

## Base Case Modeling Assumptions for 2011-2012 NYCA IRM Requirement Study

Parameter	2010 Study Modeling Assumptions	Recommended 2011 Study Modeling Assumptions	Basis for Recommended 2011 Assumptions	Possible Impact on IRM
Peak Load	33,025 MW for NYCA, 11,725 MW for zone J, and 5368 MW for zone K.	To be provided by NYISO on October 1, 2010.	Forecast based on examination of 2010 weather normalized peaks. Top three external Area peak days aligned with NYCA. The interim modeling is done using the Gold Book Forecast of 33,160 MW for NY, 11,775 MW for NYC and 5,384 MW for LI.	Low (-)
Load Shape Model	2002 Load Shape	2002 Load Shape	After evaluating 2009 data, analysis indicates 2002 load shape is an appropriate representation for this analysis.	None
<b>Wind Shape Model</b>	<b>2002 Wind Shape</b>	<b>2002 (?) Wind Shape</b>	<b>Hourly wind readings correlate with hourly loads</b>	None
Load Uncertainty Model	Statewide and zonal model updated to reflect current data.	Statewide and zonal model updated to reflect current data.	Method used and accepted by NYISO and ICS based on collected data and input from LIPA and Con Ed ( <i>see Attachments A and A-1</i> ).	Low (+)
Existing Generating Unit Capacities	Updated DMNC test values	Updated DMNC test values. Will use the minimum of DMNC or CRIS values.	2010 Gold Book units	Low (-)
Proposed New Units	Those listed on <i>Attachments B and B1</i> .	Those listed on <i>Attachments B and B1</i> .	Units built since the 2010 Gold Book and those non-renewable units with Interconnection	Low (-)

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			agreements signed by August 1 <sup>st</sup> . Renewables based on RPS agreements and ICS input.	
Wind Resource Production Modeling	(1,326 MW) Derived from hourly wind data with average Summer Peak Hour availability factor of approximately 11%.	(1,467 MW) Derived from hourly wind data with average Summer Peak Hour availability factor of approximately yy%.	Based on collected hourly wind data. Summer Peak Hour capacity factor based on June 1-Aug 31, hours (beginning) 2-5 PM.	Low (+)
Solar Resource Modeling	Hourly solar readings converted to MW output with average Summer Peak Hour availability factor of approximately 65%. (30 MW)	Forecast of 36 MW of total solar capacity, centered on Long Island. (new hourly readings or use existing?)	Based on collected hourly solar data. Summer Peak Hour capacity factor based on June 1-Aug 31, hours (beginning) 2-5 PM.	None
Retirements	Poletti 1 retirement (891 MW 2/10), Greenidge Unit 3 (52 MW 12/09), and Westover Unit 7 (40.2 MW 12/09).	ESNE retirement of 74.5 MW from zone A	2010 Gold Book plus units indicated by PSC notification.	None
Forced & Partial Outage Rates	5-year (2004-08) GADS data. (Those units with less than five years data could use available representative data.)	5-year (2005-09) 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). Units with suspect data could have their data replaced with representative data (proxy data) per the GADs screening process.	Low (-)
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	Modeled approximately 150 MW after reviewing last year's data.	Use approximately zzz MW after reviewing last year's data.	Review of most recent data.	Low (-)

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Combustion Turbines Ambient Derate	Derate based on provided temperature correction curves.	Derate based on provided temperature correction curves. <i>Add derates for new units.</i>	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 2010.	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.	<del>Similar RNA Sensitivity .</del>	None
Non-NYPA Hydro Capacity Modeling	45% derating.	Cc % derating.	Review of historic and most recent data.	None
Special Case Resources	2575 MW (July 10) based on 3 year historical growth rate. Monthly variation based on historical experience. Limit to 4 calls per month in July and August for DEC limited generation. (about 30 hour total). See SCR determinations in Attachment F.	vvvv MW (July 11) based on NYISO growth rate forecast. Monthly variation based on historical experience. Limit to 4 calls per month in July and August for DEC limited generation. (about 30 hour total). See SCR determinations in Attachment F.	Those sold for the program, discounted to historic availability. and distributed according to zonal performance. <i>Methodology for growth rate forecast has improved. ... See SCR determinations in Attachment F and F-1.</i>	Low (-)
EDRP Resources	329 MW registered; modeled as 148 MW in July and Aug and proportional to monthly peak load in other months. Limit to 5 calls per month.	aaa MW registered; modeled as bbb 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. (45% overall) July & August values calculated from 2010 July and August registrations.	None

