

# 2013-2014 NYCA IRM Requirement Study

## Base Case Model Assumptions

### Load Parameters

Parameter	2012 Model Assumptions	2013 Model Assumptions Recommended	Basis for Recommendation	Model Change	Possible Impact*
Peak Load	October 1, 2011 forecast NYCA: 33,335 MW NYC: 11,607 MW Long Island: 5521 MW	October 1, 2012 forecast NYCA: XX MW NYC: XX MW Long Island: XX MW	Forecast based on examination of 2012 weather normalized peaks. Top three external Area peak days aligned with NYCA	N	Low(+)
Load Shape	2002 Load Shape	xxxx Load Shape	Chosen to better approximate the 'typical' load shape.	Y	None
Load Forecast Uncertainty	Zonal model updated to reflect current data	Zonal model updated to reflect current data	Based on collected data and input from LIPA, Con Ed, and NYISO. Method and values accepted by LFTF (See attachment A)	N	None

## 2013-2014 IRM Study Assumption Matrix

### Capacity Parameters - Generation

Parameter	2012 Model Assumptions	2013 Model Assumptions Recommended	Basis for Recommendation	Model Change	Possible Impact*
Existing Generating Unit Capacities	2011 Gold Book values. Use min (DMNC vs. CRIS) capacity value	2012 Gold Book values. Use min (DMNC vs. CRIS) capacity value	2012 Gold Book publication	N	Low(-)
Proposed New Units	Total new capacity = 1413 MW. See Tables A-5 and A-6 of the 2012 IRM Report	See Attachment B	Units built since the 2011 Gold Book and those non-renewable units with Interconnection Agreements signed by August 1, 2012. Renewable units based on RPS agreements and ICS input	N	Low(-) may balance with above
Retirements	351 MW of retirements. See Appendix E of the 2012 IRM Report	See Attachment B	Newly adopted Policy 5 guidelines on retirement disposition in IRM studies	N	Med (-)
Forced and Partial Outage Rates	Five-year (2006-2010) GADS data	Five-year (2007-2011) GADS data. Those units with less than five years – use representative data	Most recent five-year period. Includes proxy data for unit(s) that are deemed suspect as part of the GADS screening process	N	Med(+)
EFORd	Transition rates representing the Equivalent Forced Outage Rates (EFOR) were derived using NYISO developed software	Transition rates representing the Equivalent Forced Outage Rates (EFOR) during demand periods were derived using GADS Open Source software	White Paper indicates that using the new software creates transition rates more closely aligned with the EFORd of the units	Y	Med (-)

## 2013-2014 IRM Study Assumption Matrix

Planned Outages	Based on schedules received by the NYISO and adjusted for history	Based on schedules received by the NYISO and adjusted for history	Updated schedules	N	None
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### Capacity Parameters – Generation (*continued*)

Parameter	2012 Model Assumptions	2013 Model Assumptions Recommended	Basis for Recommendation	Model Change	Possible Impact*
Summer Maintenance	Nominal 50 MWs – divided between upstate and downstate	Nominal 50 MWs – divided equally between upstate and downstate	Review of most recent data	N	None
Combustion Turbine Derates	Derate based on temperature correction curves provided	Derate based on temperature correction curves provided	Operational history indicates the derates are in-line with manufacturer's curves	N	None
Wind Resources	Wind Capacity – 1648 MWs Derived from hourly wind data resulting in an average Summer Peak Hour availability of ~11%	Wind Capacity – xx MWs Derived from hourly wind data resulting in an average Summer Peak Hour availability of -yy%	Based on collected hourly wind data. Summer Peak Hour capacity factor based on June 1 – Aug 31, hours HB14 – HB18.	N	Med (+)
Wind Shape	2002 Wind Generation Profile	2002 Wind Generation Profile	A sensitivity will be performed using MARS probabilistic feature.	N	None
Solar Resources	Solar Capacity – 38.5 MW	Solar Capacity – xx MW. Unit output checked against actual hourly solar data for a different year. See Attachment B-2	Based on collected hourly solar data. Summer Peak Hour capacity factor based on June 1 – Aug 31, hours HB14 – HB18	N	None
Non-NYPA Hydro Resources	Derate by 45%	Derate by xx%	Review of unit production and hydrological conditions including recognized forecasts (i.e. NOAA)	N	None

