

## Base Case Modeling Assumptions for 2009-2010 NYCA IRM Requirement Study

Parameter	2008 Study Modeling Assumptions	Recommended 2009 Study Modeling Assumptions	Basis for Recommended 2009 Assumptions
Peak Load	33,730 MW for NYCA, 11,955 MW for zone J, and 5460 MW for zone K.	To be provided by NYISO on October 1, 2008.	Forecast based on examination of 2008 weather normalized peaks. Top three external Area peak days aligned with NYCA.
Load Shape Model	2002 Load Shape	2002 Load Shape	After evaluating 2007 data, analysis indicates 2002 load shape is an appropriate representation for this analysis.
Load Uncertainty Model	Statewide and zonal model updated to reflect current data.	Statewide and zonal model updated to reflect current data.	Updated data from LIPA, Con Ed, and NYISO (see Attachment A). Con Ed LFU to be run as Base Case. NYISO numbers will be run as sensitivity.
Existing Generating Unit Capacities	Updated DMNC test values.	Updated DMNC test values plus Noble Wind Units; Bliss 101 MW, Ellenburg 81 MW, and Clinton 100.5 MW. Also, 30 MW increase in rating of Gilboa Unit #1	2008 Gold Book plus units that have come on line since Gold Book.
Proposed New Units	Gold Book (table III) units plus Prattsburgh Wind Park – 55 MW (11/07) and Gilboa unit 2 uprate of 30 MW (6/07).	Those listed on attachments B and B1.	2008 Gold Book and those non-renewable units with Interconnection agreements signed by August 1 <sup>st</sup> . Renewables based on RPS agreements and ICS input.
Wind Resource Modeling	Derived from hourly wind data with average Summer Peak Hour capacity factor of 11.4%.	Derived from hourly wind data with average Summer Peak Hour capacity factor of approximately	Based on collected hourly wind data. Summer Peak Hour capacity factor based on June 1-Aug 31,

<b>Parameter</b>	<b>2008 Study Modeling Assumptions</b>	<b>Recommended 2009 Study Modeling Assumptions</b>	<b>Basis for Recommended 2009 Assumptions</b>
		11 %.	hours (beginning) 2-5 PM.
Retirements	Lovett 3,4,5 (404.8 MW), Russell Station (236.4 MW) Huntley 65&66 (165 MW), and Ogdensburg (76.7 MW).	None known for 2009 Capability Year.	2008 Gold Book plus units indicated by Aug. 1.
Forced & Partial Outage Rates	5-year (2002-06) GADS data. (Those units with less than five years data will use available representative data.)	5-year (2003-07) GADS data. (Those units with less than five years data will use available representative data.)	Most recent 5-year period (see Attachments C and C-1).
Planned Outages	Based on schedules received by NYISO & adjusted for history.	Based on schedules received by NYISO & adjusted for history.	Updated schedules.
Summer Maintenance	Continue with approximately 150 MW after reviewing last year's data.	Continue with approximately 150 MW after reviewing last year's data.	No basis for change after review of most recent data.
Gas 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.
Environmental Impacts	Studied as sensitivities.	No reliability impact due to RGGI in basecase. Sensitivies studies to address range of potential cases.	NYISO white paper . See Attachments F and F-1.
Non-NYPA Hydro Capacity Modeling	45% derating.	45% derating.	No basis for change after review of most recent data.
Special Case Resources	1323 MW sold; modeled as 1205 MW in July and August and proportional to monthly peak load in other months. Limit to 4 calls per month in July and August for DEC limited generation. (about 30 hour total)	2107 MW (July 09) 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	Those sold for the program, discounted to historic availability. and distributed according to zonal performance. Assume 15% growth rate for all zones. Modify load SCR/EOP to proportion available SCR by load amount by zone. See SCR

<b>Parameter</b>	<b>2008 Study Modeling Assumptions</b>	<b>Recommended 2009 Study Modeling Assumptions</b>	<b>Basis for Recommended 2009 Assumptions</b>
		Attachment G.	determinations in Attachment G.
EDRP Resources	430 MW registered; modeled as 193.5 MW in July and Aug and proportional as above. Limit to 5 calls per month.	365 MW registered; modeled as 160 MWs 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 2008 July and August registrations.
External Capacity - Purchases	2,921 MW total, 1200 from HQ, 50 from NE, 1300 from PJM, 205 from Ontario, and 166 MW from Cedars.	3,046 MW total, 1200 from HQ, 50 from NE, 1280 from PJM, 350 MW from Ontario (HQ wheel through Ontario), and 166 MW from Cedars.	Based on NYISO forecast. Sensitivity performed to remove contracts and see the effect on LCR-IRM curve. Results should not impinge on IRM. Sensitivity with 20 MW MISO wheel through Ontario to Zone A).
EOPs (other than SCR and EDRP)	See Attachment C.	See Attachment D.	Based on TO information, measured data, and NYISO forecasts.
Interface Limits	Based on 2007 Operating Study, 2007 Operations Engineering Voltage Studies, 2007 Comprehensive Planning Process, and additional analysis.	Based on 2008 Operating Study, 2008 Operations Engineering Voltage Studies, 2008 Comprehensive Planning Process, and additional analysis.	NYISO engineering studies and additional analysis and input from other external Control Areas. Cedars modeled as new Tie with contract. See attachment E.
New Transmission Capability	Introduction of Millwood Capacitor bank, Neptune including EGC to Newbridge to Ruland Road. Mott Haven substation. NUSCO 1385 cable reconductoring. Completion of Bethel to Norwalk 345Kv.	None Identified as new for this study.	VFT as sensitivity (100 MW).
Transmission Cable Forced Outage Rate	All existing Cable EFORS updated on LI and NYC (based	All existing Cable EFORS updated on LI and NYC to	Based on TO analysis.

