Base Case Modeling Assumptions for 2012-2013 NYCA IRM Requirement Study

Parameter	2011 Study Modeling Assumptions	Recommended 2012 Study Modeling Assumptions	Basis for Recommended 2012 Assumptions	Model change	Poss-ible Impact
Peak Load	Oct 1 IRM forecast: 32,872 MW for NYCA, 11,463 MW for zone J, and 5414 MW for zone K.	Gold Book forecast used as preliminary load forecast (33,182 MW, 11,635 MW, 5,543 MW). Oct 1 IRM forecast to be used for final base case.	Forecast based on examination of 2011 weather normalized peaks. Top three external Area peak days aligned with NYCA		Low (+)
Load Shape Model	2002 Load Shape	2002 Load Shape	2002 load shape is still appropriate. A sensitivity with a shape that is closer to the mean may be performed.		None
Load Uncertainty Model	Statewide and 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)*.		Low (+)
Solar Resource Modeling	Forecast of 15 MW of total solar capacity, centered on Long Island. *See Attachment B-2.*	Forecast of 38.5 MW of total solar capacity. *See Attachment B-2.*	Based on collected hourly solar data during summer Peak Hours (June 1-Aug 31, hours (beginning) 2-5 PM).		Low (+)
Wind Resource Modeling	(1,260 MW) Derived from hourly wind data with average Summer Peak Hour availability factor of approximately 11%. *See Attachment B-1.*	(1,648 MW) Derived from hourly wind data resulting in an average Summer Peak Hour availability of approximately 11%. *See Attachment B-1.*	Based on collected hourly wind data. Summer Peak Hour capacity factor based on June 1-Aug 31, hours (beginning) 2-5 PM.		Med (+)

Parameter	2011 Study Modeling Assumptions	Recommended 2012 Study Modeling Assumptions	Basis for Recommended 2012 Assumptions	Model change	Poss-ible Impact
Wind Shape Model	2002 Wind Generation Profile	2002 Wind Generation Profile	A sensitivity will be performed using blended shapes		None
Existing Generating Unit Capacities	Updated DMNC test values. Use the minimum of DMNC or CRIS values.	Updated DMNC test values. Use the minimum of DMNC or CRIS values.	2011 Gold Book units		Low (-)
Proposed New Units	Those listed on *Attachment B.*	Those listed on *Attachment B.*	Units built since the 2011 Gold Book and those non-renewable units with Interconnection agreements signed by August 1st. Renewables based on RPS agreements and ICS input.		Low (-)
Retirements	Energy Systems North East (ESNE) retirement of 74.5 MW from zone A	578.1 MW of retirements and mothballing as listed in *Attachment B-3*	Owners of these plants have notified the NYISO of their intention to retire or be mothballed .		Low (-)
Forced & Partial Outage Rates	5-year (2005-09) GADS data. (Those units with less than five years data could use available representative data.)	5-year (2006-10) GADS data. (Those units with less than five years data could use available representative data.)	Most recent 5-year period. *(see Attachments C and C-1)* Includes proxy data for unit(s) that are deemed suspect as part of the GADS screening process.		Low (+)
EFORd	Sensitivity on EFORd "True-up" performed.	APA paper indicates an acceptable methodology to develop EFORd transition rates based on GADS data.	Sensitivity using Associated Power Analysts (APA) methodology. New Model will be used in 2013 IRM Base Case.	Non-std	Low (-)

Parameter	2011 Study Modeling Assumptions	Recommended 2012 Study Modeling Assumptions	Basis for Recommended 2012 Assumptions	Model change	Poss-ible Impact
Planned Outages	Based on schedules received by NYISO & adjusted for history.	Based on schedules received by NYISO & adjusted for history.	Updated schedules.		None
Summer Maintenance	Use 150 MW after reviewing last year's data.	Use 50 MW after reviewing last year's data.	Review of most recent data.		Low (-)
Combustion Turbines Ambient Derate	Derate based on provided temperature correction curves.	Derate based on provided temperature correction curves.	Operational history indicates derates in line with manufacturer's curves.		Low (+)
Environmental Impacts	No impact on unit availability due to RGGI . The base case assumes that any forthcoming NOx RACT rule will not require compliance by summer 2011.	No impacts for base case. A sensitivity will be performed.	Analysis of Cross State Air Pollution Rule (CSAPR) indicates 2012 impacts can be mitigated with existing fleet.	Std.	None
Non-NYPA Hydro Capacity Modeling	45% derating.	45% derating.	No Change		None
Special Case Resources	2498 MW (Aug 11) based on NYISO growth rate forecast. Monthly variation based on historical experience.	2192 MW (Jul 12) based on Registrations and NYISO growth rate forecast. Monthly variation based on historical experience.	Those sold for the program, discounted to historic availability. Sensitivity. *See SCR determinations in Attachment F.*	Std.	Med (-)
EDRP Resources	260 MW registered; modeled as 172 MW in July and Aug and proportional to monthly peak load in other months. Limit to 5 calls per month.	148 MW registered; modeled as 95 MW in July and Aug and proportional to monthly peak load in other months. Limit to 5 calls per month.	Those registered for the program, discounted to historic availability. (66% overall) Summer values calculated from 2011 July registrations.		Low (+)