## 2013-2014 IRM Study Assumption Matrix

### Capacity Parameters – Import and Exports

Parameter	2012 Model Assumptions	2013 Model Assumptions Recommended	Basis for Recommendation	Model Change	Possible Impact*
Capacity Purchases	Grandfathered amounts: ISONE – 50 MW PJM – 1080 MW HQ – 1090 MW All contracts model as equivalent contracts	Grandfathered amounts: ISONE – 50 MW (through 12/2013) PJM – 1080 MW HQ – 1090 MW All contracts model as equivalent contracts	Grandfathered Rights, ETCNL, and other FERC identified rights	N	None
Capacity Sales	Long Term firm sales (279 MW)	Long Term firm sales (xxx MW)	These are long term federally monitored contracts	N	None
UDRs	Amounts are confidential	UDRs on HTP Line	Contracted amounts of capacity are confidential and are included as capacity internal to the NYISO	N	Med (-)
Capacity Wheels	None modeled	None modeled. Sensitivity Case to be run	The ISO Tariff is silent about capacity wheels though NYCA	N	None

## 2013-2014 IRM Study Assumption Matrix

### Topology Parameters

Parameter	2012 Model Assumptions	2013 Model Assumptions Recommended	Basis for Recommendation	Model Change	Possible Impact*
Interface Limits	All changes reviewed and commented on by TPAS	All changes reviewed and commented on by TPAS See Attachment E	Based on 2012 Operating Study, 2012 Operations Engineering Voltage Studies, 2012 Comprehensive Planning Process, and additional analysis including interregional planning initiatives	N	None to Low(+)
New Transmission	None	HTP – Hudson Transmission Project – scheduled for 2013 operation	Based on TO provided models and NYISO review	Y	See above-UDRs
Cable Forced Outage Rates	All existing Cable EFORs updated for NYC and LI to reflect five-year history	All existing Cable EFORs updated for NYC and LI to reflect five-year history	Based on TO analysis	N	None

## 2013-2014 IRM Study Assumption Matrix

### Emergency Operating Procedure Parameters

Parameter	2012 Model Assumptions	2013 Model Assumptions Recommended	Basis for Recommendation	Model Change	Possible Impact*
Special Case Resources	July 2012 – 2192 MW based on registrations and NYISO growth rate forecast. Monthly variation based on historical experience	July 2013 – xxx MW based on registrations and NYISO growth rate forecast. Monthly variation <u>removed due to multiplier effect</u>	Those sold for the program discounted to historic availability. Summer values calculated from July 2012 registrations Potential sensitivity for alternate performance calculation	N	Low (+)
EDRP Resources	July 2012 – 148 MW registered model as 95 MW in July and August. Proportional to monthly peak load in other months Limit to five calls per month	July 2013 – xxx MW registered model as yy MW in July and August. Proportional to monthly peak load in other months Limit to five calls per month	Those sold for the program discounted to historic availability. Summer values calculated from July 2012 registrations	N	Low (+)
Other EOPs	735 MW of non-SCR/non-EDRP resources	xxx MW of non-SCR/non-EDRP resources See Attachment D	Based on TO information, measured data, and NYISO forecasts	N	None

