

2010 Weather Adjustments & Preliminary 2011 ICAP Forecast

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System & Resource Planning

New York Independent System Operator

LFTF

December 3, 2010

2010 Summer Peak MW Data		NYISO DSS Actual MW Data				TO & ELRR Data - Actual & WA			
7/6/2010, Hour Ended 5 PM		Actual	Load +	Percent		Actual	Weather	Demand	TOs' W/N MW
Version 2 12/3/2010		Load	Losses	Losses	Losses	Load Data	Adjustments	Response	With DSM
Central Hudson		1,201.6	28.4	1,230.0	2.31%	1,229.0	-64.0		1,165.0
Consolidated Edison		12,923.4	113.6	13,037.0	0.87%	13,030.0	-380.0	500.0	13,150.0
Long Island Power Authority		5,737.9	84.1	5,822.0	1.44%	5,719.0	-479.0		5,240.0
Full Requirement Customers						16.0	-1.0		15.0
Partial Requirement Customers						90.0	-8.0		82.0
Other Municipalities						8.0	(1.0)		7.0
						5,833.0	-489.0		5,344.0
New York Power Authority		331.5	2.5	334.0	0.75%	315.1	-3.5		311.6
New York State Electric & Gas		3,051.8	89.2	3,141.0	2.84%	2,941.0	-107.6		2,833.4
Losses						89.2	-3.3		85.9
Full Requirement Customers						40.4	-1.5		38.9
Partial Requirement Customers						78.5	-2.9		75.6
Other Adjustments						-	-		-
						3,149.1	-115.3		3,033.8
National Grid		6,759.3	391.7	7,151.0	5.48%	6,366.0	-332.3		6,033.7
Losses						391.7	-20.4		371.3
Full Requirement Customers						118.4	-6.2		112.2
Partial Requirement Customers						214.1	-11.2		202.9
Other Municipalities						68.2	-3.6		64.6
Other Adjustments						-	-		-
						7,158.4	-373.7		6,784.7
Orange & Rockland Utilities		1,127.5	16.5	1,144.0	1.44%	1,137.0	3.0		1,140.0
RG&E		1,538.9	32.1	1,571.0	2.04%	1,564.0	-9.0		1,555.0
Partial Requirement Customers						11.7	(0.1)		11.6
						1,575.7	-9.1		1,566.6
Totals		32,671.9	758.1	33,430.0	2.27%	33,427.3	-1,431.6	500.0	32,495.7

2010 Summer Peak MW Data		Adjustments to TO's WN MW With DSM				Proportional		2010 Adjusted W/N MW
7/6/2010, Hour Ended 5 PM		W/N Losses	Station Power	Intra TD Loads	Adj. W/N Load Less Losses	Allocation of Losses	Adj. W/N Load Less Losses	
Version 2 12/3/2010								
Central Hudson		26.9	1.2		1,136.9	26.0	1,136.9	1,162.9
Consolidated Edison		114.6	15.0		13,020.4	298.4	13,020.4	13,318.8
Long Island Power Authority		77.1			5,162.9	118.3	5,162.9	5,281.2
Full Requirement Customers					15.0	0.3	15.0	15.3
Partial Requirement Customers					82.0	1.9	82.0	83.9
Other Municipalities				7.0	-	0.0	7.0	7.0
					5,259.9		5,266.9	5,387.4
New York Power Authority		2.5			309.1	7.1	309.1	316.2
New York State Electric & Gas		85.9			2,833.4	64.9	2,833.4	2,898.3
Losses								-
Full Requirement Customers					38.9	0.9	38.9	39.8
Partial Requirement Customers					75.6	1.7	75.6	77.3
Other Adjustments					-	0.0	-	-
					2,947.9		2,947.9	3,015.4
National Grid		371.3	28.4		6,005.3	137.6	6,005.3	6,142.9
Losses								
Full Requirement Customers					112.2	2.6	112.2	114.8
Partial Requirement Customers					202.9	4.6	202.9	207.5
Other Municipalities					64.6	1.5	64.6	66.1
Other Adjustments				-	-		-	-
					6,385.0	0.0	6,385.0	6,531.3
Orange & Rockland Utilities		16.5			1,123.5	25.7	1,123.5	1,149.2
RG&E		31.9			1,523.1	34.9	1,523.1	1,558.0
Partial Requirement Customers					11.6	0.3	11.6	11.9
					1,534.7		1,534.7	1,569.9
Totals		726.7	44.6	7.0	31,717.4	726.7	31,724.4	32,451.1

2011 New York Control Area Peak Load Forecast

Preliminary 12/3/2010	2010 Weather- Normalized <u>Load + Losses (MW)</u>	Regional Load Growth <u>Factor</u>	2011 Forecast At Time of <u>NYCA Peak (MW)</u>
Central Hudson	1,162.9	1.0120	1,176.9
Consolidated Edison	13,318.8	1.01000	13,452.0
Long Island Power Authority	5,281.2	1.00320	5,298.1
Full Requirement Customers	15.3	1.00320	15.3
Partial Requirement Customers	83.9	1.00320	84.2
Other Municipalities	7.0	1.00320	7.0
New York Power Authority	316.2	1.0006	316.4
New York State Electric & Gas	2,898.3	1.0070	2,918.6
Full Requirements Customers	39.8	1.0070	40.1
Partial Requirements Customers	77.3	1.0070	77.8
Other Adjustments to Load	0.0	1.0070	0.0
National Grid	6,142.9	1.0070	6,185.8
Full Requirements Customers	114.8	1.0070	115.6
Partial Requirements Customers	207.5	1.0070	209.0
Other Municipalities	66.1	1.0070	66.6
Orange & Rockland Utilities	1,149.2	1.0160	1,167.6
Rochester Gas & Electric	1,558.0	1.0040	1,564.2
Partial Requirements Customers	11.9	1.0040	11.9
New York Control Area	32,451.1	1.0079	32,707.1
Zone J Locality Peak	11,400.0	1.0100	11,514.0
Zone K Locality Peak	5,417.0	1.0032	5,434.0