Parameter	2011 Study Modeling Assumptions	Recommended 2012 Study Modeling Assumptions	Basis for Recommended 2012 Assumptions	Model change	Poss-ible Impact
External Capacity - Purchases	Grandfathered amounts of 50 MW from NE, 37 MW from PJM, and 1,090 MW from Quebec modeled as actual contracts on border interfaces. Also, 1,043 MW modeled as de-ration on the upstate ties to PJM.	Grandfathered amounts of 50 MW from NE, 1080 MW from PJM and 1,090 MW from Quebec. All contracts modeled as equivalent contracts.	Equivalent contracts do not require an additional re-adjustment of externals areas per Policy 5.		None
Capacity - Sales	In addition to the long term firm sales of 293 MW, include known firm contracts of 716 MW as a result of NE FCM market auctions. Contracts modeled on border interfaces.	Long term firm sales of 279.4 MW.	During NE FCM reconfiguration auctions, the sales positions for 2012 were bought out by internal NE parties.		Low (+)
Capacity Wheels-through	None modeled. A sensitivity case may be run.	None modeled. A sensitivity case will be run.	The ISO tariff is silent about capacity wheels through NYCA.		None
EOPs (other than SCR and EDRP)	737 MW of non-SCR/EDRP MWs.	735 MW of non-SCR/EDRP MWs.	Based on TO information, measured data, and NYISO forecasts. *See Attachment D.*		None
Interface Limits	Based on 2010 Operating Study, 2010 Operations Engineering Voltage Studies, 2010 Comprehensive Planning Process, and additional analyses including interregional planning	All changes viewed and commented on by TPAS.	Based on 2011 Operating Study, 2011 Operations Engineering Voltage Studies, 2011 Comprehensive Planning Process, and additional analyses including		None

Parameter	2011 Study Modeling Assumptions	Recommended 2012 Study Modeling Assumptions	Basis for Recommended 2012 Assumptions	Model change	Poss-ible Impact
	initiatives. Operation of M29 Line (improvement in transfer from zone I to zone J by 350MW).		interregional planning initiatives. *See Attachments E, E-1, and E-2.*		
New Transmission Capability	Upgrade on Northport Norwalk Cable (NNC) line to 428 MW from 286 MW.	None Identified.	Based on TO provided models and NYISO review.		None
Transmission Cable Forced Outage Rate	All existing Cable EFORs updated on LI and NYC to reflect 5 year history.	All existing Cable EFORs updated on LI and NYC to reflect 5 year history.	Based on TO analysis.		Low (+)
Unforced Capacity Deliverability Rights (UDR)	No new projected UDRs	No new projected UDRs	Contracted amounts of capacity are confidential and are included as capacity internal to NYCA.		None
Model Version	Version 3.01	Version 3.12	Per testing and recommendation by ICS.		None
Outside World Area Models	Single Area representations for Ontario and Quebec. Four zones modeled for PJM. Thirteen zones modeled for New England.	Single Area representations for Ontario and Quebec. Four zones modeled for PJM. Thirteen zones modeled for New England.	The representations are provided by the neighboring Areas. This updated data may then be adjusted as described in Policy 5.		None
Reserve Sharing between Areas	All Control Areas have indicated that they will share reserves equally among all.	All NPCC Control Areas have indicated that they will share reserves equally among all.	Per NPCC CP-8 working group assumption.		None