## 2013-2014 IRM Study Assumption Matrix

### External Control Areas Parameters

Parameter	2012 Model Assumptions	2013 Model Assumptions Recommended	Basis for Recommendation	Model Change	Possible Impact*
PJM	Four Area representation	Load and Capacity data provided by PJM/NPCC CP-8 Data may be adjusted per NYSRC Policy 5 See Attachment E	Additional level of review (prior to Policy 5 changes) performed by the NPCC CP-8 WG	N	below
ISONE	Thirteen Area representation	Load and Capacity data provided by ISONE/NPCC CP-8 Data may be adjusted per NYSRC Policy 5 See Attachment E	Additional level of review (prior to Policy 5 changes) performed by the NPCC CP-8 WG	N	below
HQ	Single Area representation	Load and Capacity data provided by HQ/NPCC CP-8 Data may be adjusted per NYSRC Policy 5 See Attachment E	Additional level of review (prior to Policy 5 changes) performed by the NPCC CP-8 WG	N	below
IESO	Single Area representation	Load and Capacity data provided by IESO/NPCC CP-8 Data may be adjusted per NYSRC Policy 5 See Attachment E	Additional level of review (prior to Policy 5 changes) performed by the NPCC CP-8 WG	N	Low (+) for sum above
Reserve Sharing	All NPCC Control Areas indicate that they will	All NPCC Control Areas indicate that they will share	Per NPCC CP-8 WG	N	None

## 2013-2014 IRM Study Assumption Matrix

	share reserves equally among all members	reserves equally among all members			
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### Miscellaneous Parameters

Parameter	2012 Model Assumptions	2013 Model Assumptions Recommended	Basis for Recommendation	Model Change	Possible Impact*
MARS Model Version	Version 3.12	Version 3.xx	Per benchmark testing and ICS recommendation	N	None
Environmental Initiatives	None for Base Case	Xxx estimated impacts based on review of existing rules and retirement trends	An analysis of air and water pollution rules, Retirement trends, and Economic conditions	N	None



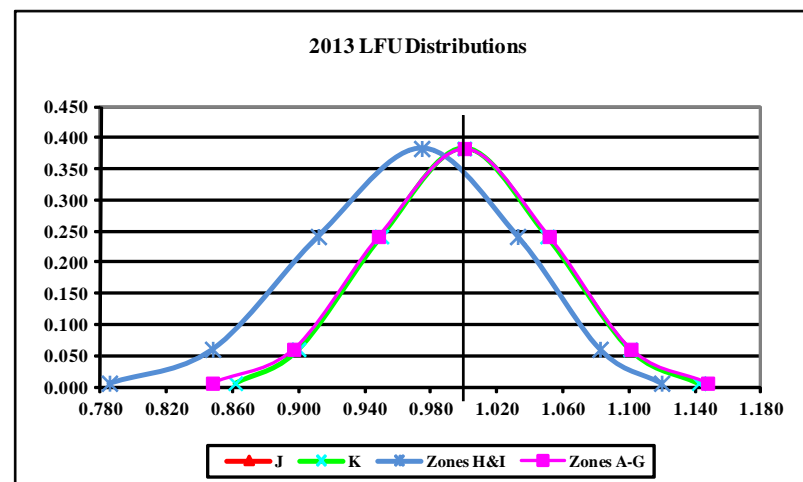
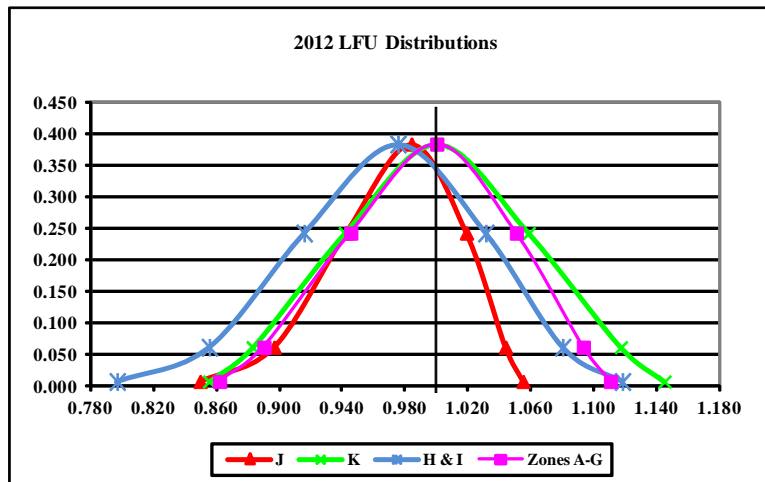
# 2013-2014 IRM Study Assumption Matrix