<b>Parameter</b>	<b>2008 Study Modeling Assumptions</b>	<b>Recommended 2009 Study Modeling Assumptions</b>	<b>Basis for Recommended 2009 Assumptions</b>
	on 2002-2006 availability with adjustment to NUSCO cable due to reconductoring).	reflect 5 year history.	
Unforced Capacity Deliverability Rights (UDR)	LIPA has notified the NYISO that the amount of UDR's for the Neptune Cable and Cross Sound Cable is confidential data.	LIPA has notified the NYISO that the amount of UDR's for the Neptune Cable and Cross Sound Cable is confidential data.	Per transmission owner notification.
<b>Model Version</b>	Version 2.83	Version 2.92	Per testing and recommendation by ICS.
<b>Outside World Area Models</b>	Updated models for PJM and NE to include zonal representations.	Single Area representations for Ontario and Quebec. Three zones modeled for PJM. Five zones modeled for New England derived from 14 zones provided.	The load and capacity data (including zonal information if available) is provided by the neighboring Areas. This data is then adjusted as described in Policy 5.
Reserve Sharing between Areas	Canadian Provinces assist each other first; US Control Areas assist each other first.	Canadian Provinces have indicated that they will share reserves equally among all.	NPCC CP-8 working group has identified this arrangement as more representative.

**NYSRC Executive Committee Vote to Approve 2009-2010 IRM Base Case Modeling Assumptions:**

Votes in Favor of Motion ..... 13

Votes Against Motion ..... 0

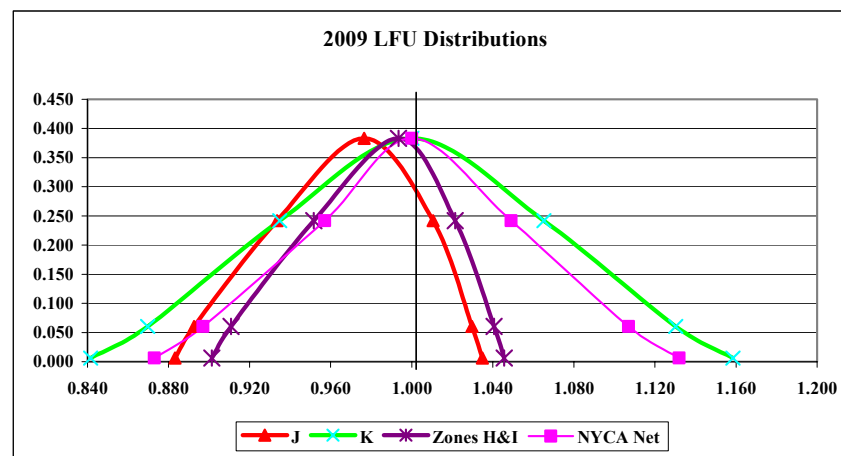
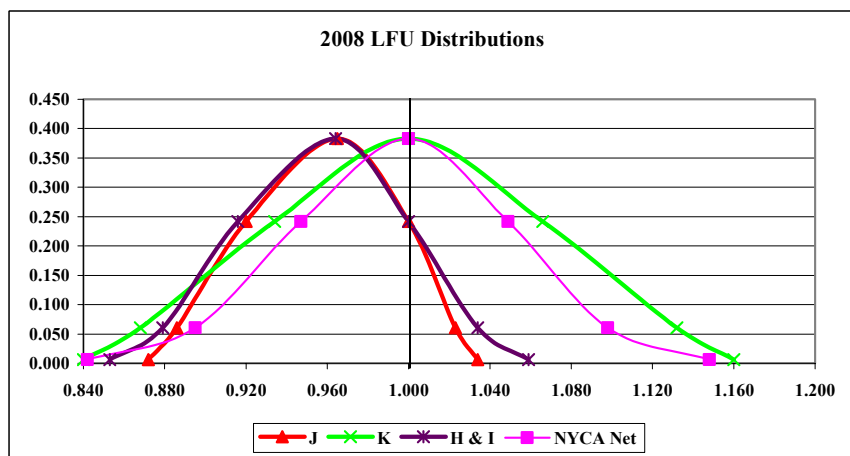
**Motion Approved on August 8, 2008**

# Attachment A NYCA Load Forecast Uncertainty Base Case

## 2008 and 2009 LFU Models

<u>2008 Load Forecast Uncertainty Models</u>				
Multiplier	Zones H&I	Con Ed (J)	LIPA (K)	NYCA Net
0.0062	1.0590	1.0340	1.1600	1.1480
0.0606	1.0340	1.0230	1.1320	1.0980
0.2417	1.0000	1.0000	1.0660	1.0490
0.3830	0.9640	0.9650	1.0000	1.0000
0.2417	0.9160	0.9200	0.9340	0.9470
0.0606	0.8790	0.8860	0.8680	0.8950
0.0062	0.8530	0.8720	0.8400	0.8420

<u>2009 Load Forecast Uncertainty Models</u>				
Multiplier	Zones H&I	Con Ed (J)	LIPA (K)	NYCA Net
0.0062	1.0457	1.0348	1.1584	1.1320
0.0606	1.0406	1.0297	1.1303	1.1070
0.2417	1.0215	1.0106	1.0651	1.0490
0.3830	0.9935	0.9765	1.0000	1.0000
0.2417	0.9517	0.9336	0.9349	0.9570
0.0606	0.9108	0.8926	0.8697	0.8970
0.0062	0.9014	0.8833	0.8416	0.8730