Attachment A
NYCA Load Forecast Uncertainty

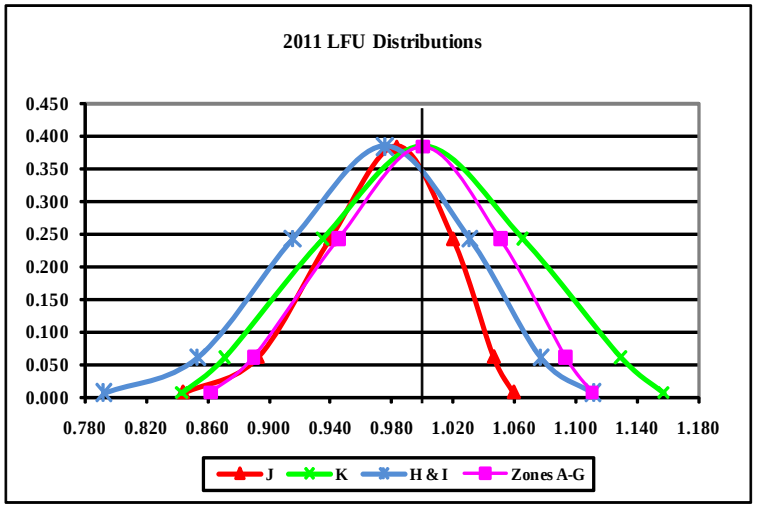
2011 and 2012 LFU Models

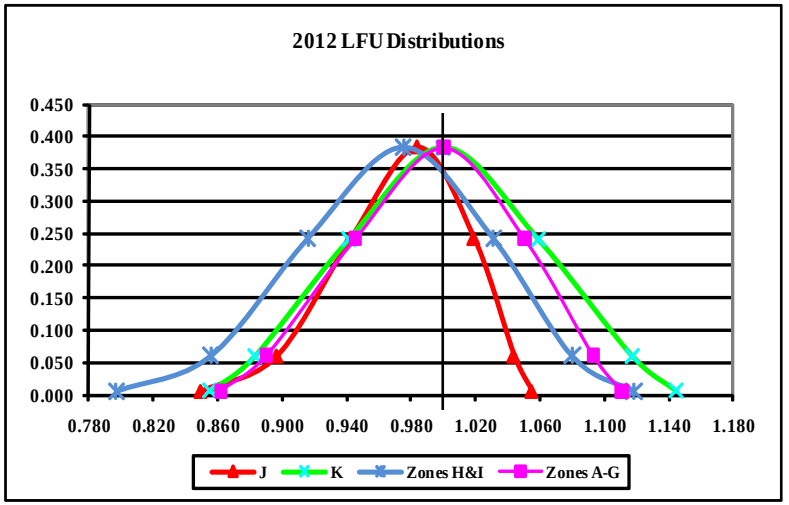
2011 Load Forecast Uncertainty Models

Multiplier	Zones H&I	Con Ed (J)	LIPA (K)	Zones A-G
0.0062	1.1111	1.0594	1.1570	1.1105
0.0606	1.0771	1.0464	1.1290	1.0932
0.2417	1.0306	1.0198	1.0650	1.0506
0.3830	0.9755	0.9832	1.0000	1.0000
0.2417	0.9154	0.9399	0.9350	0.9453
0.0606	0.8533	0.8927	0.8710	0.8901
0.0062	0.7921	0.8441	0.8430	0.8619

2012 Load Forecast Uncertainty 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





Attachment B
List[1] of Proposed Units
To be in-service by summer of 2012

Project Name		IS Date	Zone	MW
New Generation				
	Astoria Energy II	**5/11**	**J**	**576**
	Bayonne Energy Center	**5/12**	**J**	**500**

[1] The list on this page does not show wind and solar units which are presented on Attachments B-1, and B-2, respectively.

Attachment B1

Renewable Generating Wind Projects for Inclusion in the 2012-2013 Installed Reserve Margin Study

Wind Generation Projects in the NYCA

Considered for Inclusion in the 2012-2013 IRM Study

Facility Name	Owner / Developer	Zone	Connecting Transmission Owner	NYISO Interconnection Study Queue Project Number	Projected/ Actual In-Service Date	Current Status	Existing Wind Capacity (MW)	New Wind Capacity for 2012 IRM (MW)	Total Wind Capacity for 2012 IRM (MW)
Steel Wind	Constellation Power	A	National Grid		2007 Jan	Operating	20.0		20.0
Bliss Wind Power	Noble Bliss Windpark, LLC	A	Village of Arcade	173	2008 May	Operating	100.5		100.5
Canandaigua Wind Power	Canandaigua Power Partners, LLC	C	NYSEG	135&199	2008 Jun	Operating	125.0		125.0
Cody Road	Green Power	C	National Grid	180A	2011 Dec			10.0	10.0
Hardscrabble Wind[1]	Hardscrabble Wind Power, LLC	C	National Grid	156	2011 Sept	Operating	74.0		74.0
Howard Wind	Howard Wind, LLC	C	NYSEG	182	2011 Dec			57.4	57.4
Wethersfield Wind Power	Noble Wethersfield Windpark, LLC	C	NYSEG	177	2008 Dec	Operating	126.0		126.0
High Sheldon Wind Farm	Sheldon Energy, LLC.	C	NYSEG	144	2009 Feb	Operating	112.5		112.5
Altona Wind Power	Noble Altona Windpark, LLC	D	NYPA	174	2008 Sept	Operating	97.5		97.5
Chateaugay Wind Power	Noble Chateaugay Windpark, LLC	D	NYPA	214	2008 Sept	Operating	106.5		106.5
Clinton Wind Power	Noble Clinton Windpark, LLC	D	NYPA	172 & 211	2008 May	Operating	100.5		100.5
Ellenburg Windpark	Noble Ellenburg Windpark, LLC	D	NYPA	175	2008 May	Operating	81.0		81.0
Munnsville	Coral Power	E	NYSEG	127A	2007 Aug	Operating	34.5		34.5
Maple Ridge 1	Flat Rock Windpower, LLC	E	National Grid	171	2006 Feb	Operating	231.0		231.0
Maple Ridge 2	Flat Rock Windpower, LLC	E	National Grid	171	2006 Feb	Operating	90.7		90.7
Madison Wind Power	Madison Windpower, LLC	E	NYSEG	N/A	2000 Sept	Operating	11.5		11.5
Allegany Wind	Allegany Wind, LLC	A	National Grid	237	2011 Oct			72.5	72.5
Prorated Units to account for probability[2]:									
Belmont/Ellenburg II	Noble Environmental Power LLC	D	NYPA	213	2011 Dec			5.3	5.3
Windfarm Prattsburgh	Windfarm Prattsburgh, LLC	C	NYSEG	113	2011 Oct			39.1	39.1
Stony Creek Wind Farm	Invenergy, LLC	C	NYSEG	263	2012 Aug			44.3	44.3
Marble River Wind Farm 1 and 2	Horizon Wind Energy, LLC	D	NYPA	161 & 171	2012 Jan			108.2	108.2
TOTAL CAPACITY - ALL CATEGORIES							**1,311.2**	**336.8**	**1,648.0**

