

# CARIS I Presentation

## Presenter

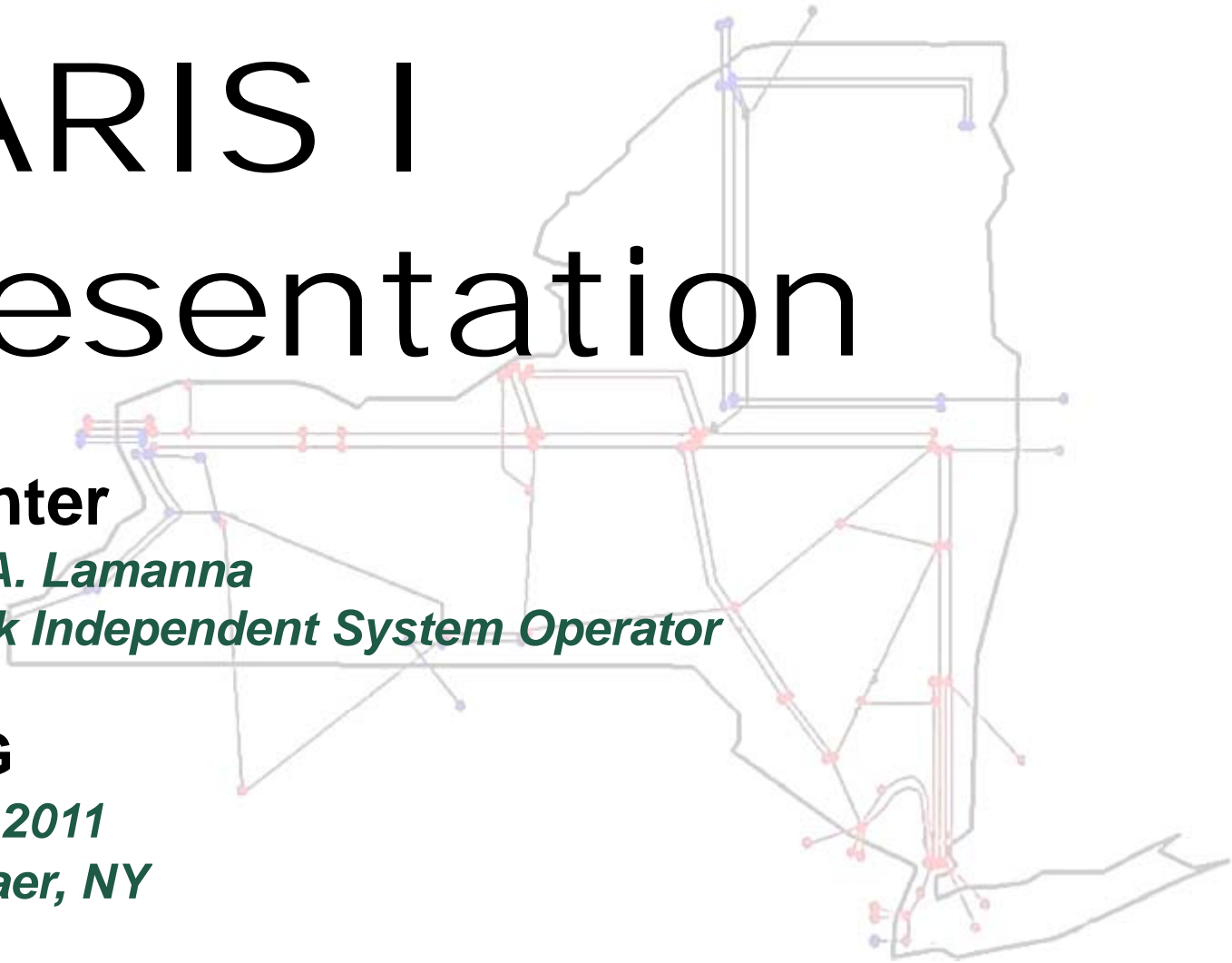
*William A. Lamanna*

*New York Independent System Operator*

## ESPWG

*April 21, 2011*

*Rensselaer, NY*



# Modeling Assumptions

- ◆ Ramapo 345 kV PAR flow
- ◆ ConEd - PSEG Wheel
- ◆ Central – East Transfer Limits
- ◆ Athens SPS
- ◆ Gold Book Data