Summary of Weather Adjustments

- ◆ All analyses are specific to each Transmission District.
- ◆ Obtain actual daily peak loads and weather data from NYISO's databases.
- ◆ Add estimates of load management impacts to actual.
- ◆ Build weather response models, by TD.
- ◆ Obtain mean and standard deviation of weather data at date & time of historic NYCA peaks, and derive design conditions.
- ◆ Calculate weather adjustment:
$$\text{MW Adjustment} = (\text{Design} - \text{Actual}) \times \text{Weather Response}$$
- ◆ Add adjustment to actual load to obtain Adjusted Actual Peak MW at time of NYCA peak.
- ◆ Add municipal load & losses to TD loads as needed before making comparisons to NYISO results.

Central Hudson

TO's Results

Pct Diff

Actual MW **1,230**

1,229

-0.1%

Actual CTHI 89.50

Design CTHI 86.34

Difference 3.16

Difference - CTHI -3.16

Weather Response - MW/F 24

Weather Adjustment - MW **-76**

-64

-15.8%

Actual Adjusted MW **1,154**

1,165

1.0%

Linear Model

Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	804.290	12.327	65.245	0.00%
CTHI_Data.CTHI_75	31.156	1.897	16.427	0.00%

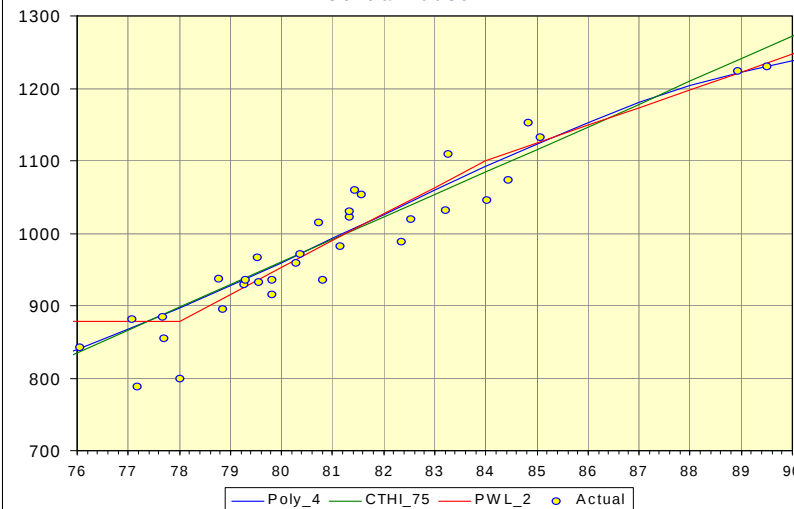
Two-Segment Piecewise Linear (Best Fit)

Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	878.963	14.080	62.425	0.00%
PWL_Data.CTHI_Low	36.896	3.879	9.511	0.00%
PWL_Data.CTHI_Hi	-12.477	8.297	-1.504	14.28%

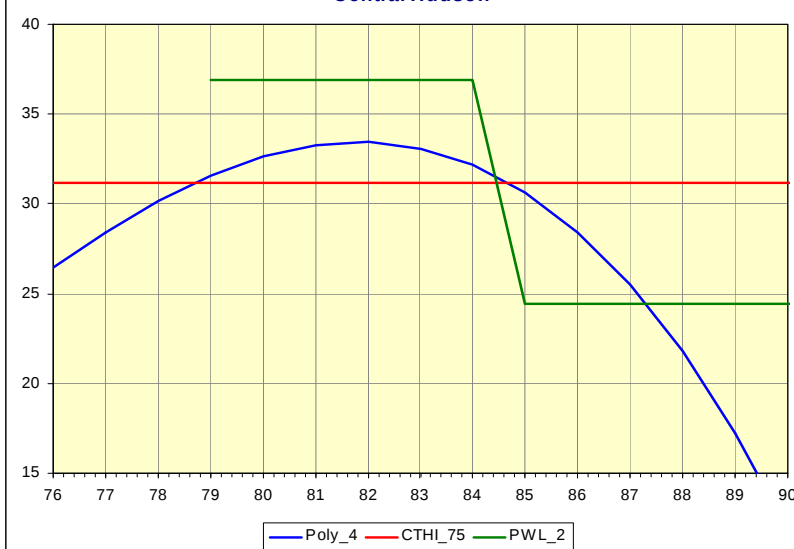
4th Order Polynomial

Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	688.860	9.690	71.089	0.00%
CTHI_Data.CTHI_3	0.085	0.006	13.740	0.00%
CTHI_Data.CTHI_4	-0.002	0.000	-8.857	0.00%