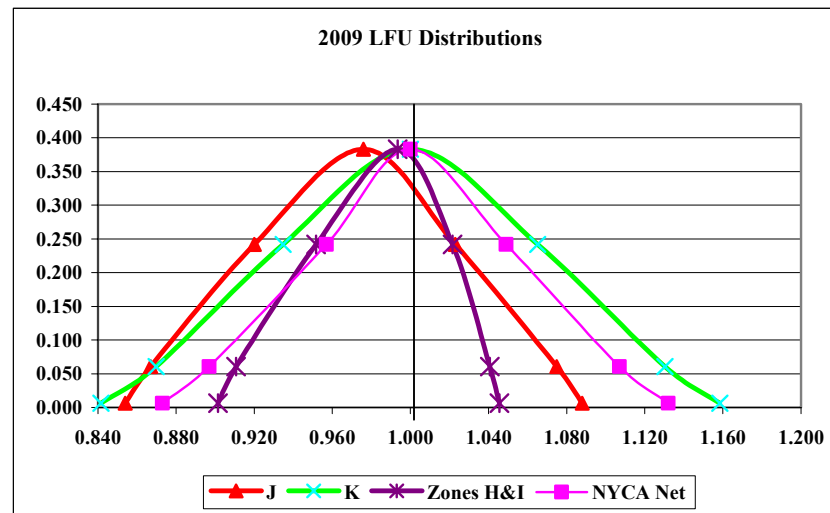
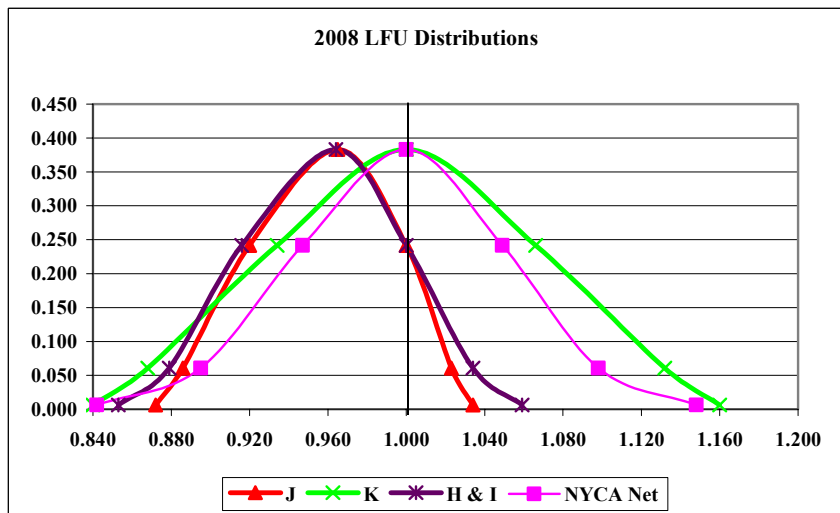


# Attachment A-1 NYCA Load Forecast Uncertainty Sensitivity Case

## 2008 and 2009 LFU Models

<u>2008 Load Forecast Uncertainty Models</u>					
Multiplier	Zones H&I	Con Ed (J)	LIPA (K)	NYCA Net	
0.0062	1.0590	1.0340	1.1600	1.1480	
0.0606	1.0340	1.0230	1.1320	1.0980	
0.2417	1.0000	1.0000	1.0660	1.0490	
0.3830	0.9640	0.9650	1.0000	1.0000	
0.2417	0.9160	0.9200	0.9340	0.9470	
0.0606	0.8790	0.8860	0.8680	0.8950	
0.0062	0.8530	0.8720	0.8400	0.8420	

<u>2009 Load Forecast Uncertainty Models</u>					
Multiplier	Zones H&I	Con Ed (J)	LIPA (K)	NYCA Net	
0.0062	1.0457	1.0880	1.1584	1.1320	
0.0606	1.0406	1.0750	1.1303	1.1070	
0.2417	1.0215	1.0230	1.0651	1.0490	
0.3830	0.9935	0.9760	1.0000	1.0000	
0.2417	0.9517	0.9200	0.9349	0.9570	
0.0606	0.9108	0.8670	0.8697	0.8970	
0.0062	0.9014	0.8540	0.8416	0.8730	



**Attachment B**  
**List of (non-wind)proposed Units**  
**To be in-service by Summer of 2009**

<b>Unit Name</b>	<b>Zone</b>	<b>MW</b>
Caithness	K	310
Albany Landfill	F	2
Co-op city (River Bay)	J	45
DANC	E	4.8
Clinton	D	4.8
Hyland	B	4.8

# Attachment B1

## Renewable Generating Projects for Inclusion in the 2009-2010 Installed Reserve Margin Study

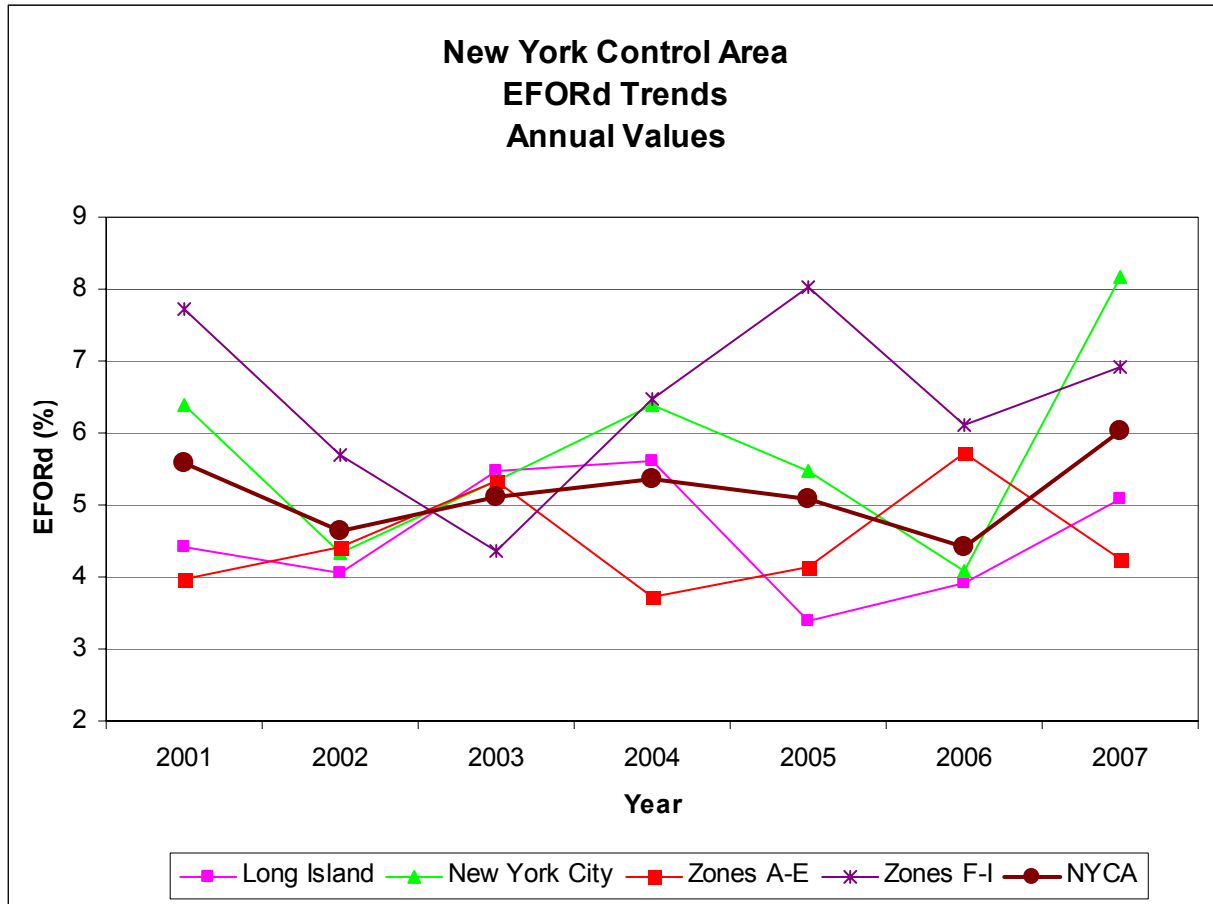
Final  
Renewable Generating Projects Under Consideration for Inclusion in the  
2009-2010 Installed Reserve Margin Study