<b>Parameter</b>	<b>2010 Study Modeling Assumptions</b>	<b>Recommended 2011 Study Modeling Assumptions</b>	<b>Basis for Recommended 2011 Assumptions</b>	<b>Possible Impact on IRM</b>
External Capacity - Purchases	Grandfathered amounts of 50 MW from NE, 1080 MW from PJM and 1090 MW from Quebec. Equivalent <sup>1</sup> Contracts modeled.	Grandfathered amounts of 50 MW from NE, 37 MW from PJM and 1090 MW from Quebec. Contracts modeled on border interfaces.	Grandfathered contracts per FERC.	None
Capacity - Sales	In addition to the long term firm sales of 303 MW, include known firm contracts of 641 MW from NE FCM market. Equivalent Contracts modeled.	In addition to the long term firm sales of 303 MW, include known firm contracts of 716 MW as a result of NE FCM market auctions. Contracts modeled on border interfaces.	Other firm contracts are becoming known, such as from neighbor’s forward capacity markets.	None
Capacity Wheel-throughs	None modeled	None modeled	There are no market mechanisms that allow capacity wheels through NYCA	None
EOPs (other than SCR and EDRP)	700 MW of non-SCR/EDRP MWs. <i>See Attachment D.</i>	eee MW of non-SCR/EDRP MWs. <i>See Attachment D.</i>	Based on TO information, measured data, and NYISO forecasts.	?
Interface Limits	Based on 2009 Operating Study, 2009 Operations Engineering Voltage Studies, 2009 Comprehensive Planning Process, and additional analysis.	Based on 2010 Operating Study, 2010 Operations Engineering Voltage Studies, 2010 Comprehensive Planning Process, and additional analyses including interregional planning initiatives.	NYISO engineering studies and additional analysis and input from other external Control Areas. <i>See Attachments E and E-1</i>	Low (-)
New Transmission Capability	Linden VFT - 300 MW.	Upgrade on 1385 line to 428 MW. Operation of M29 Line (improvement in transfer from zone I to zone J).	Based on NYISO analysis and TO provided models.	Low (-)