Daily Peaks vs CTHI - Actual & Model (MWs)
Central Hudson



Modeled Weather Response - MW per CTHI, vs CTHI
Central Hudson



Consolidated Edison

TO's Results

Pct Diff

Actual MW+ DSM

13,537

13,530

-0.1%

Actual CTHI

88.83

Design CTHI

87.42

Difference

1.41

Difference - CTHI

-1.41

Weather Response - MW/F

271

Weather Adjustment - MW

-381

-380

-0.3%

Actual Adjusted MW

13,156

13,150

0.0%

Linear Model (Best Fit)

Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	9609.673	92.375	104.029	0.00%
CTHI_Data.CTHI_75	271.336	13.087	20.733	0.00%

Two-Segment Piecewise Linear

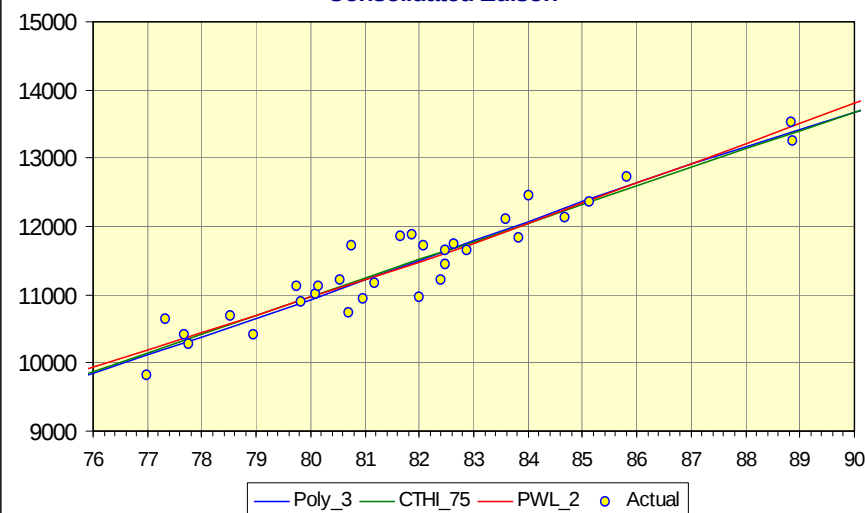
Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	9691.188	127.597	75.952	0.00%
PWL_Data.CTHI_Low	253.482	23.285	10.886	0.00%
PWL_Data.CTHI_Hi	38.619	41.630	0.928	35.90%

3rd Order Polynomial

Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	8323.501	553.989	15.025	0.00%
CTHI_Data.CTHI_1	-134.630	106.910	-1.259	21.29%
CTHI_Data.CTHI_2	18.930	6.414	2.951	0.45%
CTHI_Data.CTHI_3	-0.284	0.122	-2.330	2.33%

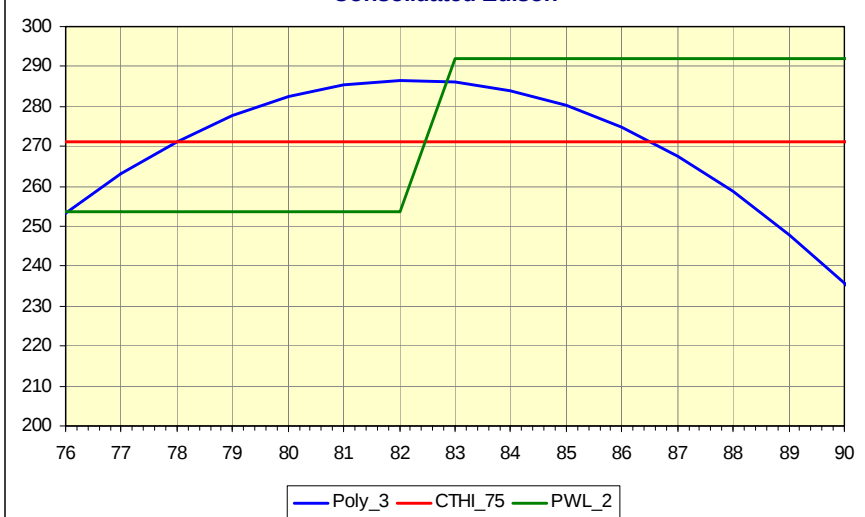
Daily Peaks vs CTHI - Actual & Model (MWs)

Consolidated Edison



Modeled Weather Response - MW per CTHI, vs CTHI

Consolidated Edison



Long Island Power Authority

TO's Results

Pct Diff

Actual MW	5,822	5,833	0.2%
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Actual CTHI	87.84
Design CTHI	84.64
Difference	3.20

Difference - CTHI	-3.20
Weather Response - MW/F	144

Weather Adjustment - MW	-460	-489	6.3%
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Actual Adjusted MW	5,362	5,344	-0.3%
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Linear Model (Best Fit)

Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	4032.245	57.954	69.577	0.00%
CTHI_Data.CTHI_75	144.056	10.925	13.186	0.00%