Facility	Resource Type	New Nameplate Capacity (MW)	Contract Capacity (MW)	Annual Contract Quantity (MWh)	Contract Duration (years)	Requested an Extension	Zone	Connecting Transmission Owner	NYISO Interconnection Study Queue Project Number	NYISO Interconnection Study Queue Project Status*	Projected/ Actual In-Service Date	Current Status	Wind Modeled in 2008 IRM study	Wind On-line since 2008 Gold Book	Wind Capacity Modeled for 2009 IRM <sup>5</sup> (MW)	New Wind Capacity for 2009 IRM <sup>5</sup> (MW)	Sensitivity Capacity	
<b>Maple Ridge 1 &amp; 2 (Previously called Flat Rock)</b>																		
Horizon Wind, Madison	Wind	11.6	NA	NA	NA	NA	E				2000 Sept	Operating	11.6		11.6			
Wester New York Wind Corp, Wethersfield	Wind	6.6	NA	NA	NA	NA	B				2000 Oct	Operating			-			
Canastota Wind Power, Fenner	Wind	30.0	NA	NA	NA	NA	C				2001 Dec	Operating	30.0		30.0			
Constellation Power, Steel Wind	Wind	20.0	NA	NA	NA	NA	A				2007 Jan	Operating	20.0		20.0			
Coral Power, Mummsville	Wind	34.5	NA	NA	NA	NA	E				2007 Aug	Operating			34.5	34.5		
<b>Non-RPS Total</b>		<b>102.7</b>													<b>96.1</b>	<b>34.5</b>		
<b>NYSEDA RPS Projects</b>																		
<b>1<sup>st</sup> Main Tier Solicitation - 2005<sup>1</sup></b>																		
Spier Falls	Hydro	0.8	0.8	3,582	10	na						Operational						
Higley Falls	Hydro			10,255	1	na						1-yr Contract may still be operational						
Browns Falls	Hydro			1,125	1	na						1-yr Contract may still be operational						
Maple Ridge 1 & 2 (Previously called Flat Rock)	Wind	321	231	781,916	10	na	E	NG	171	14	2006 Feb	Operational	321.0		321			
Bear Creek	Wind	22	22	88,704	4	na	Penn				2006 Feb	Operational			22			
<b>Totals for 1<sup>st</sup> Main Tier</b>		<b>343.8</b>	<b>253.8</b>	<b>866,582</b>											<b>343</b>	<b>0</b>	<b>0</b>	
<b>2<sup>nd</sup> Main Tier Solicitation - 2006<sup>2</sup></b>																		
Niagara Generating Facility	Biomass	26.0	26.0	189,525	10	Yes	A				2008 May	This unit converted to a biomass facility.						
Albion Falls	Hydro	0.3	0.3	1,675	10	No	D											
Browns Falls	Hydro	0.4	0.4	1,277	10	No	E											
Colton	Hydro	0.7	0.7	4,851	10	No	E											
Eagle	Hydro	0.5	0.5	3,181	10	No	E											
East Norfolk	Hydro	0.9	0.9	6,207	10	No	E											
Higley Falls	Hydro	1.9	1.9	11,648	10	No	E											
Norfolk	Hydro	1.5	1.5	10,154	10	No	E											
Norwood	Hydro	0.5	0.5	4,828	10	Yes	E											
Oswego Falls	Hydro	0.6	0.6	4,049	10	Yes	C					2008 Jul						
Raymondville	Hydro	0.7	0.7	5,044	10	Yes						2008 Jun						
JPC Canandaigua Cohocton Wind Farm	Wind	82.5	8.3	23,372	10	Yes	C	NYSEG	135	10	2008 Jun				82.5	82.5		
JPC Canandaigua Dutch Hill Wind Farm	Wind	42.5	4.3	12,818	10	Yes	D	NYSEG	199	9	2008 Jun				42.5	42.5		
Noble Altona Windpark	Wind	99.0	88.9	270,782	10	Yes	D	NYPA	174	10	2008 Sept				99.0	99.0		
Noble Bliss Windpark	Wind	100.5	95.5	294,400	10	Yes	A	Village of Arcade	173	10	2008 May	Installed	100.5		100.5	100.5		
Noble Chateaugay Windpark I	Wind	106.5	101.2	292,477	10	Yes	D	NYPA	214	9	2008 Sept				106.5	106.5		
Noble Belmont/Elenburg II	Wind	21.0	20.0	57,671	10	Yes	D	NYPA	NA	NA	2008 Sept				21.0	21.0		
Noble Clinton Windpark I & II	Wind	100.5	95.5	303,599	10	Yes	D	NYPA	172 & 211	10/9	2008 May	Installed	100.5		100.5	100.5		
Noble Elenburg Windpark	Wind	81.0	77.0	252,107	10	Yes	D	NYPA	175	10	2008 May	Installed	81.0	81.0	81.0	81.0		
Windfarm Prattsburgh	Wind	55.5	5.6	15,670	10	Yes	C	NYSEG	113	11	2008 Nov		55.5		55.5	55.5		
<b>Totals for 2<sup>nd</sup> Main Tier</b>		<b>723.0</b>	<b>538.0</b>	<b>1,765,134</b>											<b>689.0</b>	<b>689.0</b>	<b>-</b>	
<b>3<sup>rd</sup> Main Tier Solicitation - 2007<sup>3</sup></b>																		
<b>4<sup>th</sup> Main Tier Solicitation - 2008 Total New Nameplate Capacity</b>																		
		249.0														101.91	101.91	
<b>NYSEDA Total for Main Tier</b>		<b>1,315.8</b>	<b>791.8</b>												<b>1,133.91</b>	<b>790.91</b>	<b>-</b>	
<b>LIPA</b>																		
Winery - Offshore	Wind	10.8	na	na	na	na	K	LIPA	273	2	2010-2011							
Lona Island Cable Project	Wind	94.0	na	na	na	na	K	LIPA	291, 292 & 293	2	2012 & 2014							
<b>LIPA Total</b>		<b>950.8</b>													<b>0</b>	<b>0</b>	<b>-</b>	
<b>NYPA</b>																		
Marble River, LLC Marble River Wind Farm	Wind	84	na	na	na	na	D	NYPA	161	10	12/1/2009	Have not broken ground						
Marble River, LLC Marble River II Wind Farm	Wind	134	na	na	na	na	D	NYPA	171	10	12/1/2009	Have not broken ground						
Jericho Rise Wind Farm, LLC	Wind	79.2	na	na	na	na	E	NYPA	160	6	2009-2011							
Horizon Wind-North Slope Wind	Wind	109.5	na	na	na	na	D	NYPA	187	5	2009-2010							
Noble Burke Windpark	Wind	120	na	na	na	na	D	NYPA	215	5	2010 Oct							
Eabcock & Brown LP, Hounsfield Wind	Wind	268.8	na	na	na	na	E	NYPA	270	2	2010 Sept							
<b>NYPA Total</b>		<b>795.5</b>													<b>0</b>	<b>0</b>	<b>-</b>	
<b>Total Capacity of All Categories</b>		<b>3,165</b>											<b>438.1</b>	<b>282.0</b>	<b>1,230</b>	<b>825</b>	<b>-</b>	