# Ramapo 345 kV PAR flow

- ◆ **Modeled according to Technical Bulletin # 152 (2/14/11)**
- ◆ **Nomogram placed in MAPS to control flow at 40% of the PJM - NYISO hourly interchange**

# ConEd -PSEG Wheel

- ◆ **ABCJK lines modeled to control flow per FERC Settlement Agreement February 23, 2009**
- ◆ **600 MW subject to firm load service**
- ◆ **400 MW subject to “all other actions”**
- ◆ **Revision to previous language of 13% flow distribution on ABC, and not reflected in model**
- ◆ **1000 MW firm with 100 MW bandwidth**

# Central – East Transfer Limit

- ◆ **Modeled per Central-East Voltage Collapse Transfer Limits Component Values**

([http://www.nyiso.com/public/webdocs/market\\_data/power\\_grid\\_info/CE\\_VC\\_Static\\_limit\\_posting.pdf](http://www.nyiso.com/public/webdocs/market_data/power_grid_info/CE_VC_Static_limit_posting.pdf))

- ◆ **Average de-rate to 2400 MW (reflects additional derates for capacitor availability)**
- ◆ **Nomogram to set transfer limit based on Oswego area generation operation**

# Athens SPS

- ◆ **Modeling of Athens SPS to be determined based upon most recent information from National Grid prior to model lockdown.**

# Gold Book Updates – Load Forecast

## Forecast of Annual Energy by Zone - GWh

Year	A	B	C	D	E	F	G	H	I	J	K	NYCA
2011	15,440	9,963	16,396	5,510	7,773	11,275	10,478	2,962	6,145	54,283	22,562	162,787
2012	15,376	9,994	16,443	6,297	7,762	11,318	10,574	2,995	6,197	54,746	22,819	164,521
2013	15,283	10,017	16,418	6,363	7,790	11,333	10,624	2,999	6,182	54,617	22,970	164,596
2014	15,238	10,020	16,478	6,399	7,787	11,332	10,667	3,008	6,188	54,669	23,062	164,848
2015	15,148	10,034	16,466	6,453	7,781	11,330	10,694	3,016	6,184	54,632	23,187	164,925
2016	15,058	10,065	16,397	6,488	7,777	11,334	10,725	3,036	6,197	54,747	23,495	165,319
2017	14,961	10,111	16,333	6,544	7,770	11,300	10,733	3,043	6,203	54,800	23,681	165,479
2018	14,845	10,156	16,273	6,580	7,759	11,283	10,746	3,069	6,265	55,350	23,912	166,238
2019	14,788	10,225	16,260	6,632	7,776	11,333	10,806	3,094	6,329	55,908	24,159	167,310
2020	14,720	10,295	16,264	6,685	7,795	11,381	10,870	3,132	6,411	56,637	24,505	168,695
2021	14,687	10,373	16,285	6,716	7,821	11,439	10,942	3,151	6,457	57,043	24,741	169,655

## Forecast of Coincident Summer Peak Demand by Zone - MW

Year	A	B	C	D	E	F	G	H	I	J	K	NYCA
2011	2,550	1,947	2,795	648	1,308	2,173	2,256	702	1,464	11,505	5,364	32,712
2012	2,554	1,970	2,825	742	1,312	2,201	2,290	711	1,472	11,635	5,470	33,182
2013	2,550	1,987	2,834	752	1,321	2,222	2,321	722	1,484	11,720	5,520	33,433
2014	2,549	1,998	2,855	757	1,322	2,234	2,345	729	1,492	11,785	5,543	33,609
2015	2,525	2,002	2,849	763	1,318	2,233	2,357	732	1,497	11,830	5,572	33,678
2016	2,495	2,005	2,831	766	1,310	2,230	2,366	736	1,497	11,880	5,633	33,749
2017	2,476	2,017	2,820	773	1,305	2,227	2,375	744	1,509	12,015	5,655	33,916
2018	2,458	2,030	2,814	777	1,302	2,230	2,387	750	1,521	12,200	5,721	34,190
2019	2,451	2,047	2,817	783	1,305	2,248	2,408	756	1,538	12,405	5,775	34,533
2020	2,443	2,064	2,822	790	1,309	2,264	2,428	763	1,554	12,585	5,845	34,867
2021	2,438	2,081	2,830	795	1,313	2,280	2,449	772	1,576	12,758	5,900	35,192