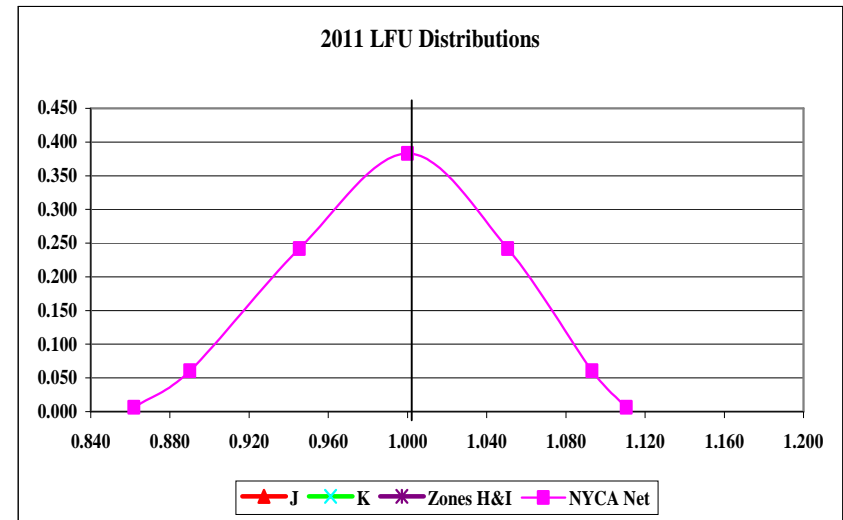
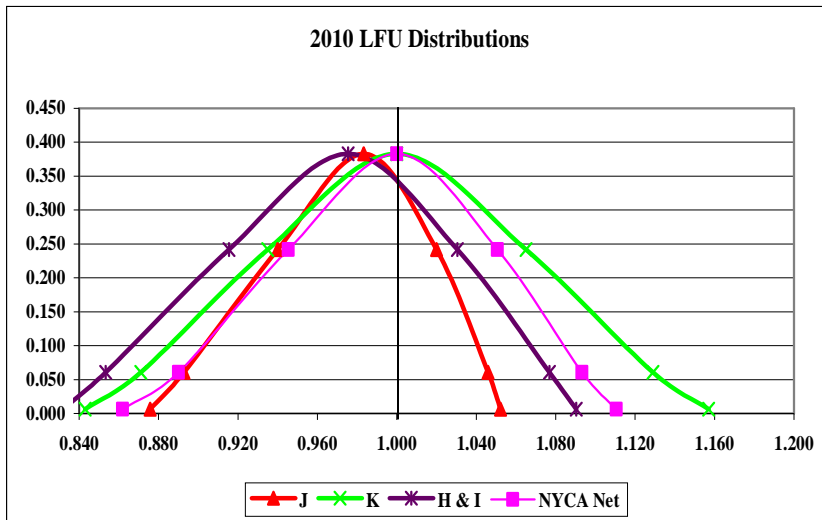
<b>Parameter</b>	<b>2010 Study Modeling Assumptions</b>	<b>Recommended 2011 Study Modeling Assumptions</b>	<b>Basis for Recommended 2011 Assumptions</b>	<b>Possible Impact on IRM</b>
Transmission Cable Forced Outage Rate	All existing Cable EFORs updated on LI and NYC to reflect 5 year history.	All existing Cable EFORs updated on LI and NYC to reflect 5 year history.	Based on TO analysis. (? On effect of recent outage (planned v forced))	?
Unforced Capacity Deliverability Rights (UDR)	UDRs have been issued for the Cross Sound Cable, Neptune cable, and Linden VFT Project.	No new projected UDRs	Contracted amounts of capacity are confidential and are included as capacity internal to NYCA.	None
<b>Model Version</b>	Version 2.98	Version 3.01	Per testing and recommendation by ICS.	None
<b>Outside World Area Models</b>	Single Area representations for Ontario and Quebec. Three zones modeled for PJM. Five zones modeled for New England derived from 13 zones provided.	Single Area representations for Ontario and Quebec. Four zones modeled for PJM. Thirteen zones modeled for New England.	The load and capacity data is provided by the neighboring Areas. This updated data may then be adjusted as described in Policy 5.	Low (-)
<b>Reserve Sharing between Areas</b>	All Control Areas have indicated that they will share reserves equally among all.	All Control Areas have indicated that they will share reserves equally among all.	Per NPCC CP-8 working group assumption.	None

Range: Low < 0.5%, Medium 0.5% - 1%, High > 1%

## Attachment A NYCA Load Forecast Uncertainty

Multiplier	Zones H&I	Con Ed (J)	LIPA (K)	NYCA Net
0.0062	1.0903	1.0522	1.1570	1.1105
0.0606	1.0768	1.0460	1.1290	1.0932
0.2417	1.0305	1.0200	1.0650	1.0506
0.3830	0.9755	0.9833	1.0000	1.0000
0.2417	0.9154	0.9400	0.9350	0.9453
0.0606	0.8533	0.8928	0.8710	0.8901
0.0062	0.8317	0.8758	0.8430	0.8619

Multiplier	Zones H&I	Con Ed (J)	LIPA (K)	NYCA Net
0.0062				1.1105
0.0606				1.0932
0.2417				1.0506
0.3830				1.0000
0.2417				0.9453
0.0606				0.8901
0.0062				0.8619



**Attachment B**  
**List of (non-wind)proposed Units**  
**To be in-service by summer of 2011**

<b><u>Project Name</u></b>	<b><u>IS Date</u></b>	<b><u>Zone</u></b>	<b><u>MW</u></b>
<b>Upton Solar</b>	<b>5/11</b>	<b>K</b>	<b>21.1</b>
<b>EnXco Solar</b>	<b>5/11</b>	<b>K</b>	<b>15.0</b>
<b>Empire Generating</b>	<b>7/10</b>	<b>F</b>	<b>635</b>
<b>NYC Energy</b>	<b>2010</b>	<b>J</b>	<b>79.9</b>
<b>Riverbay</b>	<b>6/10</b>	<b>J</b>	<b>24(?)</b>
<b>Fulton County Land Fill</b>	<b>5/10</b>	<b>F</b>	<b>3.2</b>
<b>Beacon Flywheel</b>	<b>9/10</b>	<b>F</b>	<b>20/0*</b>
<b>Astoria Energy II</b>	<b>5/11</b>	<b>J</b>	<b>650/TBD</b>
<b>Uprate Gilboa #4</b>	<b>6/10</b>	<b>F</b>	<b>30</b>