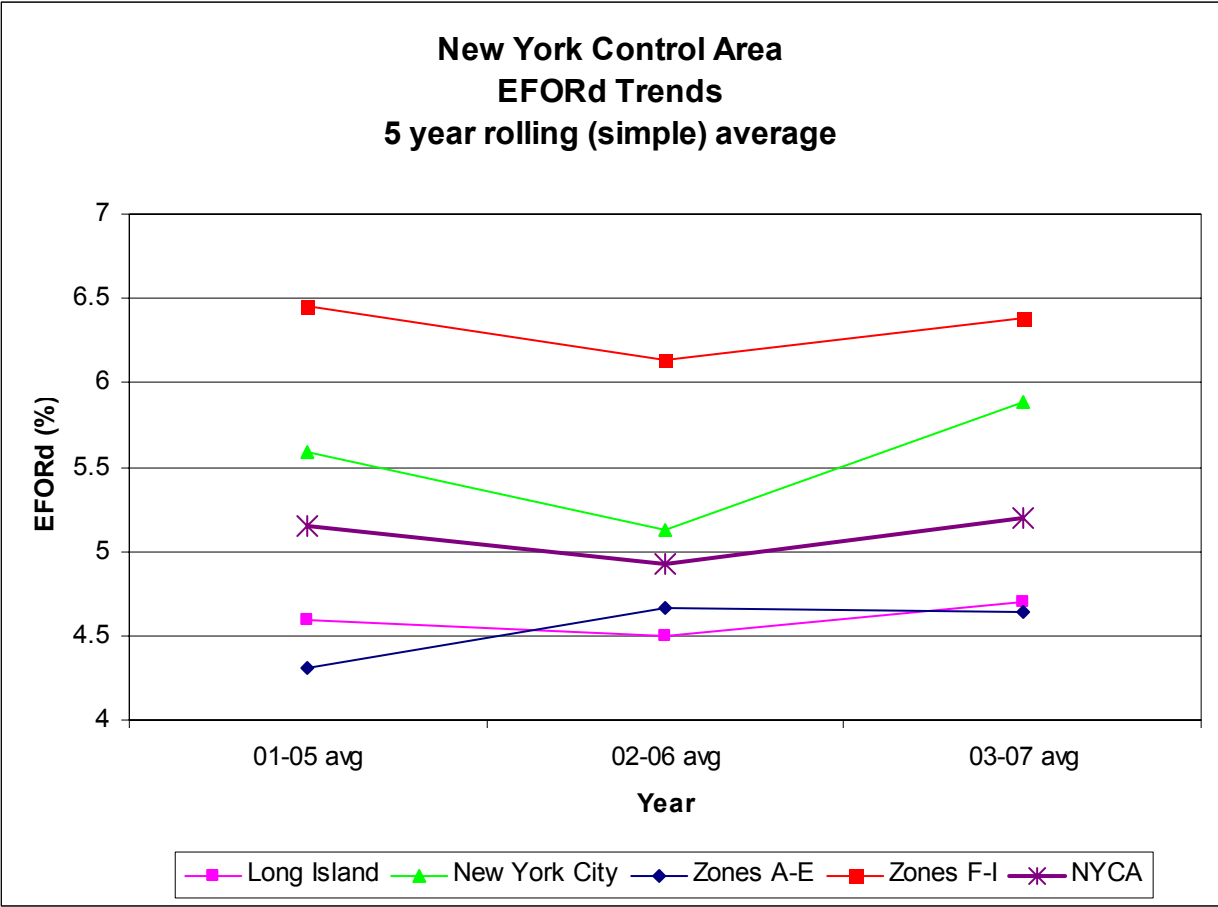
Notes:

- The first main tier solicitation contracts did not include an option for an extension. Units were required to be on-line by January 1, 2006 except for the Bear Creek who was required to be on-line in February 2006.
- The second main tier solicitation contracts were expected to be on-line by January 1, 2008 unless the developer asked for an extension by December 1, 2007 in which case the project would be required to be on-line by November 1, 2008.
- The third main tier solicitation contracts are expected to be on-line by January 1, 2009 unless the developer asks for an extension by December 5, 2008 in which case the project would be required to be on-line by November 30, 2009.
- NYISO Study Queue Project Status Key: 1=Scoping Meeting Pending, 2=FES Pending, 3=FES in Progress, 4=SRIS/SIS Pending, 5=SRIS/SIS in Progress, 6=SRIS/SIS Approved, 7=FES Pending, 8=Rejected Cost Allocation/Next FS Pending, 9=FES in Progress, 10=Accepted Cost Allocation/IA in Progress, 11=IA Completed, 12=Under Construction, 13=In Service for Test, 14=In Service Commercial, 0=Withdrawn
- Assume all wind projects with Tier 1 and Tier 2 RPS contracts are online for the forecast year. For Tier 3 RPS contracts, prorate the capacity of the wind farms with contracted capacity by the ratio of Tier 2 projects that came online by May 2008 divided by total Tier 2 projects.

