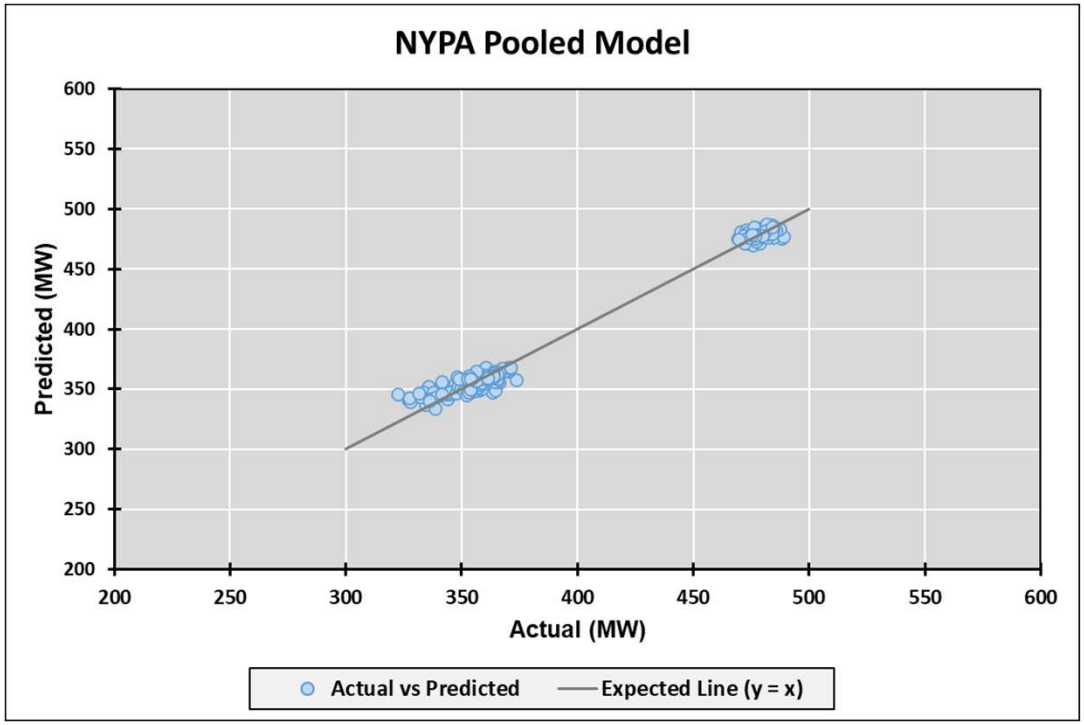
NYPA Pooled Model

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	415.94	6.34	65.64	0.00%
CTHI_NYPA	0.86	0.09	10.06	0.00%
Y2018	-131.61	1.11	-118.88	0.00%
Y2019	-118.87	1.10	-107.73	0.00%

Regression Statistics	
Multiple R	99.5%
R Square	99.0%
Adjusted R Square	98.9%
Standard Error	6
Observations	185