\* Second number indicates CRIS value

## Attachment B1

### Renewable Generating Projects (Wind) for Inclusion in the 2011-2012 Installed Reserve Margin Study

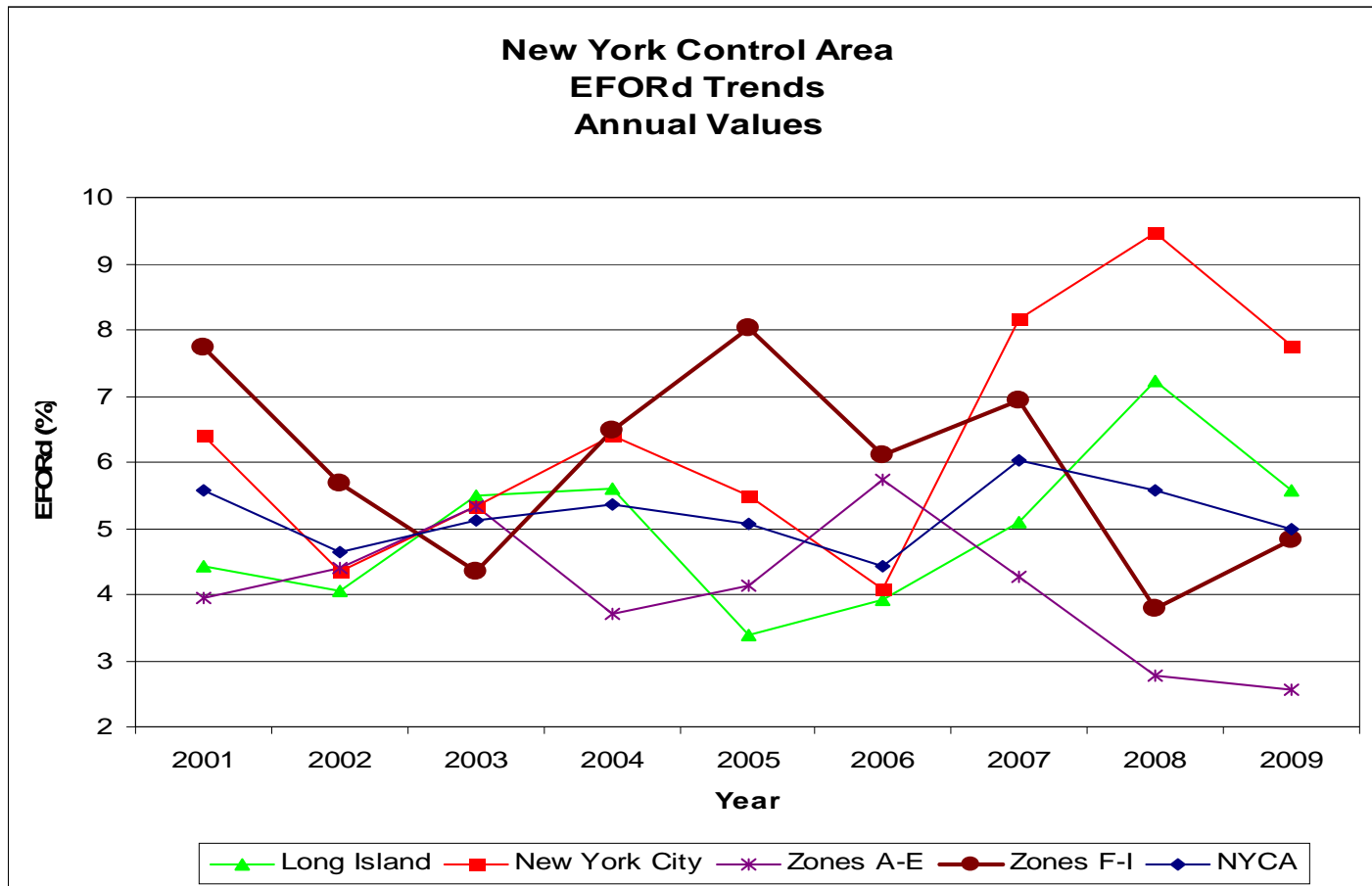
Facility Name	Owner / Developer	Zone	Connecting Transmission Owner	NYISO Interconnection Study Queue Project Number	Projected/ Actual In-Service Date	Current Status	Modeled in 2010 IRM	Existing Wind Capacity Modeled for 2011 IRM (MW)	New Wind Capacity for 2011 IRM (MW)	Total Wind Capacity for 2011 IRM (MW)
Steel Winds II	First Wind	A	National Grid	234	2010 Nov		45.0	15.0		15.0
Bliss Windpark	Noble Bliss Windpark, LLC	A	Village of Arcade	173	2008 May	Operating	100.5	100.5		100.5
Steel Wind	Constellation Power	A			2007 Jan	Operating	20.0	20.0		20.0
High Sheldon Wind Farm	Sheldon Energy, LLC.	C	NYSEG	144	2009 Feb	Operating	112.5	112.5		112.5
Canandaigua I <sup>1</sup>	Canandaigua Power Partners, LLC	C	NYSEG	135	2008 Jun	Operating	82.5	82.5		82.5
Canandaigua II <sup>1</sup>	Canandaigua Power Partners, LLC	C	NYSEG	199	2008 Jun	Operating	42.5	42.5		42.5
Wethersfield Wind Power	Noble Wethersfield Windpark, LLC	C	NYSEG	177	2008 Dec	Operating	126.0	126.0		126.0
Bear Creek	Wind Park Bear Creek, LLC	C			2006 Feb	Operating	22.0	22.0		22.0
Altona Windpark	Noble Altona Windpark, LLC	D	NYPA	174	2008 Sept	Operating	99.0	99.0		99.0