1. Hardscrabble Wind has been called Fairfield Wind, after the town that it is in.

2. ICS has forecast that only 50% of the proposed active projects will be complete in tiime for this study.

Attachment B-2
List of Solar proposed Units
To be in-service by summer of 2012

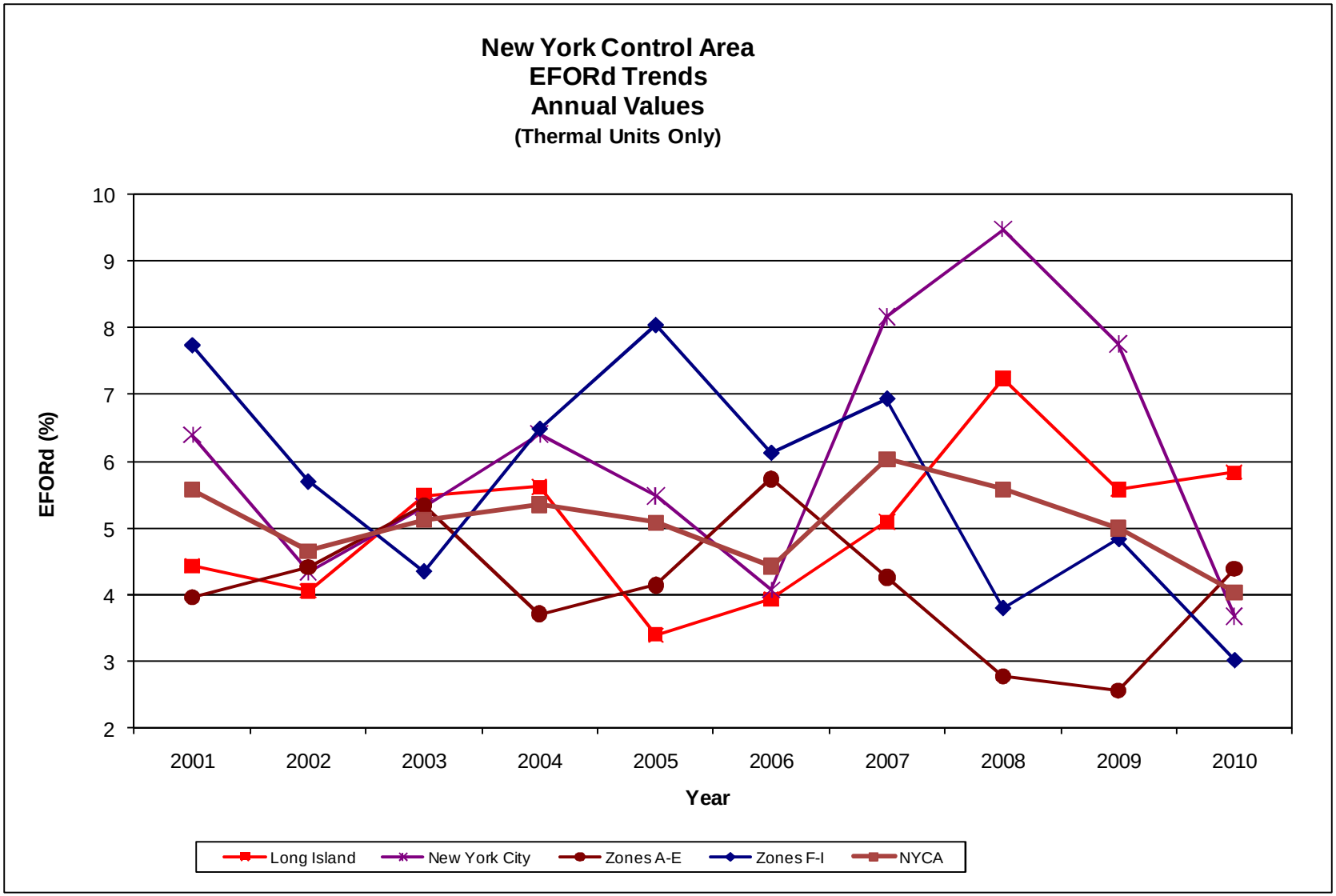
Project Name	IS Date	Zone	MW
BP Solar	11/11	K	32.0
Enxco	5/12	K	6.5

