G-J Locality Forecasting Method

Arthur Maniaci
Supervisor, Load Forecasting & Energy Efficiency
New York Independent System Operator

LFTF
November 18, 2013
KCC

DRAFT – FOR DISCUSSION PURPOSES ONLY

Summary

1. **Principles and Outline of Method**
2. **Example of Method using 2013 Data**
3. **Determination of Ratios of Non-Coincident Peak to Coincident Peak for G-J Locality and Zone J Locality, based on 10 years of historic data**

Principles for Developing the G-J Locality Forecast

1. **Non-coincident peak for any Locality must be greater than or equal to its coincident peak. Historical data determines the degree of the difference (see slides 11-14 for 10 years of data).**
2. **Load Forecasting Manual (LF Manual) methodology is applied for all Locality peaks, with recognition of multiple Transmission Owners (TOs) in the G-J Locality**
   - ***Each TO in the G-J Locality has its own actual load, weather normalized load, Regional Load Growth Factor (RLGF) and forecast.***
   - ***Proceed from coincident peaks of each TO to the non-coincident peak in the G-J Locality.***
   - ***Each TO's Locality peak is derived from the TO's individual weather normalized peak, using a ratio of the non-coincident peak to coincident peak for the entire G-J Locality, common to all TOs.***
3. **LF Manual acceptance criteria in G-J Locality are maintained for actual loads, weather normalized loads and RLGFs, specific to each TO.**

Outline of Approach

1. **Actual MW: Allocate TO total coincident peak MW across Zones G through J using zonal MW information from NYISO Financial Settlements group. Apply any adjustments to each TO's final load in proportion to NYISO's zonal load of each TO in the G-J Locality.**
2. **Weather normalized MW: Allocate weather normalized coincident peaks across Zones G through J in proportion to actual loads of each TO in the G-J Locality.**
3. **Apply a common non-coincident to coincident peak ratio to all coincident peak MW values in the G-J Locality, to obtain the G-J Locality weather normalized peak.**
4. **Apply the Regional Load Growth Factor for each TO to the zonal components of their non-coincident weather normalized peaks. These RLGFs can (and will) vary by TO.**
5. **There is no proportional allocation of losses within a Locality; only for the NYCA as a whole.**

(1a) – Actual NYCA-Coincident MW for TOs in G-J Locality, By Transmission District

2013 Actual MW By Transmission Owner NYCA Coincident Peak - Actual					
Utility	**Gens**	**Ties**	**Gen+Tie**	**Losses**	**TD Loads Less Losses**
Central Hudson	1155.6	8.7	1164.3	34.1	1130.3
Orange & Rockland	825.1	302.6	1127.7	15.5	1112.2
NYSEG	1594.9	1696.3	3291.2	90.2	3201.0
Con_Ed	10059.7	3227.3	13287.0	121.6	13165.4
NYCA Total (Coincident)	13635.3	5234.9	18870.2	261.3	18608.9

Notes: (1) All TOs except NYSEG are fully contained in the G-J Locality.

(1b) – Actual NYCA-Coincident MW for TOs in G-J Locality by Zone, Within the G-J Locality

2013 Actual MW By Transmission Owner - Zonal Detail
G-J Coincident Peak - Actual

Utility	Zone G MW	Zone H MW	Zone I MW	Zone J MW	Total G-J MW	Weather Normalized MW in G-J
Central Hudson	1164.3				1164.3	1106.3
Orange & Rockland	1127.7				1127.7	1145.7
NYSEG	24.8	380.1			404.8	374.0
Con_Ed		332.8	1484.7	11469.5	13287.0	13325.0
G-J Total (Coincident)	2316.8	712.9	1484.7	11469.5	15983.8	15951.0

Notes: (1) Includes only NYSEG's portion of its load in the G-J Locality; all other TOs are entirely within the G-J Locality
(2) Current estimates of weather normalized coincident load are also shown.
(3) Results show contribution in each zone for TOs

(2) – Weather-Normalized NYCA-Coincident MW for TOs in G-J Locality, by Zone

2013 Weather-Normalized MW By Transmission Owner - Zonal Detail G-J Coincident Peak - Normalized					
Utility	**Zone G MW**	**Zone H MW**	**Zone I MW**	**Zone J MW**	**Total G-J MW**
Central Hudson	1106.3				1106.3
Orange & Rockland	1145.7				1145.7
NYSEG	22.9	351.1			374.0
Con_Ed		333.8	1488.9	11502.3	13325.0
G-J Total (Coincident)	2274.9	684.9	1488.9	11502.3	15951.0
Ratio of NCP to CP	1.010	1.010	1.010	1.010	1.010