# Attachment C



# Attachment C-1



## **Attachment D**

### **Emergency Operating Procedures**

<b>Step</b>	<b>Procedure</b>	<b>Effect</b>	<b>2008 MW Value</b>	<b>2009 MW Value</b>
1	Special Case Resources	Load relief	1,323 MW (representing the amount sold)	See Attachment G
2	Emergency Demand Response Program	Load relief	193.5 MW	356 MW
3	5% manual voltage Reduction	Load relief	151 MW	80 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	530 MW	514 MW
6	Voluntary industrial curtailment	Load relief	134 MW	129 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

\*Reductions of 15 MW from zone A, 13 MW from zone E, 17 MW from zone F, and 25 MW from zone J.

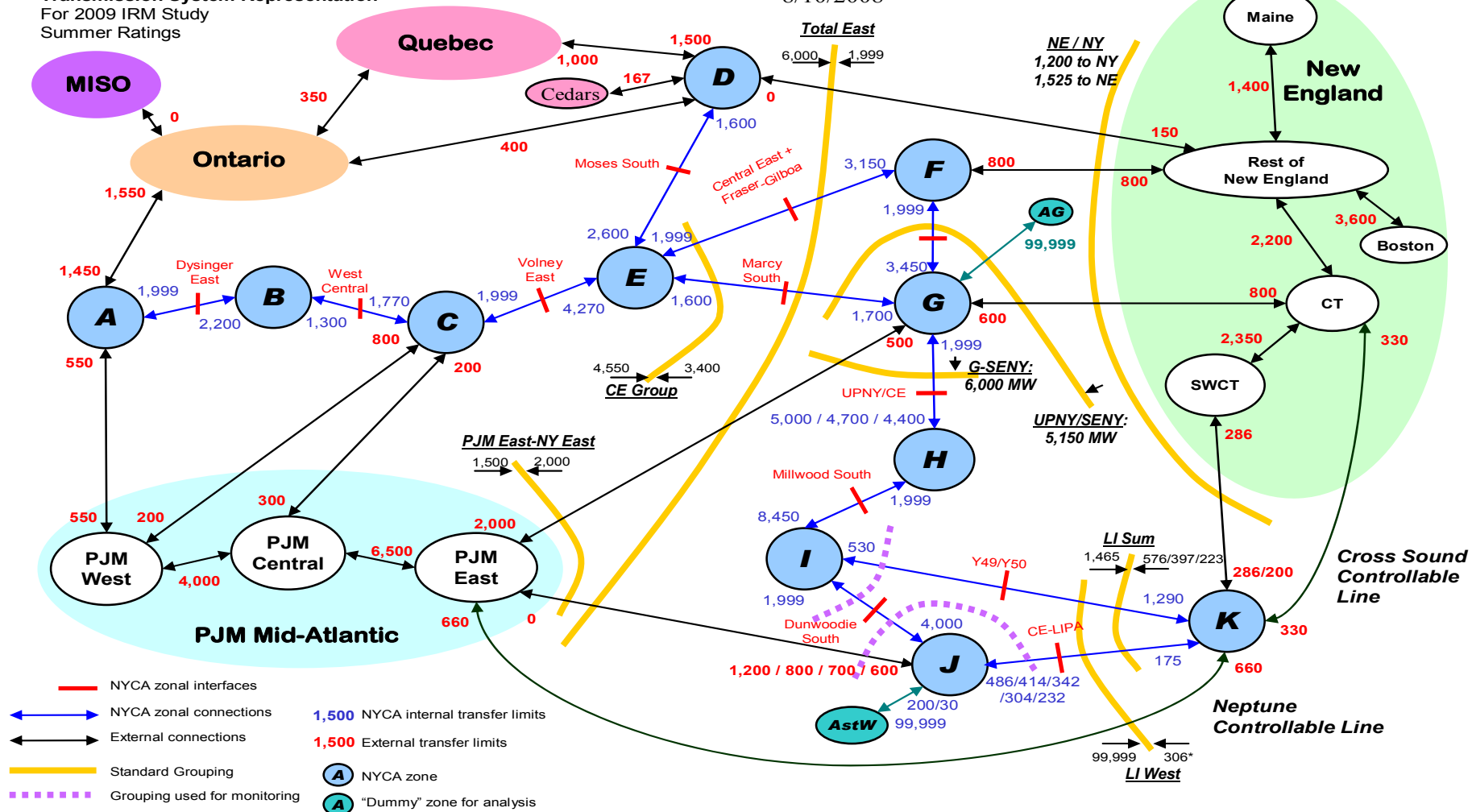
# Attachment E

## 2009 IRM study Topology

Figure A-10

8/10/2008

**New York Control Area**  
Transmission System Representation  
For 2009 IRM Study  
Summer Ratings



# Attachment F

## White Paper on Environmental Impacts

### 2009 Installed Reserve Margin Study Environmental Scenarios

The 2008 Installed Reserve Margin (IRM) studies conducted by the NYISO for the New York State Reliability Council (NYSRC) examined the potential impact on reliability of two developing environmental initiatives. The Regional Greenhouse Gas Initiative (RGGI) was proposed to place a cap on carbon dioxide (CO<sub>2</sub>) emissions starting in 2009. The High Electric Demand Day (HEDD) initiative proposed to reduce ozone precursor emissions of NO<sub>x</sub> from High Emitting Combustion Turbines (HECT) and Load Following Boilers (LFB) in 2009. The analysis of the RGGI scenario determined that the IRM would need to be increased from 15.0% to 17.1% if the number of allowances available to New York generators was limited to 52 million. The analysis of the HEDD scenario showed that the IRM would need to be increased to 24.6%.