## Attachment A NYCA Load Forecast Uncertainty

### 2012 and 2013 LFU Models

Multiplier	Zones H&I	Con Ed (J)	LIPA (K)	Zones A-G
0.0062	1.1181	1.0549	1.1448	1.1105
0.0606	1.0801	1.0437	1.1171	1.0932
0.2417	1.0312	1.0189	1.0585	1.0506
0.3830	0.9753	0.9839	1.0000	1.0000
0.2417	0.9157	0.9422	0.9415	0.9453
0.0606	0.8554	0.8966	0.8829	0.8901
0.0062	0.7968	0.8495	0.8552	0.8619

Multiplier	Zones H&I	Con Ed (J)	LIPA (K)	Zones A-G
0.0062	1.1195	0.0000	1.1420	1.1473
0.0606	1.0822	0.0000	1.1004	1.1009
0.2417	1.0323	0.0000	1.0502	1.0514
0.3830	0.9742	0.0000	1.0000	1.0000
0.2417	0.9116	0.0000	0.9498	0.9480
0.0606	0.8476	0.0000	0.8996	0.8967
0.0062	0.7851	0.0000	0.8613	0.8475



## 2013-2014 IRM Study Assumption Matrix

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Attachment B  
List<sup>1</sup> of Proposed Units  
(To be in-service by summer of 2013)

<u>Project Name</u>	<u>IS Date</u>	<u>Zone</u>	<u>MW</u>
<b>Hudson Transmission Project [UDR]</b>	<b>5/13</b>	<b>J</b>	<b>660</b>
<b>Taylor Biomass</b>	<b>12/12</b>	<b>G</b>	<b>19</b>

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<sup>1</sup> The list on this page does not show wind units which are presented on Attachment B-1.

# 2013-2014 IRM Study Assumption Matrix

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## Attachment B1 Renewable Generating Wind Projects for Inclusion in the 2013-2013 Installed Reserve Margin Study

## 2013-2014 IRM Study Assumption Matrix

Facility Name	Zone	Connecting Transmission Owner	NYISO Interconnection Study Queue Project Number	Projected/ Actual In-Service Date	New Wind Capacity for 2013 IRM (MW)	Total Wind Capacity for 2013 IRM (MW)
<b>Existing Units</b>						
Steel Wind	A	National Grid		2007 Jan		20.0
Bliss Wind Power	A	Village of Arcade	173	2008 May		100.5
Canandaigua Wind Power	C	NYSEG	135&199	2008 Jun		125.0
Hardscrabble Wind	E	National Grid	156	2011 Sept		74.0
Howard Wind	C	NYSEG	182	2011 Dec		57.4
Wethersfield Wind Power	C	NYSEG	177	2008 Dec		126.0
High Sheldon Wind Farm	C	NYSEG	144	2009 Feb		112.5
Altona Wind Power	D	NYPA	174	2008 Sept		97.5
Chateaugay Wind Power	D	NYPA	214	2008 Sept		106.5
Clinton Wind Power	D	NYPA	172 & 211	2008 May		100.5
Ellenburg Windpark	D	NYPA	175	2008 May		81.0
Munnsville	E	NYSEG	127A	2007 Aug		34.5
Maple Ridge 1	E	National Grid	171	2006 Feb		231.0
Maple Ridge 2	E	National Grid	171	2006 Feb		90.7
Madison Wind Power	E	NYSEG	N/A	2000 Sept		11.5
<b>Proposed Units</b>						
Stony Creek Wind Farm	C	NYSEG	263	2012 Dec	94.4	94.4
Marble River Wind Farm 1 and 2	D	NYPA	161 & 171	2012 Oct	216.3	216.3
<b>TOTAL CAPACITY - ALL CATEGORIES</b>					<b>310.7</b>	<b>1,679.3</b>