Notes: (1) Ratio of G-J Locality's non-coincident peak to coincident peak is also shown.
(2) Derivation of this ratio is shown on slides 11-14

(3) – Weather-Normalized Locality Peak MW (Non-Coincident) for TOs in G-J Locality, by Zone

2013 Weather-Normalized MW By Transmission Owner - Zonal Detail G-J Locality						
Utility	**Zone G MW**	**Zone H MW**	**Zone I MW**	**Zone J MW**	**Total G-J MW**	**TO's RLGF (example)**
Central Hudson	1117.4				1117.4	1.000
Orange & Rockland	1157.2				1157.2	1.006
NYSEG	23.1	354.6			377.7	1.003
Con_Ed		337.1	1503.8	11617.3	13458.3	1.013
G-J Total (Non-Coincident)	2297.6	691.7	1503.8	11617.3	16110.5	

Notes: (1) Regional Load Growth Factors (RLGFs) for each TO are also shown.

(4a) – Non-Coincident G-J Locality Peak Forecast for TOs in G-J Locality, by Zone

2014 G-J Locality Peak Forecast - Zonal Detail					
Utility	**Zone G MW**	**Zone H MW**	**Zone I MW**	**Zone J MW**	**Total G-J MW**
Central Hudson	1117.4				1117.4
Orange & Rockland	1164.1				1164.1
NYSEG	23.2	355.7			378.9
Con_Ed		341.5	1523.3	11768.4	13633.2
G-J Total (Non-Coincident)	2304.7	697.2	1523.3	11768.4	16293.6

(4b) – NYCA-Coincident Peak Forecast for TOs in G-J Locality, by Zone

2014 G-J Coincident Peak Forecast - Zonal Detail					
Utility	**Zone G MW**	**Zone H MW**	**Zone I MW**	**Zone J MW**	**Total G-J MW**
Central Hudson	1106.3				1106.3
Orange & Rockland	1152.6				1152.6
NYSEG	22.9	352.2			375.1
Con_Ed		338.1	1508.3	11651.9	13498.3
G-J Total (Coincident)	2281.8	690.3	1508.3	11651.9	16132.3
Check NCP/CP Ratio	1.010	1.010	1.010	1.010	1.010

Check: Ratio of G-J Locality Forecast to the NYCA Coincident Forecast in the G-J Locality is the same as the initial NCP/CP ratio

Example of G-J Locality and Zone J Locality Peaks, using 2004 to 2013 data

- **NYCA coincident peaks for G through J**
- **G-J Locality non-coincident peaks for G through J**
- **Zone J Locality non-coincident peaks for G through J**
- **G-J ratio of its NCP to CP is 1.010 (10 year average)**
- **Zone J ratio of its NCP to CP is 1.012 (10 year average)**
- **G-J Locality peak >= G-J coincident peak by 1%**
- **Zone J Locality peak >= Zone J's coincident peak (by 1.2%) and G-J Locality peak (by 0.2%).**
- **NCP/CP ratio in the G-J Locality and Zone J are based on the ten-year average values of their peaks.**

Notes: (1) All historic peaks are based on actual loads plus impacts of Demand Response on specific days and hours.

10-Year Historic Peaks in NYCA (Coincident) and G-J Locality (Non-Coincident)

NYCA Coincident Peak Dates & Times & Zonal MW						
Year	NYCA Date	Hr End	Zone G	Zone H+I	Zone J	G-J CP
2004	6/9/2004	17	2,041	1,755	9,742	13,538
2005	7/26/2005	17	2,236	2,001	10,806	15,043
2006	8/2/2006	14	2,436	2,063	11,604	16,103
2007	8/8/2007	17	2,316	2,033	10,971	15,320
2008	6/9/2008	17	2,277	2,056	10,979	15,311
2009	8/17/2009	16	2,159	1,875	10,366	14,400
2010	7/6/2010	17	2,399	2,187	11,600	16,186
2011	7/22/2011	16	2,482	2,239	11,826	16,546
2012	7/17/2012	14	2,282	2,082	11,405	15,769
2013	7/19/2013	17	2,384	2,253	11,736	16,373
A	10-Year Average		2,301	2,054	11,103	15,459

G-J Peak Dates & Times & Zonal MW						
Year	G-J Date	Hr End	Zone G	Zone H+I	Zone J	G-J NCP
2004	6/9/2004	17	2,041	1,755	9,742	13,538
2005	7/27/2005	17	2,301	2,110	11,364	15,775
2006	8/2/2006	17	2,497	2,133	11,660	16,290
2007	8/8/2007	17	2,316	2,033	10,971	15,320
2008	6/10/2008	17	2,338	2,101	11,262	15,701
2009	8/21/2009	15	2,117	1,879	10,661	14,657
2010	7/6/2010	17	2,399	2,187	11,600	16,186
2011	7/22/2011	16	2,482	2,239	11,826	16,546
2012	7/18/2012	13	2,288	2,071	11,424	15,783
2013	7/19/2013	17	2,384	2,253	11,736	16,373
B	10-Year Average		2,316	2,076	11,225	15,617