This year we find that the RGGI proposal continues to make progress in its development. The RGGI member states have created RGGI, Inc. to support program implementation. RGGI, Inc. in turn has selected contractors to finalize the design and implementation of allowance auction, support services for the development and implementation of emissions and allowance tracking systems, and other services. RGGI, Inc. is currently seeking services to assist in the market monitoring function for the auction. The format of the auction will use uniform prices and be held quarterly. The auction plan calls for auctioning current and future vintages.

The RGGI auction has a number of unique features including opening up the auction to bidders outside the regulated community. This auction design feature will provide direct access to non-emitting entities including, non-emitting generators, transmission owners, financial institutions, brokerages, fuel suppliers, fuel transporters, energy traders, load serving entities, non-RGGI emitters, and assorted special interest groups.

The first sub-regional allowance auction is now scheduled for September 25, 2008. This auction will offer 6.7% of 2009 allowances as shown below in Table 1.

**Table 1. First RGGI Auction Sept. 25, 2008**

State	Cap (000,000 ) Tons	% of 2009 Allowance s
CT	1.37	12.80%
DE	0.00	0.00%
MA	4.35	16.29%
MD	5.33	14.21%
ME	0.87	14.75%
NH	0.00	0.00%
NJ	0.00	0.00%
NY	0.00	0.00%
RI	0.44	16.30%
VT	0.20	16.67%
<b>Total</b>	<b>12.56</b>	<b>6.68%</b>

The first auction with participation from all states will not be until sometime in 2009. A potential impact of the RGGI program on electricity markets is the possibility of a shift in the supply-demand balance of allowances that moves from economically-based shifts in production patterns to a shortage of allowances that manifests itself as a reliability problem. It is important to understand that constraining carbon emissions limits the energy production possible from the existing fossil fueled generating fleet. Just as there is a cap to the number of allowable emissions, there is also a floor or a minimum number of allowances that are necessary to maintain acceptable levels of reliability of the electric system. Should the supply of allowances available to fossil fueled generators, fall below the floor, electric system reliability would be at risk.

Several situations can be postulated that can result in an insufficient supply of allowances for New York generators, after accounting for fuel switching, offsets, and energy efficiency programs. Disruptions in the fuel supply and delivery system can rapidly alter the emissions profile of the generating fleet. The disruptions in natural gas supply and delivery systems following the hurricanes Rita and Katrina resulted in an immediate increase in New York CO<sub>2</sub> emissions of approximately 8 million tons. The loss of a major nuclear plant could translate into the need for an additional 10 million tons/yr. of CO<sub>2</sub> allowances. The current RGGI proposal calls for the auctioning of allowances in the form of a portfolio of allowances of the participating states. Thus New York allowances will be leaving New York during the first auction that it participates in. It is also possible that non-RGGI-effected entities could remove significant quantities of allowances from the New York market for other purposes.

The consequences of finding the supply of allowances below the floor that is necessary for New York -RGGI-affected generators to maintain reliable operation of the electric system are potentially serious threats to bulk power system reliability. Therefore it is incumbent upon energy planners to understand where this floor is. Energy and environmental policy makers need to be mindful of this floor when they are designing the RGGI allowance auction, emissions and allowance tracking systems, and the market monitoring function.

To examine the impact of allowance scarcity on New York's reliability, the ABB GridView market simulation software will be used to forecast generation dispatch, transmission congestion, and market clearing prices for a series of assumed allowance prices. For a subset of these prices where the demand transitions from elastic to inelastic, LOLEs will be determined. Within this allowance price range, the minimum number of allowances necessary to maintain electric system reliability, or the "floor" will be identified. This configuration will be used as input to the IRM studies and made available to the New York policy makers.

New York's State Implementation Plan (SIP) to achieve compliance with National Ambient Air Quality Standards (NAAQS) for ozone has been based on an approach that included the United States Environmental Protection Agency's (USEPA) Clean Air Interstate Rule (CAIR), the Ozone Transport Commission's agreement to achieve

specific reductions from units that operate generally on High Electric Demand Days (HEDD) and regionally updated NO<sub>x</sub> RACT standards for non-New Source Performance Standard generating units. NO<sub>x</sub> emissions contribute to high concentrations of ozone. SO<sub>2</sub> contributes to the formation of PM 2.5. CAIR had been promulgated in 2005 as a regulatory mechanism to bring large portions of the Eastern United States into compliance with National Ambient Air Quality Standards (NAAQS) for ozone and particulate matter (PM 2.5). The CAIR program sought to achieve NAAQS through the reduction of NO<sub>x</sub> and SO<sub>2</sub> emissions, mainly from power plants through the use of a “cap and trade” system of emission permits known as allowances. On July 11, 2008, The United States Court of Appeals for the District of Columbia Circuit vacated the USEPA’s Clear Air Interstate Rule (CAIR).

While the plan attempted to balance reasonable future progress towards achieving air quality goals, costs of and time to implement emission control technology, and the policies of the states involved; ultimately the Court decided that CAIR did not fit well within the specific requirements of the Clean Air Act (CAA). The CAA requires each state to develop a State Implementation Plan (SIP) to achieve the NAAQS. These plans are built upon regulatory programs to control emissions within the state. In situations in which cross-boundary conditions contribute significantly to a neighboring states’ air quality problem, states were required to identify necessary reductions to protect its neighbors. CAIR had sought to satisfy this requirement on a regional basis through the use of a cap and trade allowance system for the region.

New York’s SIP to achieve compliance with NAAQS was submitted to USEPA in August 2007 and is currently under review. The SIP depended upon reductions to be achieved under CAIR through the use of SO<sub>2</sub> and NO<sub>x</sub> allowances. The New York SIP also commits to achieve an additional reduction in NO<sub>x</sub> emission of 50 tons/day on High Electric Demand Days (HEDD) as part of the Ozone Transport Commission (OTC) process agreed to last year. Since the Court eliminated the elements of EPA’s NO<sub>x</sub> control program that went beyond its acid rain and existing NO<sub>x</sub> SIP Call trading programs, the validity of New York’s further NO<sub>x</sub> control efforts is in question.

For 2008, the NYISO’s Comprehensive Reliability Planning Process (CRPP) and NYSRC considered the possible implementation of a HEDD program in 2009. With the July 11, 2008 Court of Appeals decision to vacate CAIR, this scenario is now called into question and appears unlikely.