## 2013-2014 IRM Study Assumption Matrix

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### Attachment B2

#### Proposed Generating Unit Retirements

(for Inclusion in the 2013-2013 Installed Reserve Margin Study)<sup>2</sup>

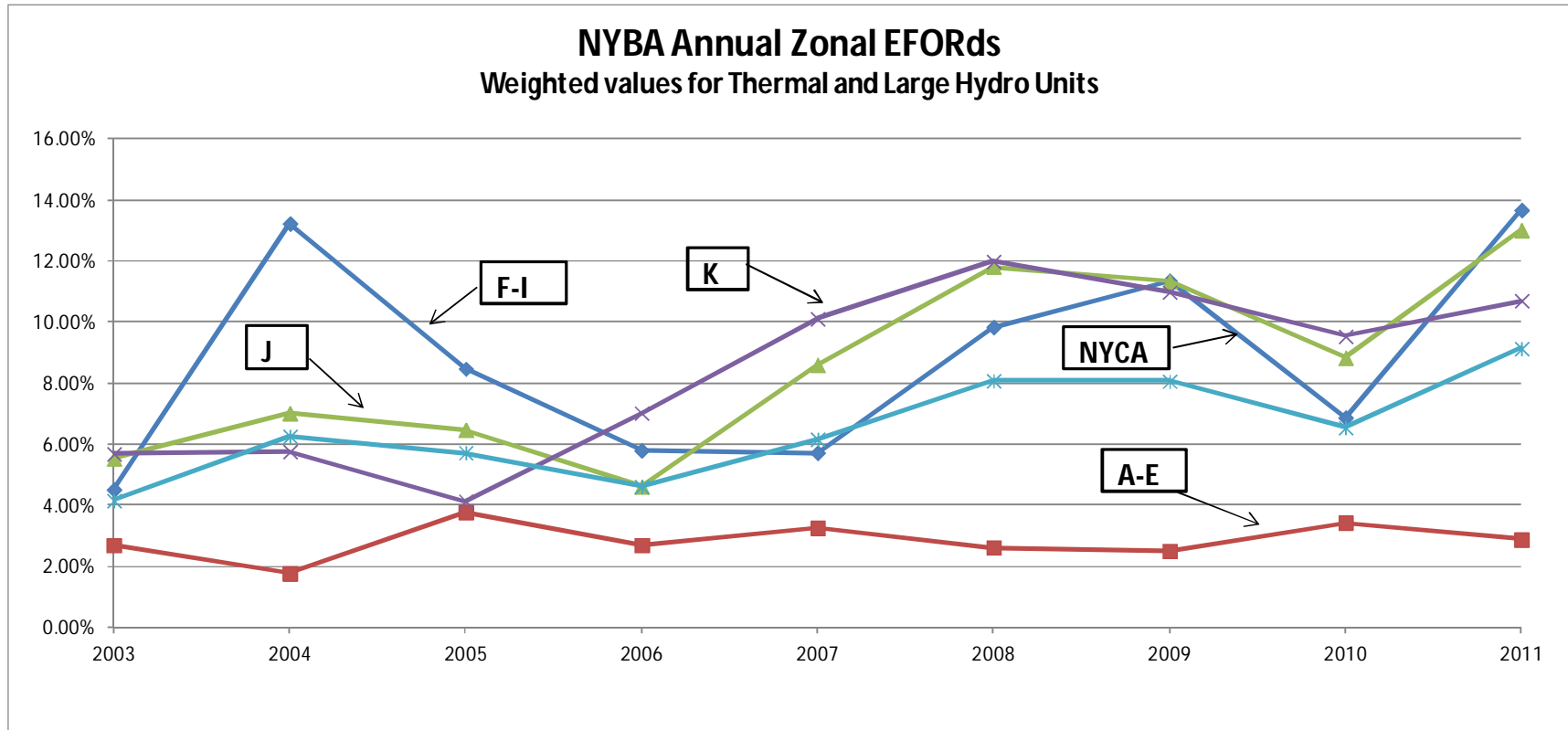
<u>Unit</u>	<u>Zone</u>	<u>MW</u>
Astoria 4	J	376
Gowanus 1	J	134
Gowanus 2	J	134
Far Rockaway ST04	K	107
Glenwood ST 04	K	115
Glenwood ST 05	K	109
Astoria GT 10	J	18
Astoria GT 11	J	16
Astoria 2	J	177
	<b>Total:</b>	<b>1229</b>