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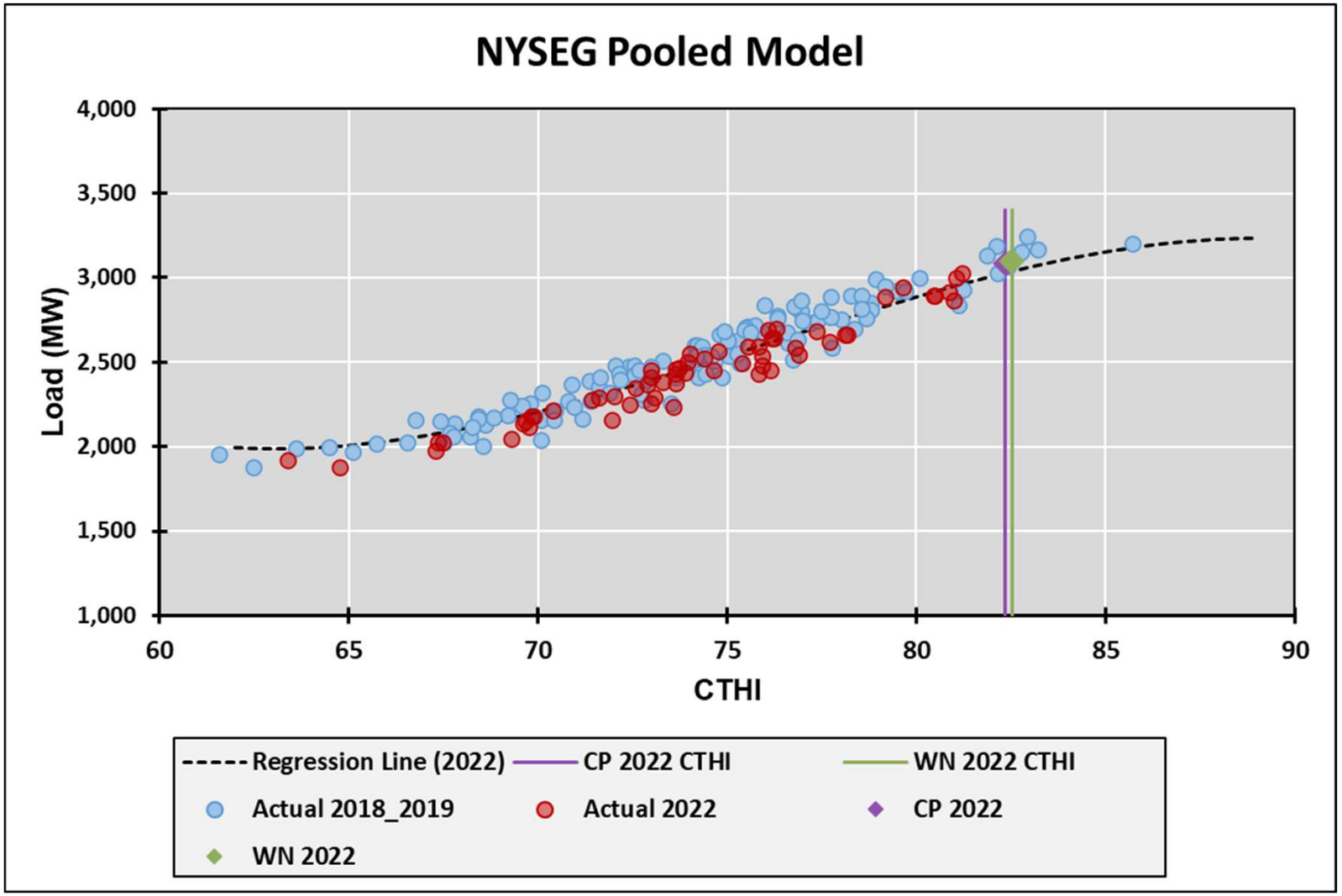

Design condition is 50th percentile.

Purple dot shows 2022 coincident peak.

Green dot shows 2022 weather normalized coincident peak.

Dotted black line shows model fit during 2022 July-Aug design conditions.

2022 CP	3,084.9
2022 CTHI	82.35
Design CTHI	82.53
Avg MW / CTHI	54.6
Weather Adj	9.6
2022 WN CP	**3,094.5**

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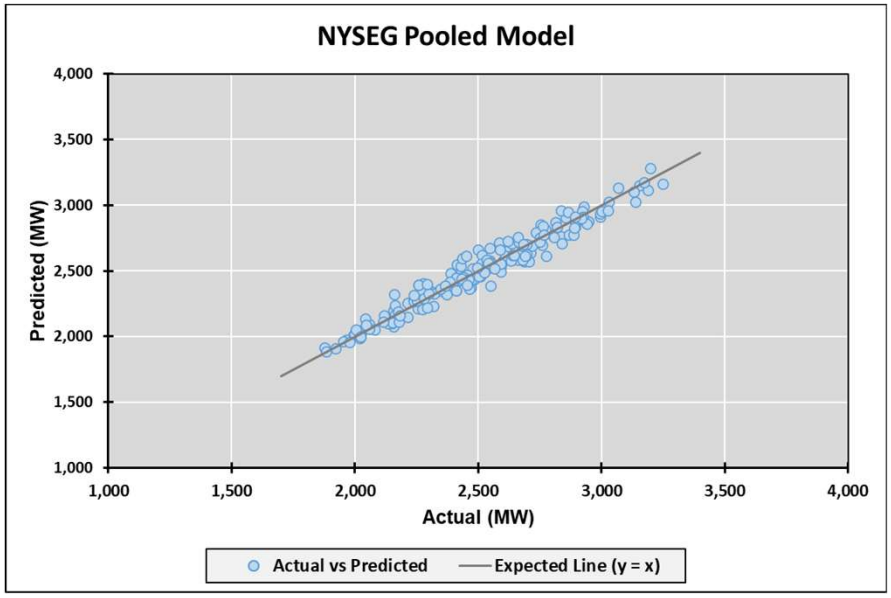
NYSEG Pooled Model

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	59968.50	10879.35	5.51	0.00%
CTHI_NYSEG	-2406.65	446.89	-5.39	0.00%
CTHI_2_NYSEG	32.59	6.10	5.34	0.00%
CTHI_3_NYSEG	-0.143	0.03	-5.16	0.00%
Y2018	102.64	12.01	8.55	0.00%
Y2019	44.49	12.00	3.71	0.03%
Fri	-38.36	11.91	-3.22	0.15%
Jun	-79.68	13.19	-6.04	0.00%

Regression Statistics	
Multiple R	97.8%
R Square	95.7%
Adjusted R Square	95.5%
Standard Error	66
Observations	185