Attachment B-3
List of Retired and Mothballed Units

Unit	Type	Zone	MW
Westover 8*	Protective lay-up	C	80.8
Greenidge 4*	Protective lay-up	C	106.1
Project Orange*	Retirement	C	40
Glenwood ST04	Retirement	K	116.0
Glenwood ST05	Retirement	K	113.2
Far Rockaway ST04	Retirement	K	105
Barrett GT7*	Retirement	K	17
		Total:	578.1

*** Units had already shown 0 MW of summer capability in the 2011 Gold Book**

Attachment C


New York Control Area
EFORd Trends
Annual Values
(Thermal Units Only)
EFORd (%)
10
9
8
7
6
5
4
3
2
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
Year
Long Island
New York City
Zones A-E
Zones F-I
NYCA

Attachment C-1

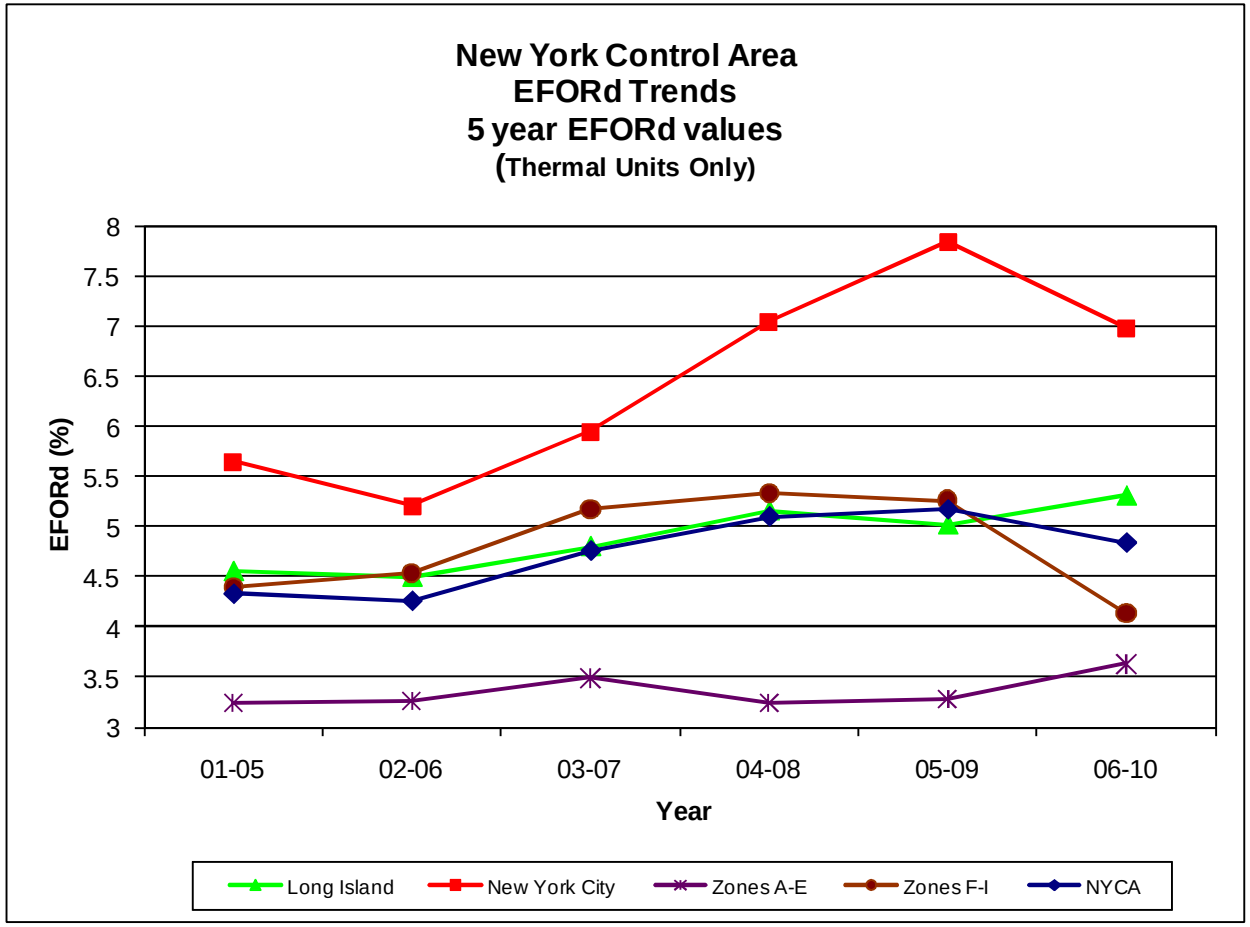
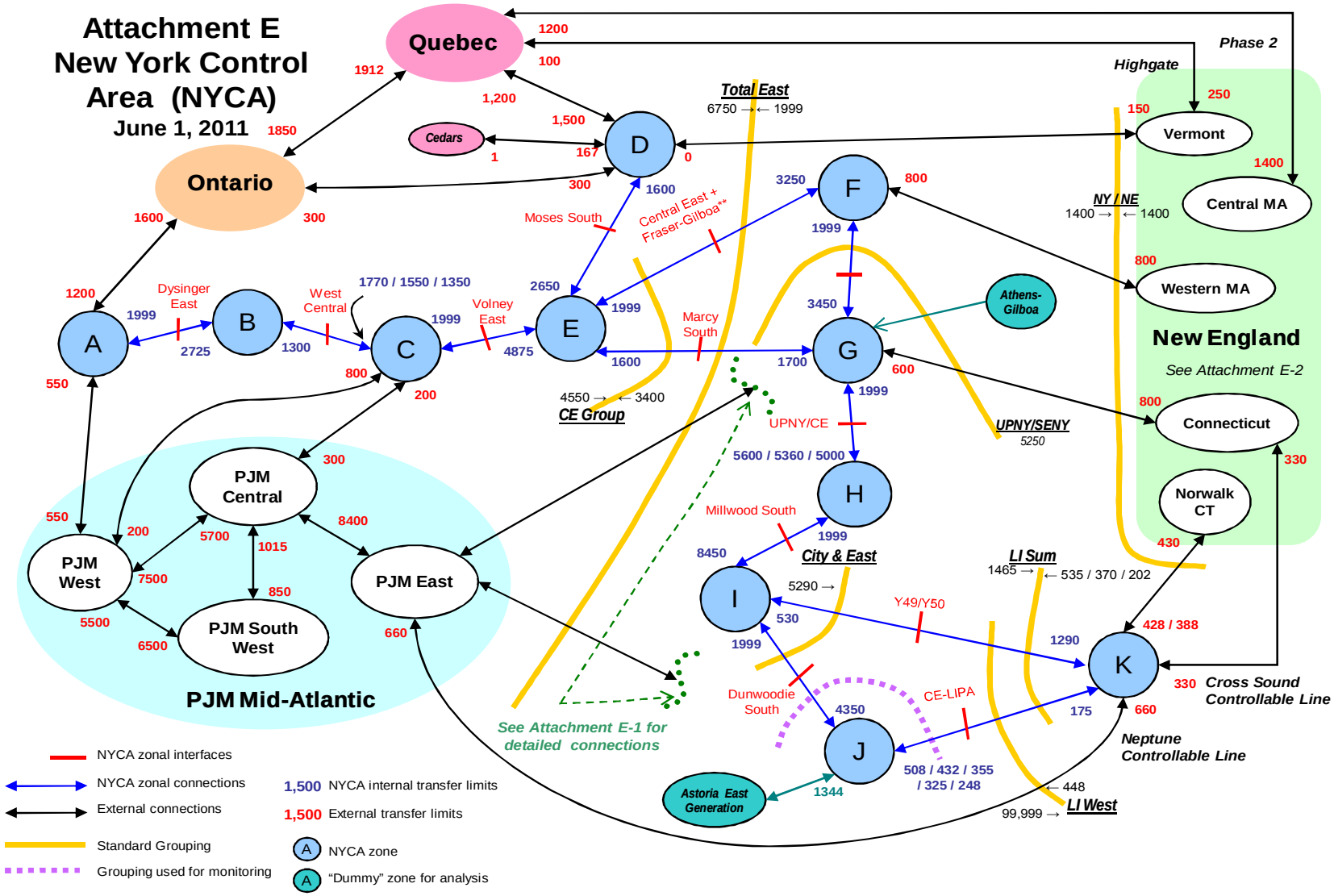


Figure 1 removes units that have retired from all five years of each affected point. These graphs represent thermal unit performance only.