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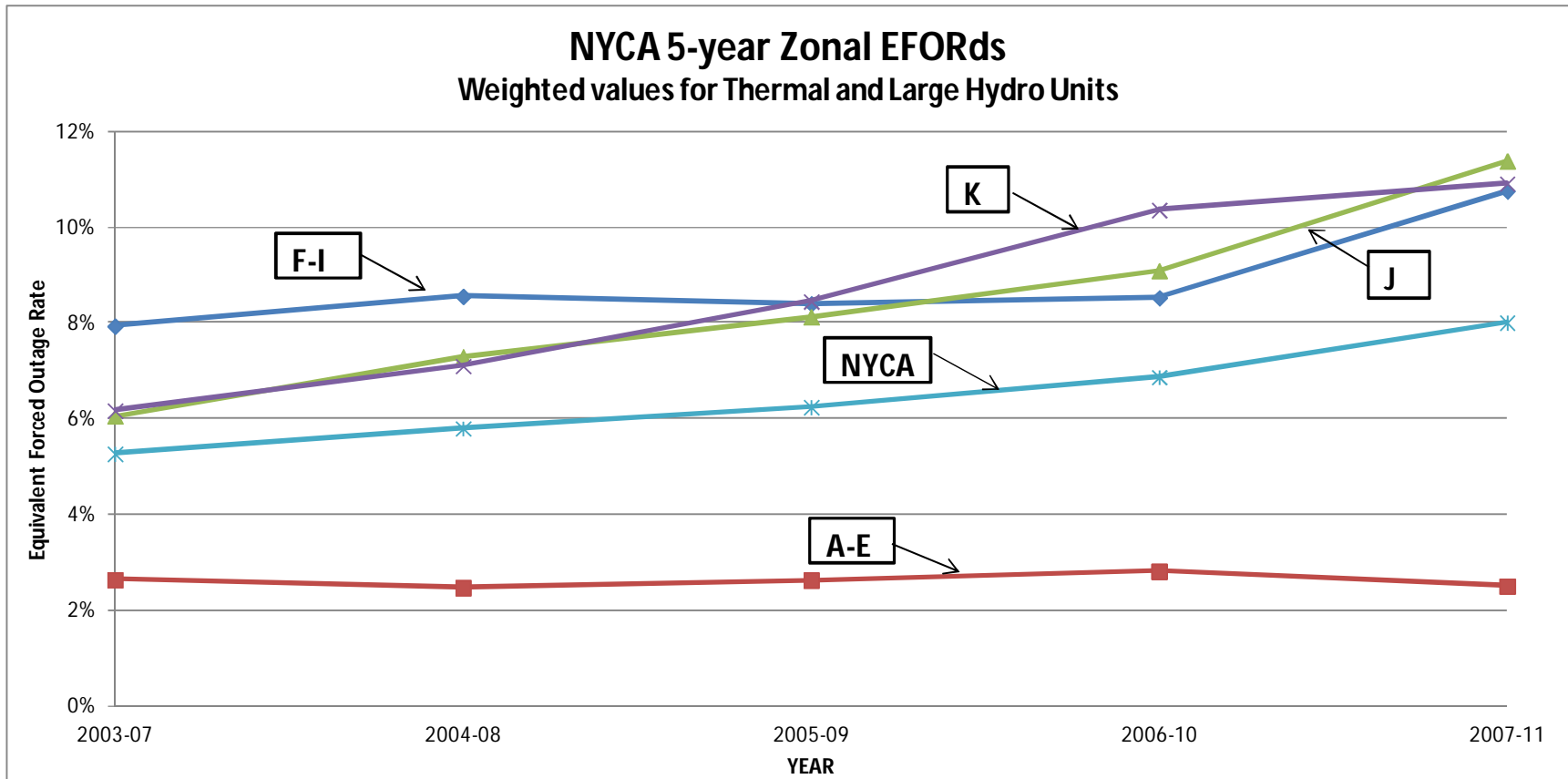
<sup>2</sup> The IRM distinguishes retirements based on NYSRC Policy 5-6.