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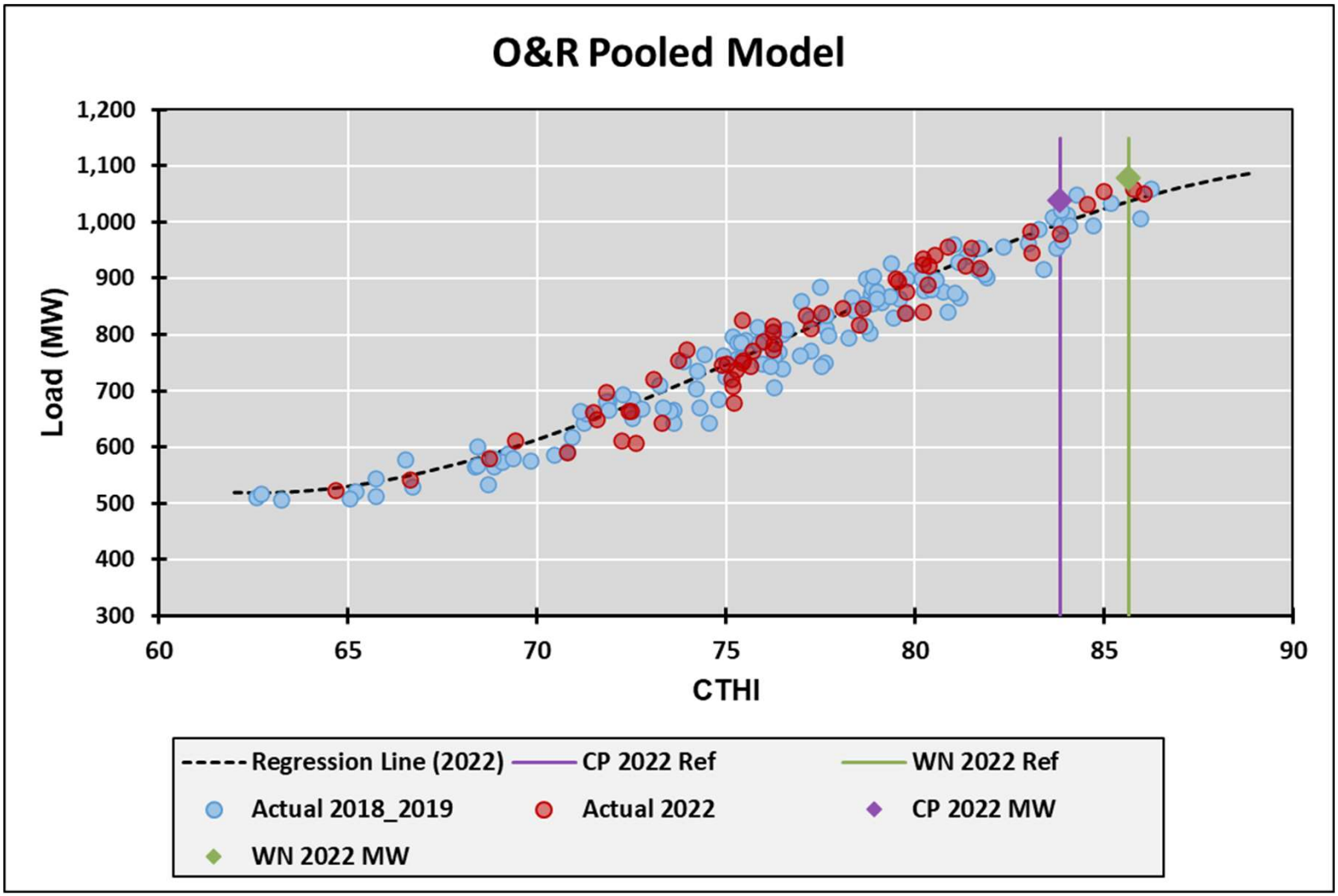

Design condition is 67th percentile.

Purple dot shows 2022 coincident peak.

Green dot shows 2022 weather normalized coincident peak.

Dotted black line shows model fit during 2022 July-Aug design conditions.