The Court ruling moves the industry away from an arena in which the emission reductions and the schedule were known, the reductions were to be determined in a competitive market place, emitters were awarded allowances to offset their increased capital and operating costs, and state regulators had SIPs that were workable. The new world after this court decision is very uncertain. The requirement to achieve NAAQS remains, however, SIPs will likely require major revisions, and the tools available will likely be less market driven, and may revert to a command and control approach. As a result, we do not have sufficient information for developing longer term forecasts for prices and power flows in the face of this uncertainty.

Summary:

<b>Issue</b>	<b>With CAIR</b>	<b>Today</b>
Emission Inventory	Known	Unknown
Estimated Emissions for Individual Sources	Estimates could be forecasted	Unknown
Allowance Prices	Functioning Markets	Unknown if not worthless
Impact on Electricity Prices	Studies indicated \$15/MWH	Near term slightly lower Long term unknown
Regulatory Schedule	Known	Unknown
Dispatch Patterns	Could be forecasted	Unknown

Given the degree of uncertainty created by this decision, it appears unlikely that a new NOx control program will be in effect in 2009.

**Recommendation:** The 2009 IRM study should include the impacts of the RGGI proposal in the base case with the assumption that it is an unremarkable year in terms of fuel supply and delivery and further that the new RGGI auction and secondary allowance markets operate without collusion, economic withholding, or significant allowance retirements. A separate scenario should be analyzed to determine the allowance floor that produces an acceptable LOLE with a somewhat higher IRM. Given the vacatur of the CAIR program and the general disruption it has caused, it appears unlikely that the DEC will put additional NOx controls in place for 2009, whether in the form of HEDD or otherwise. Accordingly, it does not appear that a HEDD scenario would represent a reasonably likely future factor in setting to the 2009 IRM. Nevertheless, the 2009 IRM study could carry forward a HEDD scenario based upon the assumptions contained in the 2008 IRM Study scenario, if the NYSRC Installed Capacity Subcommittee wishes to do so.

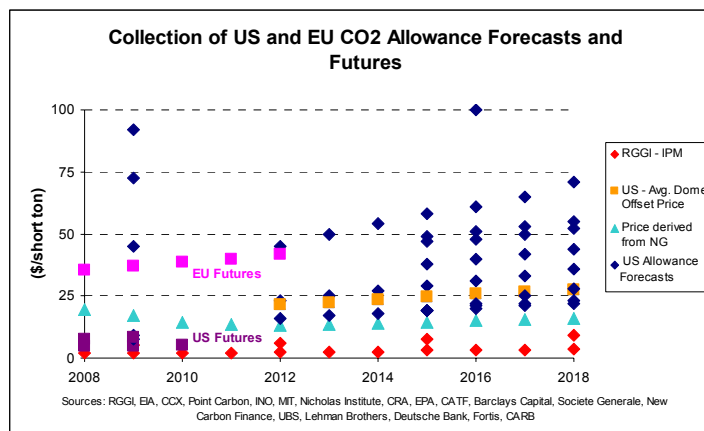
# Attachment F-1

## Environmental Impact Conclusions



### Conclusions

- ◆ **Given**
  - *the range of forecasts for CO<sub>2</sub> allowance costs*
  - *estimates that allowance supply and demand will be somewhat in balance*
  - *the three year compliance period*
  - *the GridView analysis that less than 100MW of Capacity will be forced below 50 % Capacity Factor at prices below \$20/ton...*
- ◆ **It is reasonable to forecast no negative impact on reliability in 2009**



## Attachment F-1 Environmental Impact Conclusions



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### ***Sensitivity Analysis***

- ◆ Allowance Market disruption
- ◆ Renewable Portfolio Standard
- ◆ Extended loss of a nuclear plant
- ◆ NOx reduction

# Attachment G

## SCR Determinations

**Actuals 2007/08**

	<u>UCAP</u>	<u>PF</u>	<u>ICAP</u>
May-08	1700.6	0.924	1839.9
Jun-08	1730.8	0.927	1867.1
Jul-08	1700.4	0.928	1832.3
Aug-08	1683.4	0.928	1814.0
Sep-07	1434.1	0.934	1535.6
Oct-07	1462.4	0.934	1566.6
Nov-07	1212.7	0.924	1313.0
Dec-07	1243.4	0.924	1346.4
Jan-08	1256.9	0.923	1361.2
Feb-08	1287.5	0.923	1394.3
Mar-08	1347.0	0.923	1458.9
Apr-08	1278.2	0.927	1378.7

Note: NYCA monthly PFs derived from average of 2007/2008 monthly zonal values experienced from NYISO simulated calls and 2006 actual call performance

**Annual Growth Rate: (from UCAP) - backed out an assumed 100MW of EDRP migration**

	<u>Jul-06</u>	<u>Jul-07</u>	<u>Jul-08</u>	<u>Average Growth</u>	<u>NYCA Growth Factor</u>	<u>NYCA Growth Factor 2007-2008</u>
NYCA	1194.0	1328.8	1700.4	15.8%		20.4%
J	341.4	404.3	463.1	13.0%		
K	171.8	214.5	166.4	-4.5%		
ROS	680.8	710.0	1070.9	21.7%		
	<u>Aug-06</u>	<u>Aug-07</u>	<u>Aug-08</u>			
NYCA	1228.7	1356.9	1683.4	13.5%		16.7%
J	356.4	414.6	477.4	12.2%		
K	190.0	215.4	167.6	-8.9%		
ROS	682.3	726.9	1038.4	19.6%		

15%

**Projection 2009/2010 Capability Period - utilize above NYCA annual growth rate of 15%**

	<u>UCAP</u>	<u>PF</u>	<u>ICAP</u>
May-09	1955.7	0.925	2114.0
Jun-09	1990.4	0.927	2147.2
Jul-09	1955.5	0.928	2107.1
Aug-09	1935.9	0.929	2084.3
Sep-09	1896.6	0.934	2030.8
Oct-09	1934.0	0.934	2071.8
Nov-09	1603.8	0.924	1736.5
Dec-09	1644.4	0.924	1780.6
Jan-10	1662.3	0.923	1800.1
Feb-10	1702.7	0.923	1844.0
Mar-10	1781.4	0.923	1929.4
Apr-10	1690.4	0.927	1823.3

Two-year growth rate required