Two-Segment Piecewise Linear

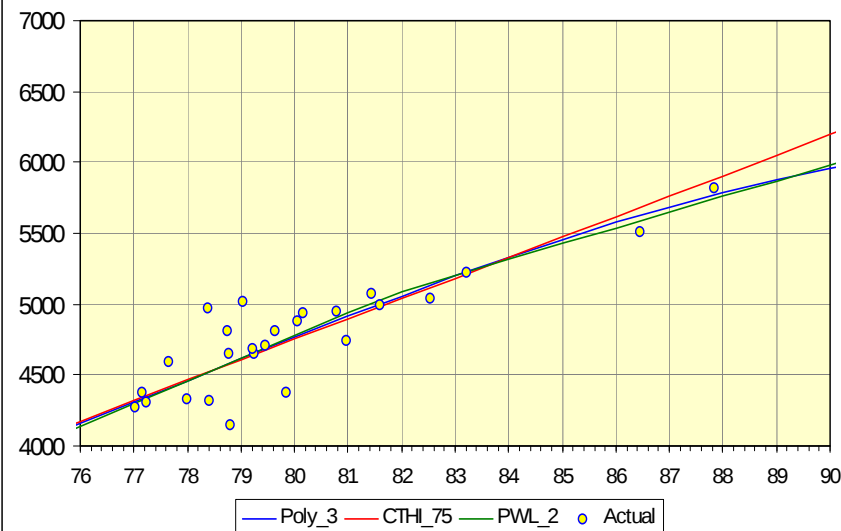
Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	3981.494	70.385	56.567	0.00%
PWL_Data.CTHI_Low	158.801	16.010	9.919	0.00%
PWL_Data.CTHI_Hi	-47.582	37.997	-1.252	21.83%

3rd Order Polynomial

Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	2586.871	74.592	34.680	0.00%
CTHI_Data.CTHI_2	8.844	0.751	11.771	0.00%
CTHI_Data.CTHI_3	-0.170	0.028	-6.038	0.00%

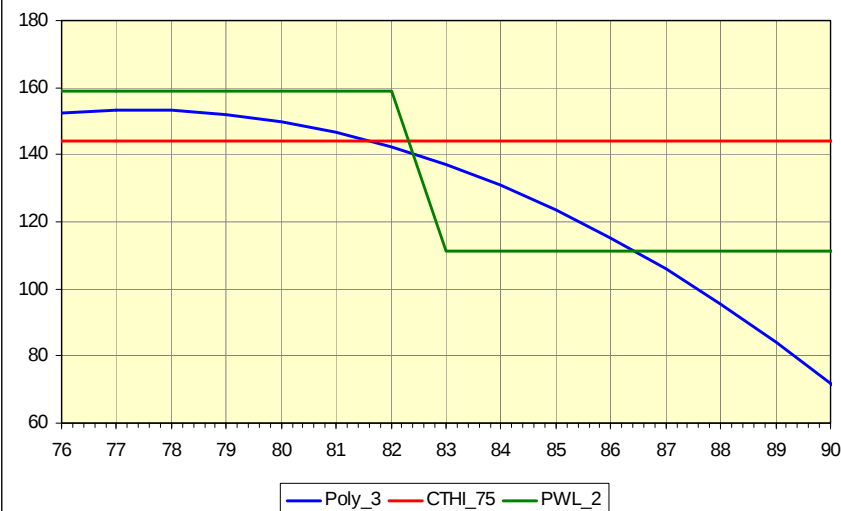
Daily Peaks vs CTHI - Actual & Model (MWs)

LIPA



Modeled Weather Response - MW per CTHI, vs CTHI

LIPA



New York Power Authority

TO's Results

Pct Diff

Actual MW **334**

315

-5.7%

Actual CTHI 85.20

Design CTHI 81.80

Difference 3.40

Difference - CTHI -3.40

Weather Response - MW/F 1.0

Weather Adjustment - MW **-3.40**

-3.5

2.9%

Actual Adjusted MW **331**

312

-5.8%

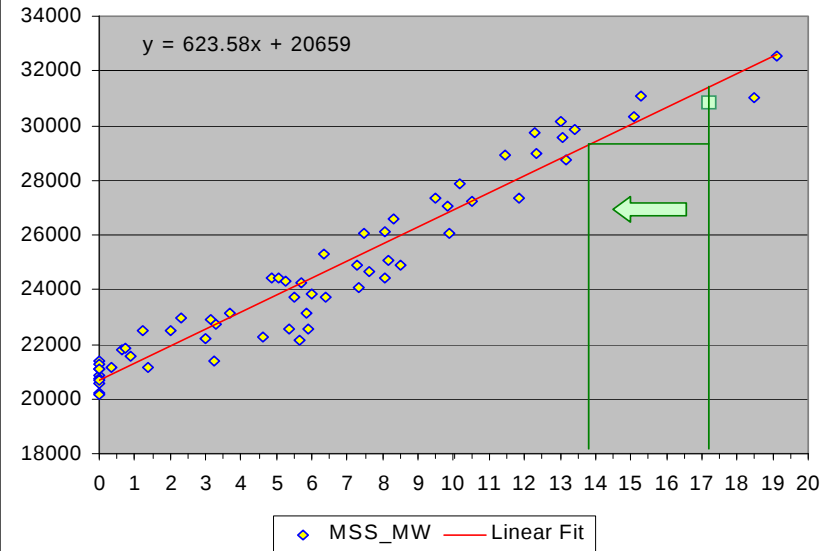
Massena Linear Model

Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	20658.794	165.442	124.870	0.00%
CTHI.CTHI_68	623.580	20.103	31.019	0.00%