2022 CP	1,038.7
2022 CTHI	83.85
Design CTHI	85.66
Avg MW / CTHI	21.8
Weather Adj	39.5
2022 WN CP	**1,078.1**

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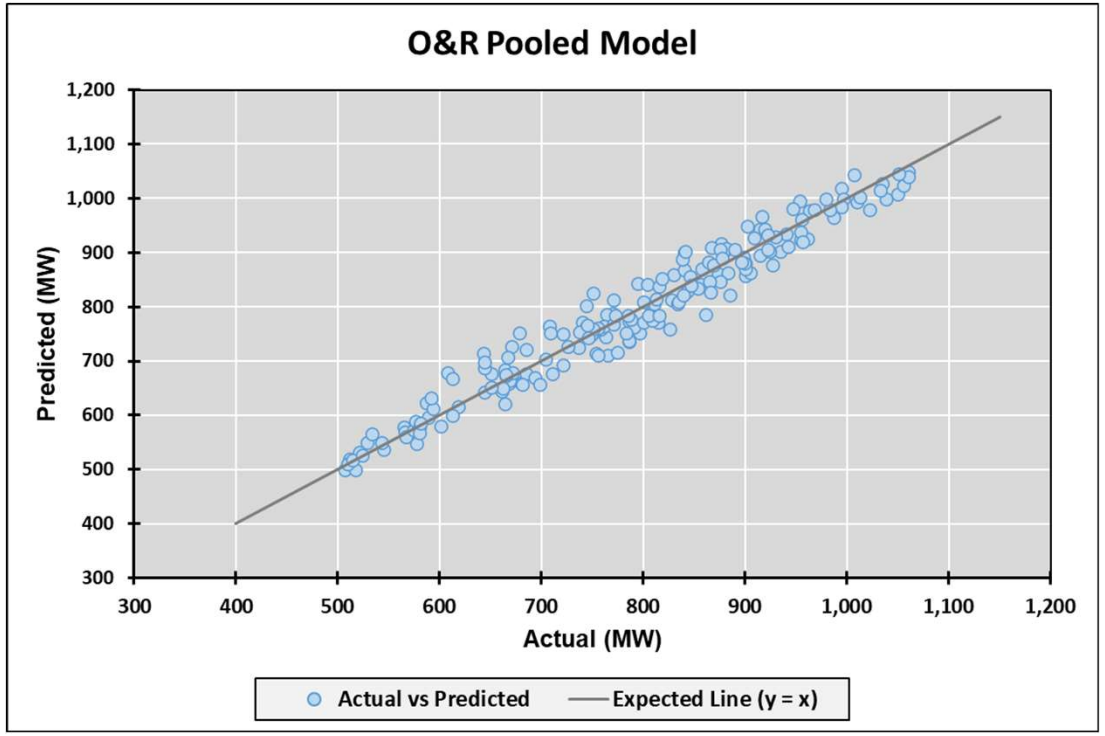
O&R Pooled Model

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	20159.91	4384.93	4.60	0.00%
CTHI_OnR	-812.67	176.81	-4.60	0.00%
CTHI_2_OnR	10.93	2.37	4.61	0.00%
CTHI_3_OnR	-0.047	0.01	-4.48	0.00%
Y2019	-19.80	4.80	-4.12	0.01%

Regression Statistics	
Multiple R	97.7%
R Square	95.4%
Adjusted R Square	95.3%
Standard Error	31
Observations	186



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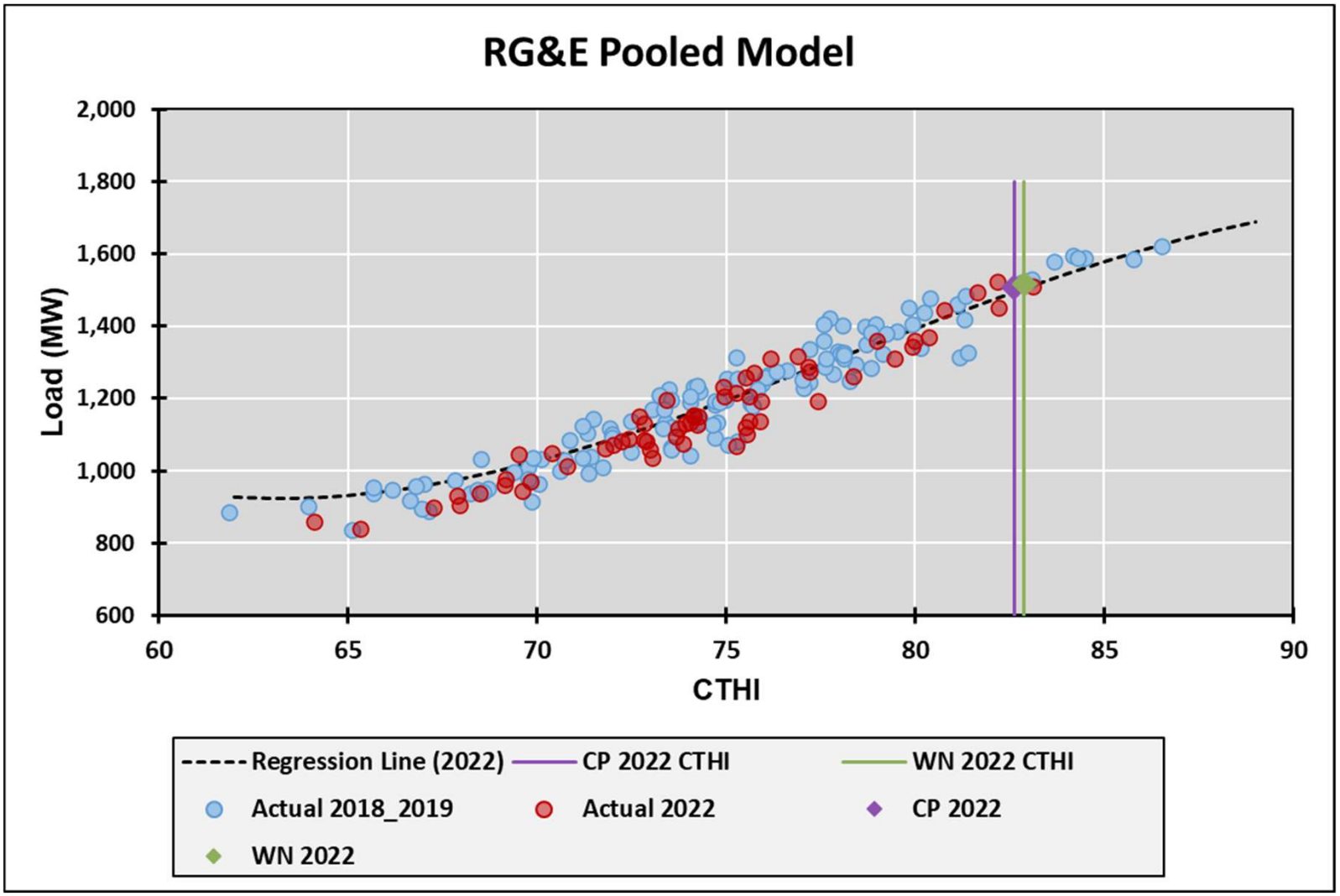