# Gold Book Updates – Generation Additions

**TABLE IV-1: Proposed Generator Additions**

QUEUE POS.	OWNER / OPERATOR	STATION	UNIT	ZONE	DATE	Rating (MW)	CRIS (MW) (3)	SUMMER (1)	WINTER (1)	UNIT TYPE	Class Year	Notes
<b><u>Completed Class Year Facilities Study</u></b>												
234	Steel Winds, LLC	Steel Winds II		A	2011/08	15.0	0.0	1.5	4.5	Wind Turbines	2008	(2)
213	Noble Environmental Power, LLC	Ellenburg II Windfield		D	2011/10	21.0	21.0	2.1	6.3	Wind Turbines	2007	
182	Howard Wind, LLC	Howard Wind		C	2011/12	62.5	62.5	6.3	18.8	Wind Turbines	2007	
186	Jordanville Wind, LLC	Jordanville Wind		E	2011/12	80.0	80.0	8.0	24.0	Wind Turbines	2006	
231	Seneca Energy II, LLC	Seneca		C	2011/12	6.4	0.0	6.4	6.4	Methane	2008	
119	ECOGEN, LLC	Prattsburgh Wind Farm		C	2012/05	78.2	78.2	7.8	23.5	Wind Turbines	2003-05	
147	NY Windpower, LLC	West Hill Windfarm		C	2012/09	31.5	31.5	3.2	9.5	Wind Turbines	2006	
166	AES-Acciona Energy NY, LLC	St. Lawrence Wind Farm		E	2012/09	79.5	79.5	8.0	23.9	Wind Turbines	2007	
161	Marble River, LLC	Marble River Wind Farm		D	2012/10	84.0	84.0	8.4	25.2	Wind Turbines	2006	
171	Marble River, LLC	Marble River II Wind Farm		D	2012/10	132.3	132.3	13.2	39.7	Wind Turbines	2006	
197	PPM Roaring Brook, LLC / PPM	Roaring Brook Wind		E	2012/12	78.0	0.0	7.8	23.4	Wind Turbines	2008	
207	BP Alternative Energy NA, Inc.	Cape Vincent		E	2012/12	210.0	0.0	21.0	63.0	Wind Turbines	2008	
<b><u>Class 2009 Projects</u></b>												
222	Noble Ball Hill Windpark, LLC	Ball Hill Windpark		A	2011/12	90.0	TBD	9.0	27.0	Wind Turbines		
232	Bayonne Energy Center, LLC	Bayonne Energy Center		J	2012/05	500.0	TBD	500.0	500.0	Dual Fuel		(2)
251	CPV Valley, LLC	CPV Valley Energy Center		G	2012/10	753.0	TBD	656.0	753.0	Combined Cycle		
<b><u>Class 2010 Projects</u></b>												
308	Astoria Energy II, LLC	Astoria Energy II		J	2011/05	617.2	TBD	576.0	617.2	Combined Cycle		(2)
330	Long Island Solar Farm LLC	Upton Solar Farms		K	2011/05	32.0	TBD	20.8	5.1	Solar		
237	Allegany Wind, LLC	Allegany Wind		A	2011/10	72.5	TBD	7.3	21.8	Wind Turbines		
254	Ripley-Westfield Wind, LLC	Ripley-Westfield Wind		A	2011/12	124.2	TBD	12.4	37.3	Wind Turbines		
261	Astoria Generating Company	South Pier Improvement		J	2012/05	108.0	TBD	105.0	108.0	Combustion Turbine(s)		(2)
263	Stony Creek Wind Farm, LLC	Stony Creek Wind Farm		C	2012/12	88.5	TBD	8.9	26.6	Wind Turbines		
266	NRG Energy, Inc.	Berrians GT III		J	2013/06	789.0	TBD	744.0	789.0	Combined Cycle		
<b><u>Class 2011 Candidates</u></b>												
239A	Innovative Energy System, Inc.	Modern Innovative Plant		A	2011/07	6.4	TBD	6.4	6.4	Methane		
198	New Grange Wind Farm, LLC	Arkwright Summit Wind Farm		A	2011/09	79.8	TBD	8.0	23.9	Wind Turbines		
169	Alabama Ledge Wind Farm, LLC	Alabama Ledge Wind Farm		B	2011	79.8	TBD	8.0	23.9	Wind Turbines		
349	Taylor Biomass Energy, LLC	Taylor Biomass		F	2012/Q4	22.6	TBD	22.6	22.6	Solid Waste		
152	Moresville Energy LLC	Moresville Energy Center		E	2012/12	99.0	TBD	9.9	29.7	Wind Turbines		
201	NRG Energy	Berrians GT		J	2013/06	200.0	TBD	200.0	200.0	Combined Cycle		
224	NRG Energy, Inc.	Berrians GT II		J	2013/06	90.0	TBD	50.0	90.0	Combined Cycle		
310	Cricket Valley Energy Center, LLC	AP Dutchess		G	2014/12	1115.0	TBD	1002.0	1115.0	Combined Cycle		
<b><u>Other Non Class Year Generators</u></b>												
	Riverbay Corporation	Co-op City		J	2010/06	40.0		24.0	24.0	Combined Cycle		
180A	Green Power	Cody Road		C	2011/Q4	10.0	10.0	1.0	3.0	Wind Turbines		
284	Broome Energy Resources, LLC	Nanticoke Landfill		C	2011	1.6	0.0	1.6	1.6	Methane		
204A	Duer's Patent Project, LLC	Beekmantown Windfarm		D	2013/06	19.5	19.5	2.0	5.9	Wind Turbines		
						<b>Total</b>	<b>4,068</b>		<b>4,699</b>			