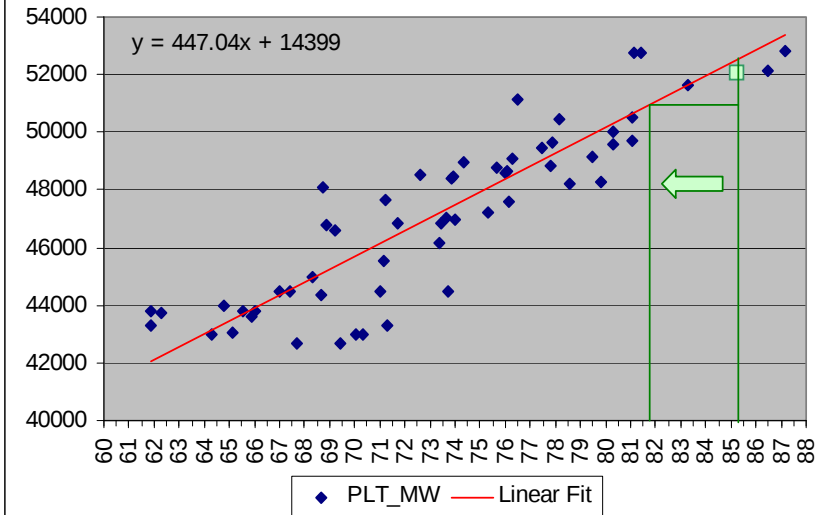
Plattsburg Linear Model

Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	14398.951	2244.646	6.415	0.00%
Metrix.CTHI	447.045	30.375	14.718	0.00%

Massena Weather Response - kW



Plattsburg Weather Response - kW



New York State Elec & Gas

TO's Results

Pct Diff

Actual MW **3,153**

3,149

-0.1%

Actual CTHI 83.49

Design CTHI 81.15

Difference 2.34

Difference - CTHI -2.34

Weather Response - MW/F 49

Weather Adjustment - MW **-115**

-115

0.0%

Actual Adjusted MW **3,038**

3,034

-0.1%

Linear Model

Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	2644.542	17.532	150.841	0.00%
CTHI_Data.CTHI_75	60.251	3.987	15.111	0.00%

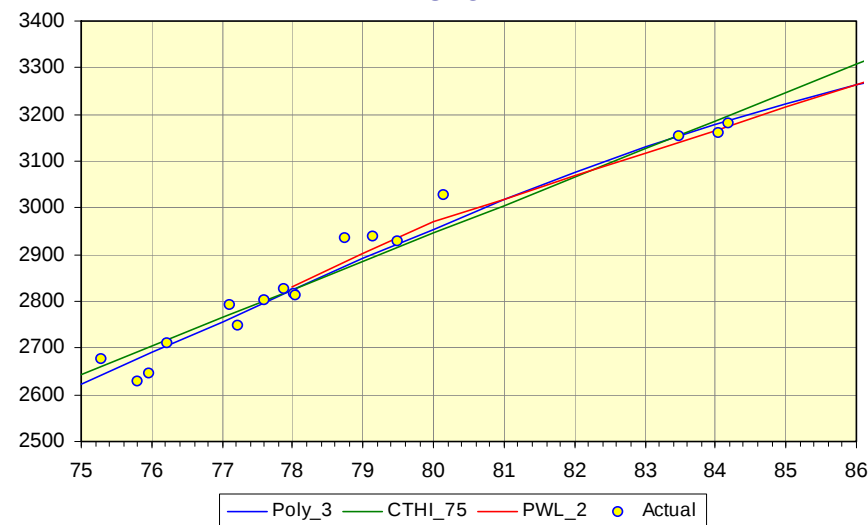
Two-Segment Piecewise Linear (Best Fit)

Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	2553.127	18.738	136.252	0.00%
PWL_Data.CTHI_Low	69.518	5.340	13.018	0.00%
PWL_Data.CTHI_Hi	-20.715	12.734	-1.627	11.59%

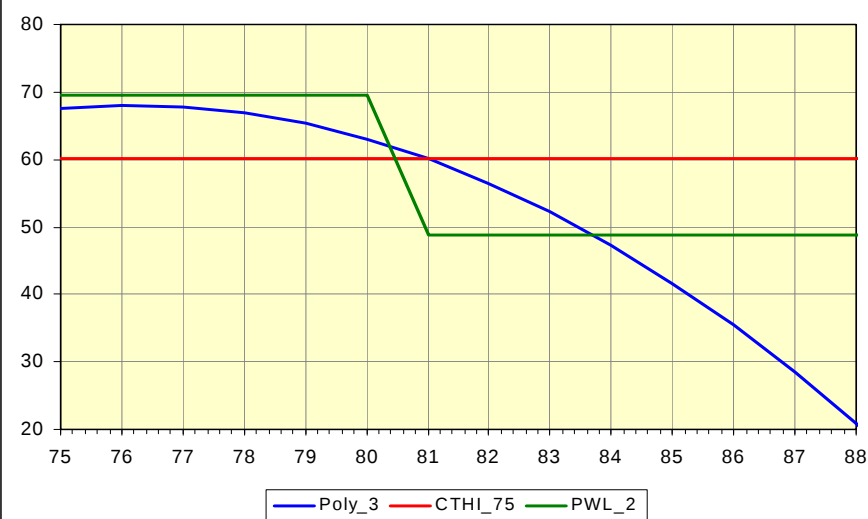
3rd Order Polynomial

Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	2059.355	15.706	131.117	0.00%
CTHI_Data.CTHI_2	4.791	0.280	17.091	0.00%
CTHI_Data.CTHI_3	-0.113	0.013	-8.398	0.00%