Design condition is 50th percentile.

Purple dot shows 2022 coincident peak.

Green dot shows 2022 weather normalized coincident peak.

Dotted black line shows model fit during 2022 July-Aug design conditions.

2022 CP	1,506.6
2022 CTHI	82.63
Design CTHI	82.88
Avg MW / CTHI	37.1
Weather Adj	9.3
2022 WN CP	**1,515.9**

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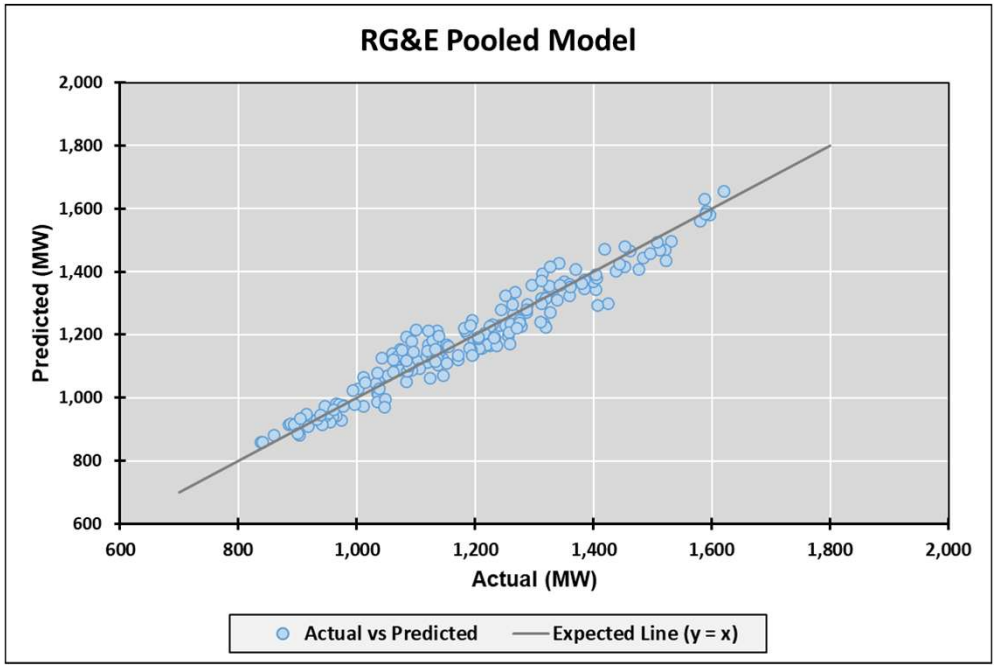
RG&E Pooled Model

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	25922.11	6991.08	3.71	0.03%
CTHI_RGE	-1020.09	282.89	-3.61	0.04%
CTHI_2_RGE	13.51	3.81	3.55	0.05%
CTHI_3_RGE	-0.057	0.02	-3.37	0.09%
Y2018	28.89	7.14	4.05	0.01%
Jun	-42.49	8.48	-5.01	0.00%
Fri	-31.27	8.03	-3.89	0.01%

Regression Statistics	
Multiple R	97.0%
R Square	94.1%
Adjusted R Square	93.9%
Standard Error	44
Observations	185



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Additional IRM Forecast Information

NCP / CP Ratio Calculation Methodology

1. Calculate 15-year Average

I. Calculate the average locality peak of prior 15 years

II. Calculate the average locality load during NYCA peak load hour

III. Calculate average NCP/CP ratio using the information from steps (I) and (II)

2. Detect Outliers*

I. Use average ratio calculated in step 1 and standard deviation of last 15 years' ratio

3. Repeat Step 1 excluding outlier years' data

* Outlier years are defined as those that have an NCP to CP ratio of over 1.65 standard deviations above the historical average, representing the upper 5% tail of the normal distribution. Outlier years are taken out of the ratio calculation.