# 2013-2014 IRM Study Assumption Matrix

## Attachment C



Attachment C1



Attachment D  
Emergency Operating Procedures

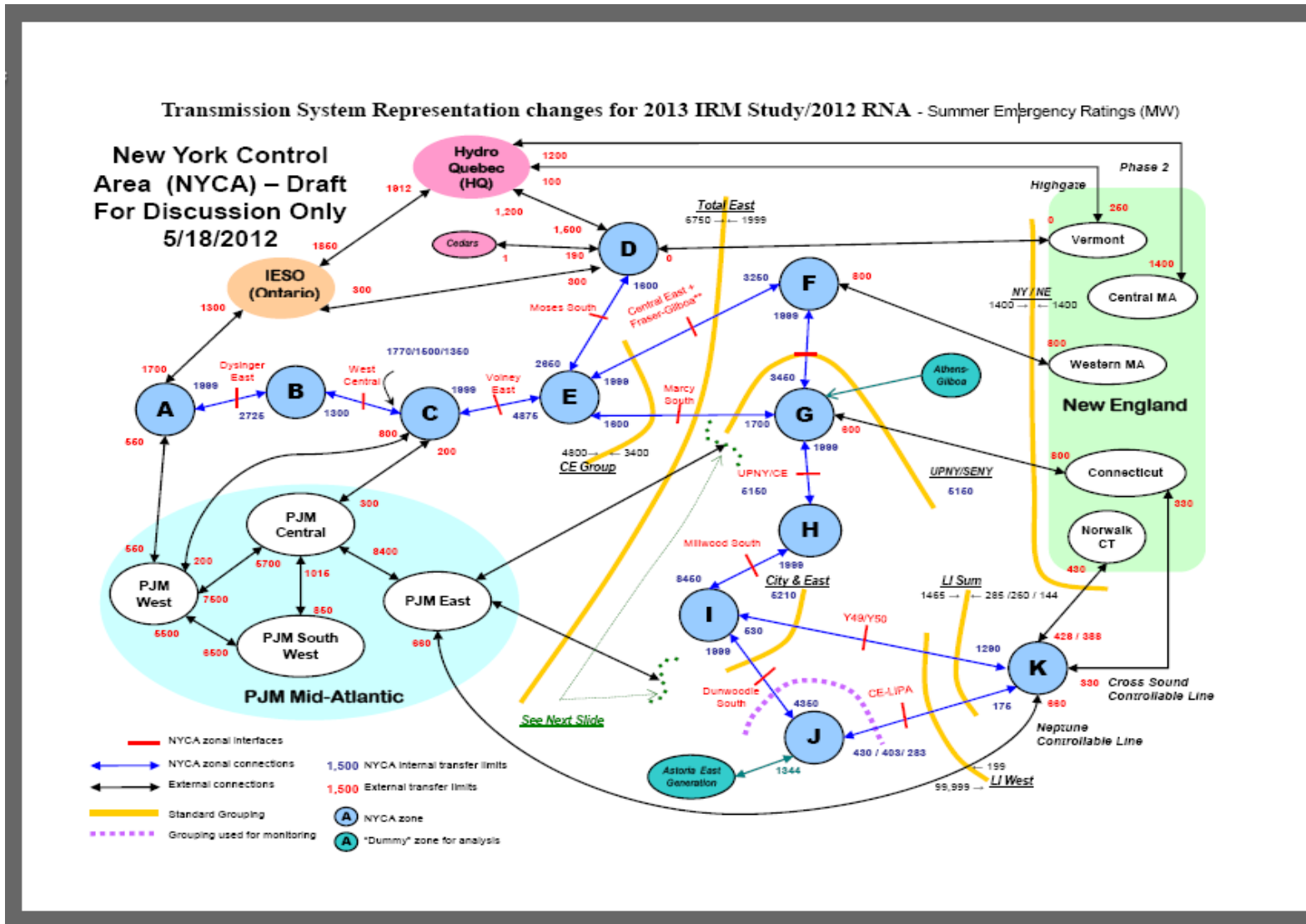


# 2013-2014 IRM Study Assumption Matrix

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## Attachment E

# 2013-2014 IRM Study Assumption Matrix

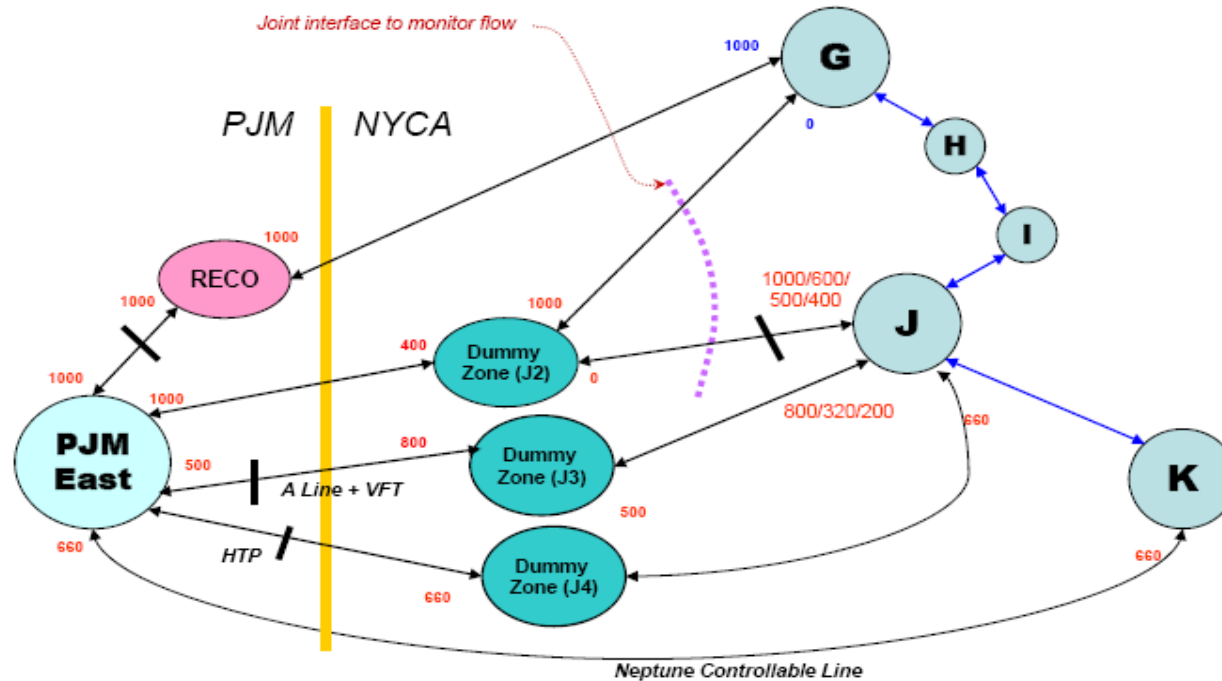


Attachment E1

# 2013-2014 IRM Study Assumption Matrix

Transmission System Representation changes for 2013 IRM Study/2012 RNA - Summer Emergency Ratings (MW)

2012 PJM-SENY MARS Model  
Draft for discussion only – 5/18/2012



*(PJM East to RECO) + (J2 to J) + (PJM East to J3) + (PJM East to J4) = 2000 MW*

*With the retirement of Hudson 1 and other changes in 2011 PJM RTEP, it was determined that this total interface can be supported to a flow of 2000 MW. This interface grouping contains those interfaces with the Bold hash mark. MARS will distribute this flow accordingly. This will change when additional transmission and generation comes into service in 2014 and 2015 up to 2340.*

# 2013-2014 IRM Study Assumption Matrix

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## Attachment F SCR Determinations