Chateaugay Windpark I	Noble Chateaugay Windpark, LLC	D	NYPA	214	2008 Sept	Operating	106.5	106.5		106.5
Belmont/Ellenburg II	Noble Environmental Power LLC	D	NYPA	213	2011 Oct	??	21.0	21.0		21.0
Clinton Windpark I & II	Noble Clinton Windpark, LLC	D	NYPA	172 & 211	2008 May	Operating	100.5	100.5		100.5
Ellenburg Windpark	Noble Ellenburg Windpark, LLC	D	NYPA	175	2008 May	Operating	81.0	81.0		81.0
Maple Ridge 1 & 2	Flat Rock Wind Power, LLC	E	National Grid	171	2006 Feb	Operating	321.0	321.0		321.0
Madison	Horizon Wind	E	NYSEG		2000 Sept	Operating	11.6	11.6		11.6
Munnsville	Coral Power	E	NYSEG		2007 Aug	Operating	34.5	34.5		34.5
Noble Allegany Windpark	Noble Environmental Power LLC	A	Village of Arcade	178	2009 Dec	>> Canceled <<				
Windfarm Prattsburgh	Windfarm Prattsburgh, LLC	C	NYSEG	113	2008 Nov	>> Canceled <<				
Prattsburgh Wind Park	Windfarm Prattsburgh, LLC	C	NYSEG	113		>> Canceled <<				
Noble Chateaugay Windpark II	Noble Chateaugay Windpark, LLC	D	NYSEG	241	2009 Oct	>> Canceled <<				
Fairfield Wind Project <sup>2</sup>	PPM Energy	C	NYSEG	156	2011 Sept					
Marble River Wind Farm	Horizon Wind Energy	D	NYPA	161 & 171	2010 Oct				171.0	171.0
Noble Chateaugay Windpark II	Noble Chateaugay Windpark, LLC	D	NYSEG	241	2009 Oct	>> Canceled <<				
<b>TOTAL CAPACITY - ALL CATEGORIES</b>							<b>1,326.1</b>	<b>1,296.1</b>	<b>171.0</b>	<b>1,467.1</b>