New York ISO

NCP / CP Ratio – G-to-J Locality

G-to-J Locality Peak Ratio									
Year	G-to-J Date	G-to-J Hr Beg	NCP MW	NYCA Date	NYCA Hr Beg	CP MW	Delta	Ratio	Outlier
2008	7/18/2008	16	14,603	7/18/2008	15	14,538	65	1.0045	FALSE
2009	8/21/2009	14	14,585	8/17/2009	15	14,388	197	1.0137	FALSE
2010	7/6/2010	16	15,809	7/6/2010	16	15,809	0	1.0000	FALSE
2011	7/22/2011	15	15,972	7/22/2011	15	15,972	0	1.0000	FALSE
2012	7/18/2012	13	15,420	7/17/2012	16	14,993	427	1.0285	FALSE
2013	7/19/2013	16	15,981	7/19/2013	16	15,981	0	1.0000	FALSE
2014	7/8/2014	16	13,959	7/1/2014	16	13,374	585	1.0437	FALSE
2015	7/20/2015	16	14,708	7/29/2015	16	14,440	268	1.0186	FALSE
2016	8/11/2016	16	15,067	8/11/2016	16	15,067	0	1.0000	FALSE
2017	7/20/2017	16	14,678	7/19/2017	17	14,163	515	1.0364	FALSE
2018	8/29/2018	16	15,033	8/29/2018	16	15,033	0	1.0000	FALSE
2019	7/17/2019	15	14,602	7/29/2019	16	14,157	445	1.0314	FALSE
2020	7/28/2020	14	14,077	7/27/2020	17	13,911	166	1.0119	FALSE
2021	8/12/2021	16	14,081	8/26/2021	16	14,008	73	1.0052	FALSE
2022	8/9/2022	17	14,884	7/20/2022	17	13,824	1,060	1.0767	TRUE
Average			14,897			14,644	253	1.0173	
Std Dev								0.0212	
Average (Excluding Outliers)			**14,898**			**14,702**		**1.0133**	

New York ISO

NCP / CP Ratio – Zone J Locality

Zone J Locality Peak Ratio									
Year	Zone J Date	J Hr Beg	NCP MW	NYCA Date	NYCA Hr Beg	CP MW	Delta	Ratio	Outlier
2008	7/18/2008	16	10,476	7/18/2008	15	10,414	62	1.0060	FALSE
2009	8/21/2009	15	10,656	8/17/2009	15	10,387	269	1.0259	FALSE
2010	7/6/2010	16	11,213	7/6/2010	16	11,213	0	1.0000	FALSE
2011	7/22/2011	11	11,399	7/22/2011	15	11,319	80	1.0071	FALSE
2012	7/18/2012	12	11,138	7/17/2012	16	10,721	417	1.0389	FALSE
2013	7/19/2013	16	11,411	7/19/2013	16	11,411	0	1.0000	FALSE
2014	7/8/2014	16	10,094	7/1/2014	16	9,565	529	1.0553	FALSE
2015	7/20/2015	16	10,598	7/29/2015	16	10,386	212	1.0204	FALSE
2016	8/11/2016	16	10,966	8/11/2016	16	10,966	0	1.0000	FALSE
2017	7/20/2017	16	10,642	7/19/2017	17	10,224	418	1.0409	FALSE
2018	8/29/2018	16	10,878	8/29/2018	16	10,878	0	1.0000	FALSE
2019	7/17/2019	17	10,756	7/29/2019	16	10,199	557	1.0546	FALSE
2020	7/28/2020	14	10,106	7/27/2020	17	9,786	320	1.0327	FALSE
2021	8/27/2021	14	10,020	8/26/2021	16	9,995	25	1.0025	FALSE
2022	8/9/2022	16	10,767	7/20/2022	17	9,917	850	1.0857	TRUE
Average			10,741			10,492	249	1.0238	
Std Dev								0.0254	
Average (Excluding Outliers)			**10,740**			**10,533**		**1.0196**	