C = B/A				
10-Year Average NCP/CP Ratio	1.007	1.011	1.011	1.010

Incremental MW of G-J Locality Peaks, Compared to their NYCA Coincident Peaks

G-J MW Differences from NYCA CP						
Year	G-J Date	Hr End	Zone G	Zone H+I	Zone J	G-J NCP
2004	6/9/2004	17	0	0	0	0
2005	7/27/2005	17	65	109	558	732
2006	8/2/2006	17	61	70	56	187
2007	8/8/2007	17	0	0	0	0
2008	6/10/2008	17	62	45	283	390
2009	8/21/2009	15	-41	4	294	257
2010	7/6/2010	17	0	0	0	0
2011	7/22/2011	16	0	0	0	0
2012	7/18/2012	13	6	-11	19	14
2013	7/19/2013	17	0	0	0	0
10-Year Average			15	22	121	158

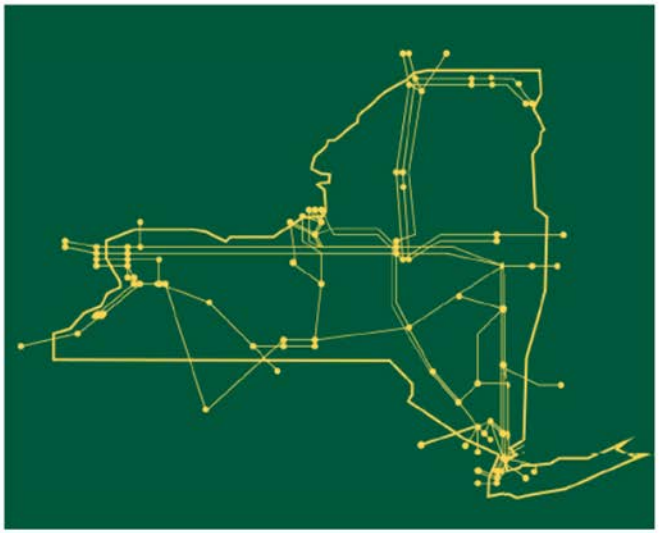
D = B - A

10-Year Historic Peaks in NYCA (Coincident) and Zone J (Non-Coincident)

NYCA Coincident Peak Dates & Times & Zonal MW						
Year	NYCA Date	Hr End	Zone G	Zone H+I	Zone J	G-J CP
2004	6/9/2004	17	2,041	1,755	9,742	13,538
2005	7/26/2005	17	2,236	2,001	10,806	15,043
2006	8/2/2006	14	2,436	2,063	11,604	16,103
2007	8/8/2007	17	2,316	2,033	10,971	15,320
2008	6/9/2008	17	2,277	2,056	10,979	15,311
2009	8/17/2009	16	2,159	1,875	10,366	14,400
2010	7/6/2010	17	2,399	2,187	11,600	16,186
2011	7/22/2011	16	2,482	2,239	11,826	16,546
2012	7/17/2012	14	2,282	2,082	11,405	15,769
2013	7/19/2013	17	2,384	2,253	11,736	16,373
E	10-Year Average		2,301	2,054	11,103	15,459

Zone J Peak Dates & Times & Zonal MW						
Year	Zone J Date	Hr End	Zone G	Zone H+I	Zone J	G-J NCP
2004	6/17/2004	16	1,727	1,500	9,769	12,996
2005	7/27/2005	17	2,301	2,110	11,364	15,775
2006	8/2/2006	17	2,497	2,133	11,660	16,290
2007	8/8/2007	17	2,316	2,033	10,971	15,320
2008	6/10/2008	17	2,338	2,101	11,262	15,701
2009	8/21/2009	15	2,117	1,879	10,661	14,657
2010	7/6/2010	17	2,399	2,187	11,600	16,186
2011	7/22/2011	12	2,375	2,107	11,876	16,358
2012	7/18/2012	15	2,115	2,002	11,438	15,554
2013	7/19/2013	17	2,384	2,253	11,736	16,373
F	10-Year Average		2,257	2,030	11,234	15,521
G = F/E	10-Year Average NCP/CP Ratio				1.012	

The New York Independent System Operator (NYISO) is a not-for-profit corporation responsible for operating the state's bulk electricity grid, administering New York's competitive wholesale electricity markets, conducting comprehensive long-term planning for the state's electric power system, and advancing the technological infrastructure of the electric system serving the Empire State.



www.nyiso.com