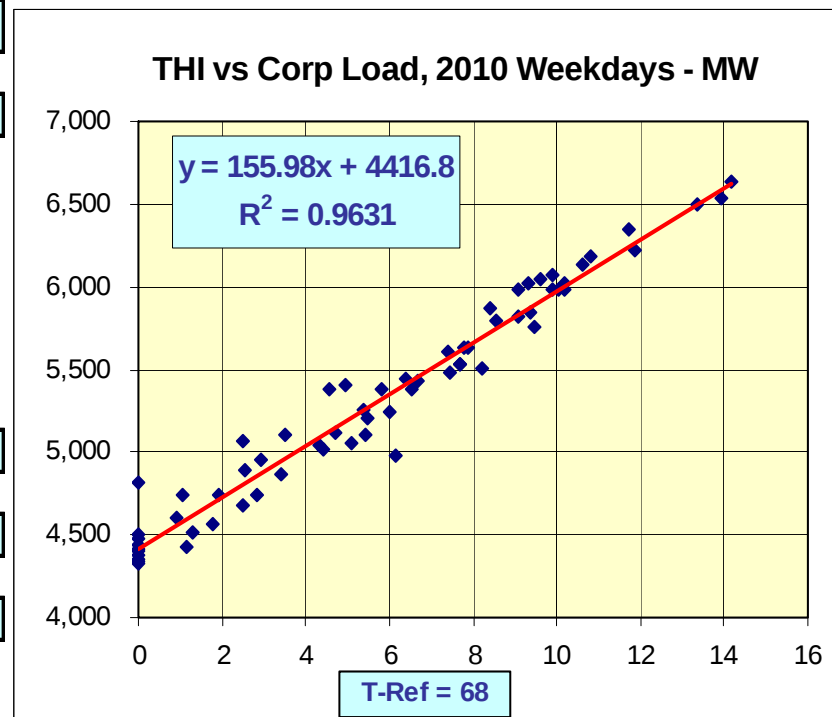
Daily Peaks vs CTHI - Actual & Model (MWs)
NYSEG



Modeled Weather Response - MW per CTHI, vs CTHI
NYSEG



National Grid		TO's Results	Pct Diff
Actual MW - Corp Load Only	6,491	6,491	0.0%
Actual THI	81.93		
Design THI	79.94		
Difference	1.99		
Difference - THI	-1.99		
Weather Response - MW/F	156		
Weather Adjustment - MW	-310	-339	9.4%
Actual Adjusted MW	6,181	6,152	-0.5%
Muni + Losses - Load Modifier	633	633	
Load With Muni's & Losses	6,814	6,785	-0.4%



Linear Model

Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	4416.831	26.989	163.650	0.00%
Metrix.CTHI_68	155.978	3.848	40.537	0.00%

Orange & Rockland

TO's Results

Pct Diff

Actual MW **1,144**

1,137

-0.6%

Actual TV 84.98

Design TV 84.90

Difference 0.08

Difference - TV -0.08

Weather Response - MW/F 34

Weather Adjustment - MW **-3**

3

-200.0%

Actual Adjusted MW **1,141**

1,140

-0.1%

Linear Model (Best Fit)

Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	806.856	10.629	75.908	0.00%
TV_Data.WPInsTV_75	34.312	2.695	12.731	0.00%

Two-Segment Piecewise Linear

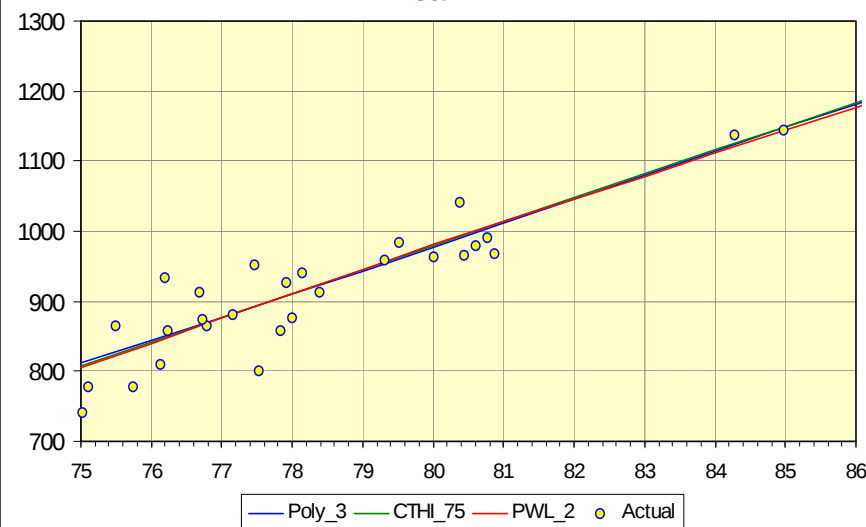
Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	804.911	12.827	62.749	0.00%
PWL.TV_1	35.198	4.187	8.406	0.00%
PWL.TV_2	-2.601	9.332	-0.279	78.21%

3rd Order Polynomial

Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	537.746	12.833	41.904	0.00%
TV_Data.WPInsTV_2	1.587	0.169	9.409	0.00%
TV_Data.WPInsTV_3	-0.024	0.007	-3.414	0.12%