New York ISO

NCP / CP Ratio – Zone K Locality

Zone K Locality Peak Ratio									
Year	Zone K Date	K Hr Beg	NCP MW	NYCA Date	NYCA Hr Beg	CP MW	Delta	Ratio	Outlier
2008	7/18/2008	16	5,201	7/18/2008	15	5,181	20	1.0039	FALSE
2009	8/21/2009	15	5,191	8/17/2009	15	5,060	131	1.0259	FALSE
2010	7/6/2010	16	5,822	7/6/2010	16	5,822	0	1.0000	FALSE
2011	7/22/2011	15	5,914	7/22/2011	15	5,914	0	1.0000	FALSE
2012	7/18/2012	13	5,456	7/17/2012	16	5,111	345	1.0675	TRUE
2013	7/18/2013	16	5,764	7/19/2013	16	5,673	91	1.0160	FALSE
2014	7/3/2014	16	4,868	7/1/2014	16	4,579	289	1.0631	TRUE
2015	7/20/2015	16	5,247	7/29/2015	16	5,136	111	1.0216	FALSE
2016	8/12/2016	16	5,411	8/11/2016	16	5,190	221	1.0426	FALSE
2017	7/20/2017	16	5,137	7/19/2017	17	4,989	148	1.0297	FALSE
2018	8/29/2018	16	5,411	8/29/2018	16	5,411	0	1.0000	FALSE
2019	7/17/2019	16	5,057	7/29/2019	16	4,947	110	1.0222	FALSE
2020	7/20/2020	17	5,433	7/27/2020	17	5,344	89	1.0167	FALSE
2021	8/13/2021	17	5,138	8/26/2021	16	5,018	120	1.0239	FALSE
2022	8/9/2022	17	5,215	7/20/2022	17	5,122	93	1.0182	FALSE
Average			5,351			5,233	118	1.0225	
Std Dev								0.0202	
Average (Excluding Outliers)			**5,380**			**5,293**		**1.0165**	

New York ISO

NCP / CP Ratios – Upstate Zones

Upstate Zonal NCP/CP Ratios							
Year	A	B	C	D	E	F	G
2008	1.0249	1.0553	1.0144	1.0412	1.0318	1.0000	1.0030
2009	1.0052	1.0000	1.0191	1.0110	1.0413	1.0049	1.0082
2010	1.0430	1.0423	1.0316	1.0237	1.0251	1.0094	1.0000
2011	***1.1529***	1.0787	1.0570	1.0104	1.0566	***1.0904***	1.0064
2012	1.0011	1.0045	1.0000	1.0353	1.0115	1.0000	1.0206
2013	1.1144	1.0297	1.0270	1.0901	1.0117	1.0111	1.0073
2014	1.0239	1.0079	1.0127	1.0253	1.0176	1.0451	1.0368
2015	1.0100	1.0000	1.0315	***1.1097***	1.0401	1.0008	1.0000
2016	1.0485	1.0075	1.0065	1.0188	1.0064	1.0076	1.0319
2017	1.0230	1.0022	1.0447	1.0409	***1.1579***	***1.0779***	1.0414
2018	***1.1495***	1.0493	***1.0758***	1.0439	1.0759	1.0167	1.0300
2019	1.0129	1.0132	1.0397	1.0124	1.0372	1.0393	1.0492
2020	1.0944	***1.1176***	1.0101	1.0000	1.0060	1.0023	1.0239
2021	1.0121	1.0151	1.0491	***1.1485***	1.0269	1.0451	1.0321
2022	1.0282	1.0000	1.0082	1.0100	1.0084	1.0108	***1.1025***
Ratio	**1.0335**	**1.0220**	**1.0249**	**1.0294**	**1.0280**	**1.0146**	**1.0201**

Notes

Annual values marked in red are outliers excluded from the final ratio calculation

For computational simplicity, Zones H&I NCP/CP ratios are set equal to the Zone J value

New York ISO

Average Sub-Zonal Peak Load

Average Subzonal Load - Top Five Summer NYCA Daily Peak Hours over Five Years (2018 - 2022)												
	A	B	C	D	E	F	G	H	I	J	K	Total
Con Ed	0.0	0.0	0.0	0.0	0.0	0.0	0.0	255.7	1,292.5	10,120.8	0.0	11,668.9
Cen Hud	0.0	0.0	0.0	0.0	3.5	0.0	1,055.0	0.0	0.0	0.0	0.0	1,058.5
LIPA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5,040.2	5,040.2
Nat Grid	1,764.9	399.5	1,259.5	87.5	887.3	2,100.9	0.0	0.0	0.0	0.0	0.0	6,499.5
NYPA	0.0	0.0	0.0	395.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	395.9
NYSEG	635.4	0.0	1,321.9	100.5	407.1	150.4	20.6	344.3	0.0	0.0	0.0	2,980.3
O&R	0.0	0.0	0.0	0.0	0.0	0.0	1,014.5	0.0	0.0	0.0	0.0	1,014.5
RG&E	0.0	1,421.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,421.9
Total	2,400.4	1,821.4	2,581.4	583.9	1,297.9	2,251.3	2,090.1	600.0	1,292.5	10,120.8	5,040.2	30,079.7