Notes:

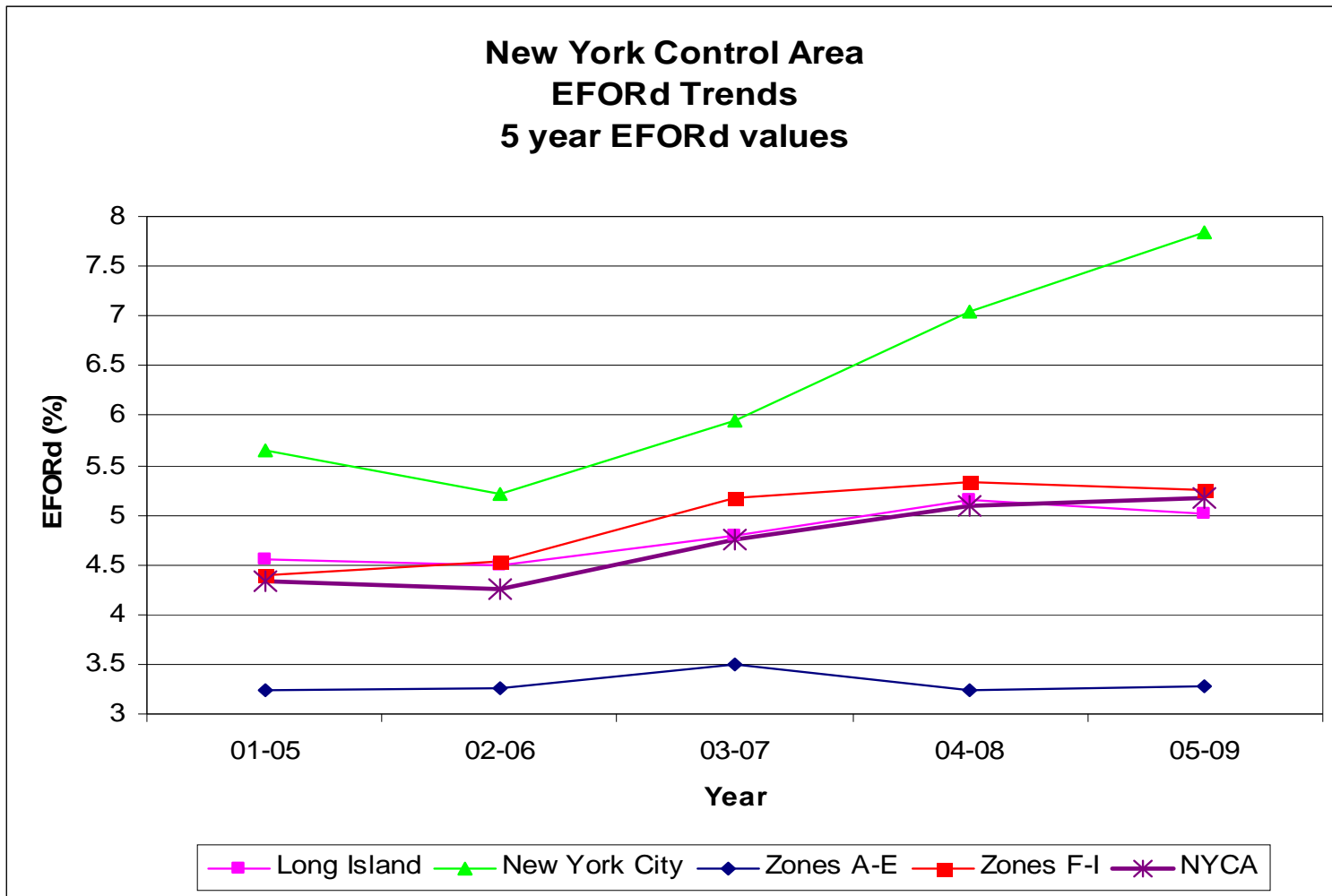
1. Canandaigua I sometimes referred to as Cohocton Wind Farm. Canandaigua II sometimes referred to as Dutch Hill Wind Farm.
2. Fairfield Wind was previously called Hardscrabble Wind.



### Attachment C



### Attachment C-1



## **Attachment D**

### **Emergency Operating Procedures**

<b>Step</b>	<b>Procedure</b>	<b>Effect</b>	<b>2010 MW Value</b>	<b>2011 MW Value</b>
1	Special Case Resources	Load relief	2575 MW (representing the amount sold)	xxxx MW (representing the amount sold)
2	Emergency Demand Response Program	Load relief	329 MW	yyyMW
3	5% manual voltage Reduction	Load relief	72 MW	zz 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	479 MW	aaa MW
6	Voluntary industrial curtailment	Load relief	61 MW	bb MW
7	General public appeals	Load relief	88 MW	cc 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