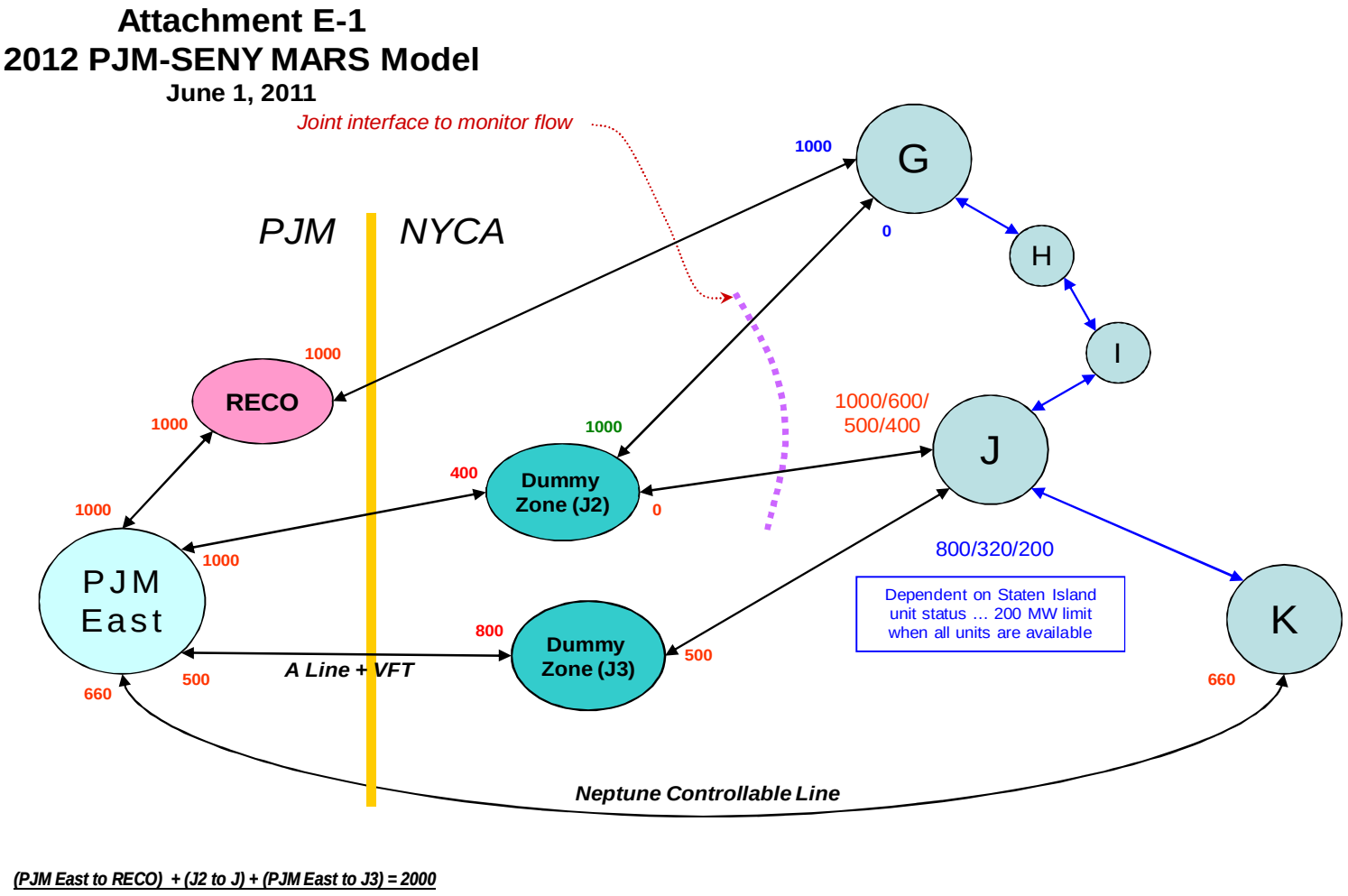
Attachment D
Emergency Operating Procedures

Step	Procedure	Effect	2011 MW Value	2012 MW Value
1	Special Case Resources	Load relief	2498 MW (representing the amount sold)	2192 MW (representing the amount sold)
2	Emergency Demand Response Program	Load relief	260 MW	148 MW
3	5% manual voltage Reduction	Load relief	71 MW	62 MW
4	Thirty-minute reserve to zero	Allow operating reserve to decrease to largest unit capacity (10-minute reserve)	600 MW	600 MW
5	5% remote voltage reduction	Load relief	478 MW	442 MW
6	Voluntary industrial curtailment	Load relief	100 MW	143 MW
7	General public appeals	Load relief	88 MW	88 MW
8	Emergency Purchases	Increase capacity	Varies	Varies
9	Ten-minute reserve to zero	Allow 10-minute reserve to decrease to zero	1200 MW	1200 MW
10	Customer disconnections	Load relief	As needed	As needed

Transmission System Representation for 2012 IRM Study - Summer Emergency Ratings (MW)