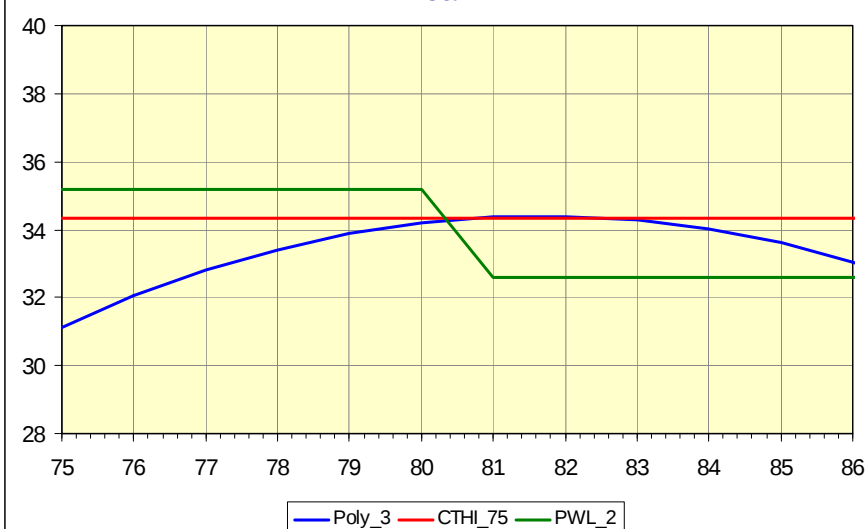
Daily Peaks vs CTHI - Actual & Model (MWs)

O&R



Modeled Weather Response - MW per CTHI, vs CTHI

O&R



Rochester Gas & Elec

TO's Results

Pct Diff

Actual MW **1,571** **1,576** **0.3%**

Actual CTHI 84.20

Design CTHI 83.20

Difference **1.00**

Difference - CTHI -1.00

Weather Response - MW/F 20

Weather Adjustment - MW **-20** **-9** **-55.0%**

Actual Adjusted MW **1,551** **1,567** **1.0%**

Linear Model

Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	1290.341	10.100	127.753	0.00%
CTHI_Data.CTHI_75	34.074	2.135	15.958	0.00%

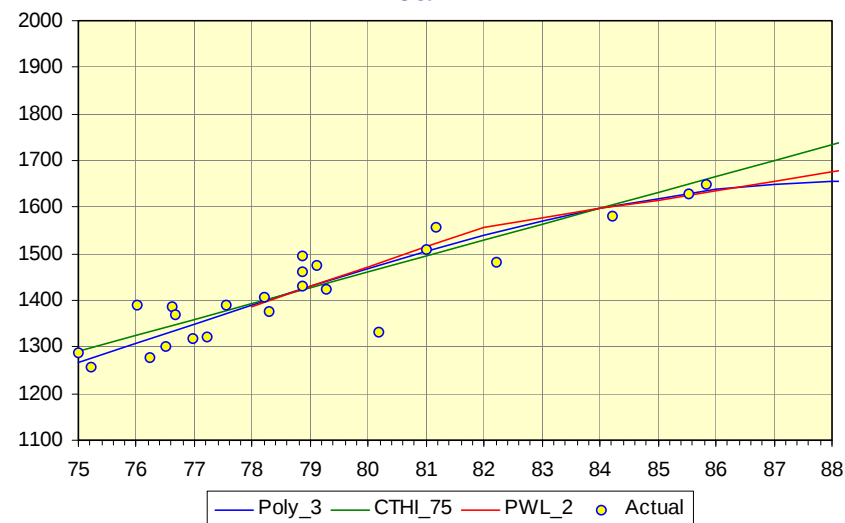
Two-Segment Piecewise Linear (Best Fit)

Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	1175.670	12.648	92.952	0.00%
PWL_Data.CTHI_Low	42.393	2.612	16.232	0.00%
PWL_Data.CTHI_Hi	-22.807	9.760	-2.337	2.51%

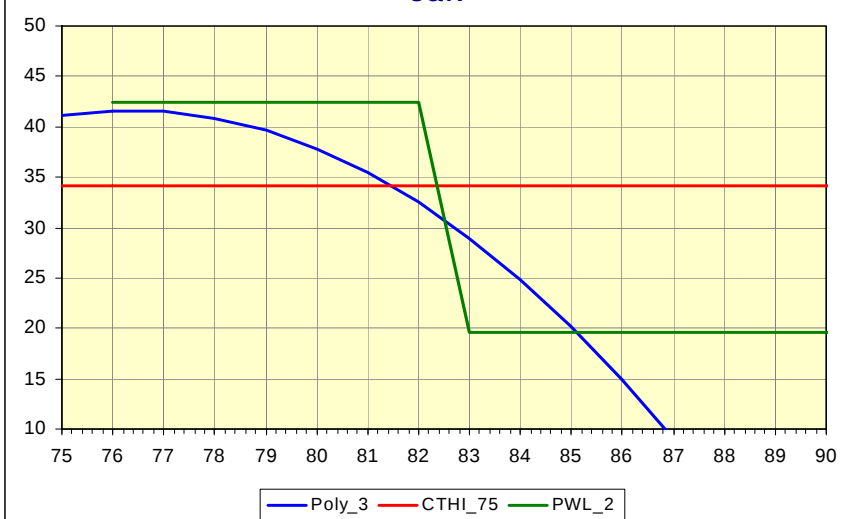
3rd Order Polynomial

Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	1011.311	17.856	56.637	0.00%
CTHI_Data.CTHI_1	-18.278	5.985	-3.054	0.34%
CTHI_Data.CTHI_2	4.163	0.580	7.176	0.00%
CTHI_Data.CTHI_3	-0.096	0.016	-5.985	0.00%