Note: Con Edison Zone G losses moved to Zone J

New York ISO

Sub-Zonal Peak Load Shares

Sbuzonal Multipliers for TO to Zone												
TD	A	B	C	D	E	F	G	H	I	J	K	Total
CE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0219	0.1108	0.8673	0.0000	1.0000
CH	0.0000	0.0000	0.0000	0.0000	0.0033	0.0000	0.9967	0.0000	0.0000	0.0000	0.0000	1.0000
LIPA	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	1.0000
NG	0.2715	0.0615	0.1938	0.0135	0.1365	0.3232	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
NYPA	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
NYSEG	0.2132	0.0000	0.4435	0.0337	0.1366	0.0505	0.0069	0.1155	0.0000	0.0000	0.0000	1.0000
OR	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	1.0000
RGE	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000

Subzonal Multipliers for Zone to TO											
TD	A	B	C	D	E	F	G	H	I	J	K
CE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.4261	1.0000	1.0000	0.0000
CH	0.0000	0.0000	0.0000	0.0000	0.0027	0.0000	0.5048	0.0000	0.0000	0.0000	0.0000
LIPA	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
NG	0.7353	0.2193	0.4879	0.1499	0.6836	0.9332	0.0000	0.0000	0.0000	0.0000	0.0000
NYPA	0.0000	0.0000	0.0000	0.6780	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NYSEG	0.2647	0.0000	0.5121	0.1721	0.3136	0.0668	0.0099	0.5739	0.0000	0.0000	0.0000
OR	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.4854	0.0000	0.0000	0.0000	0.0000
RGE	0.0000	0.7807	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

New York ISO

2022 Zonal Peak Information

Zone	Non-Coincident Peak Hour	Non-Coincident Peak MW	Non-Coincident Peak CTHI	Coincident Peak MW^	Coincident Peak CTHI	Coincident Peak Design CTHI
A	7/20/22 14:00	2,555	81.0	2,489	81.0	81.2
B	6/22/22 15:00	1,923	83.1	1,922	82.6	82.9
C	7/20/22 18:00	2,707	82.7	2,689	82.7	82.9
D*	8/30/22 17:00	737	81.0	733	82.3	82.1
E	8/8/22 16:00	1,314	81.8	1,269	82.1	82.4
F	8/8/22 18:00	2,383	85.4	2,292	84.8	84.1
G	8/8/22 18:00	2,218	86.5	2,133	84.9	85.4
H	8/9/22 17:00	671	87.1	631	85.5	85.5
I	8/9/22 17:00	1,385	87.3	1,301	84.8	85.8
J	8/9/22 16:00	10,830	86.8	9,934	84.7	86.5
K	8/9/22 17:00	5,210	86.8	5,113	85.1	84.8

^ NYCA Coincident Peak Hour - 7/20/22 17:00

**Anomalous load data outliers removed*

Note: All MW values are based on NYISO Energy Management System (EMS) data

New York ISO

Preliminary Regional Load Growth Factors

Transmission District	Preliminary 1+RLGF
Con Edison	1.0082
Central Hudson	0.9963
LIPA	0.9792
National Grid	0.9869
NYPA	1.0172
NYSEG	0.9894
O&R	0.9964
RG&E	0.9950
NYCA	*0.9957*

Note: RLGFs do not reflect large load growth

- Preliminary RLGFs calculated as a ratio of the 2023 to 2022 coincident peak forecasts from the 2022 Gold Book, before Large Load impacts
- Zonal RLGFs are shared out to the Transmission Districts using the sub-zonal peak load shares
- Preliminary RLGFs will be used for the IRM forecast absent updates from the Transmission Owners, which are to be submitted by September 19

New York ISO

CTHI

Cumulative Temperature and Humidity Index (CTHI) computation:

Step 1: Calculate hourly THI as a weighted average of the dry bulb temperature (DB) and the wet bulb temperature (WB). There are 24 values per day:

For any day d,

$$(THI)_{di} = 0.6 \times (DB)_{di} + 0.4 \times (WB)_{di}$$

Where $i = 0, 1, 2, \ldots, 23$ indicate the hours of a day

Step 2: Calculate the THI_max for a day. This is the maximum hourly THI value for that day:

$$(THI\_max)_d = \max\left((THI)_{di}\right)$$

Step 3: Calculate the daily CTHI using a weighted average of three days (the day for which the CTHI is being calculated and the two preceding days):

$$(CTHI)_d = 0.7 \times (THI\_max)_d + 0.2 \times (THI\_max)_{d-1} + 0.1 \times (THI\_max)_{d-2}$$

New York ISO

Questions?

Our Mission & Vision

Mission

Ensure power system reliability and competitive markets for New York in a clean energy future

Vision

Working together with stakeholders to build the cleanest, most reliable electric system in the nation

New York ISO