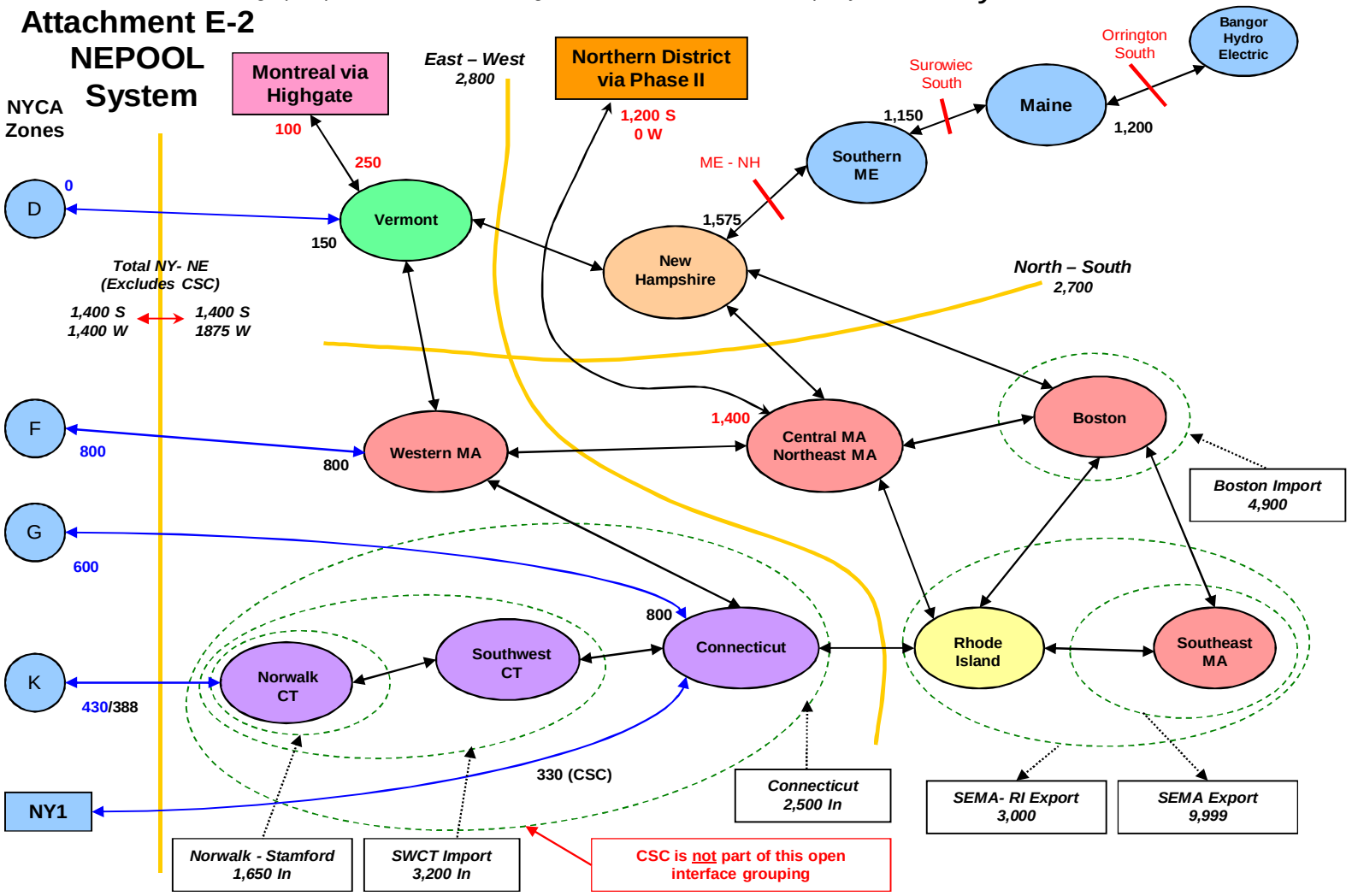
Transmission System Representation for 2012 IRM Study - Summer Emergency Ratings (MW)



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

Transmission System Representation for 2012IRM Study - Summer Emergency Ratings (MW) – June 1, 2011

Assumed Ratings (MW) from the 2011 New England Review of Resource Adequacy ----Not yet revised



Attachment F
SCR Determinations

	A	B	C	D	E	F
		=A*3.5%		=B/C		=B*E
Zones	July 2011 Registrations[1]	2012 Forecast[2]	Performance Factor	2012 ICAP	Translation Factor[3]	In Model Value
A-E	1090.0	1128.3	0.943	1199	0.95	1072
F-I	247.0	255.7	0.923	277	0.95	243
J	420.3	435.1	0.786	554	0.95	413
K	136.0	140.8	0.867	162	0.95	134
Total	1893.3	**1959.8**		2192		1862

1. Based on ACL
2. These values represent a 3.5% growth from July 2011 ICAP based registrations
3. This translation factor is used to capture the difference between ACL and CBL values.