Daily Peaks vs CTHI - Actual & Model (MWs)
O&R



Modeled Weather Response - MW per CTHI, vs CTHI
O&R



Zone J Locality Peak

TO's Results

Pct Diff

Actual MW 11,663

11,663

0.0%

Actual CTHI 88.83

Design CTHI 87.42

Difference 1.41

Difference - CTHI -1.41

Weather Response - MW/F 230

Weather Adjustment - MW -324

-263

-18.8%

Actual Adjusted MW 11,339

11,400

0.5%

Linear Model (Best Fit)

Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	8445.430	52.853	159.790	0.00%
CTHI.CTHI_75	229.589	6.781	33.857	0.00%

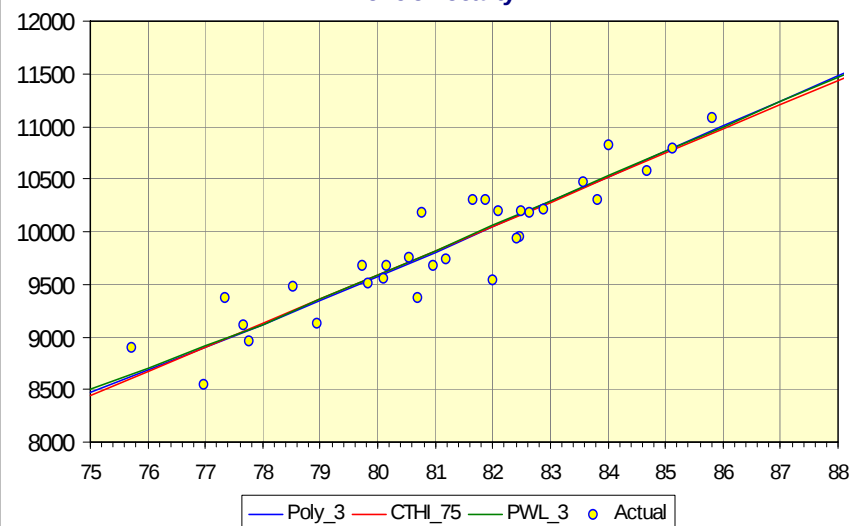
Two-Segment Piecewise Linear

Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	6557.738	73.954	88.673	0.00%
PWL.PWL_Low	90.163	9.224	9.775	0.00%
PWL.PWL_Med	117.286	14.470	8.105	0.00%
PWL.PWL_High	27.196	12.091	2.249	2.64%

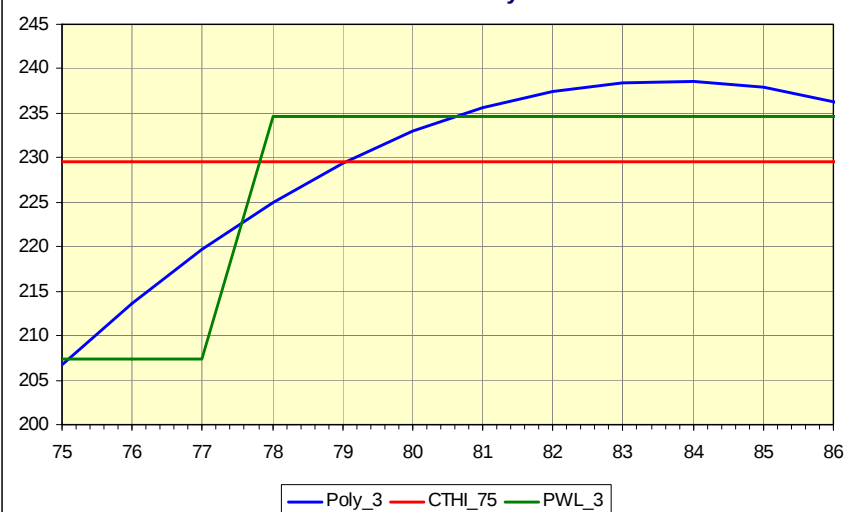
3rd Order Polynomial

Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	6681.626	46.037	145.135	0.00%
CTHI.CTHI_2	10.086	0.413	24.442	0.00%
CTHI.CTHI_3	-0.142	0.015	-9.437	0.00%

Daily Peaks vs CTHI - Actual & Model (MWs)
Zone J Locality



Modeled Weather Response - MW per CTHI, vs CTHI
Zone J Locality



Zone K Locality Peak		TO's Results	Pct Diff
Actual MW	5,822	5,833	0.2%
Actual CTHI	87.84		
Design CTHI	84.98		
Difference	2.86		
Difference - CTHI	-2.86		
Weather Response - MW/F	144		
Weather Adjustment - MW	-412	-416	1.0%
Actual Adjusted MW	5,410	5,417	0.1%

The New York Independent System Operator (NYISO) is a not-for-profit corporation that began operations in 1999. The NYISO operates New York's bulk electricity grid, administers the state's wholesale electricity markets, and performs comprehensive reliability and resource planning for the state's bulk electricity system.

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