# Gold Book Updates – Generation Reratings

**TABLE IV-2**

As of April 2011

QUEUE POS.	OWNER / OPERATOR	STATION	UNIT	ZONE	DATE	PTID	Class Year	INCREMENTAL CAPABILITY (MW)				TOTAL CAPABILITY (MW)		
								Rating (MW)	CRIS(4)	SUMMER	WINTER	Rating (MW)	CRIS(4)	SUMMER
216A	Nine Mile Point Nuclear, LLC	Nine Mile Pt2		C	6/1/2012	23744	2008	115.0	0.0	115.0	115.0	1,374.3	1,148.3	1,256.0
216B	Nine Mile Point Nuclear, LLC	Nine Mile Pt2		C	6/1/2014	23744	2008	53.0	0.0	53.0	53.0	1,427.3	1,148.3	1,309.0
127A	Airtricity Developments, LLC	Munnsville Wind Power		E	12/1/2013	323609	2006	6.0	6.0	0.6	1.8	40.5	40.5	4.1
250	Seneca Energy II, LLC	Ontario		C	11/1/2011	23819		5.6	0.0	5.6	5.6	11.2	5.6	11.2
							Total	<b>179.6</b>	<b>6.0</b>	<b>174.2</b>	<b>175.4</b>	<b>1,479.0</b>	<b>1,194.4</b>	<b>1,324.3</b>

# Gold Book Updates – Generation retirements

## **GENERATOR RETIREMENTS**

*As of April 2011*

*CAPABILITY (MW)*

OWNER / OPERATOR	STATION	UNIT	ZONE	DATE	PTID	SUMMER	WINTER
<b><u>Units retired since 2010 Goldbook</u></b>							
Erie Blvd. Hydro - Lower Hudson	Johnsonville 2		F	1/1/2010	24059	0.0	0.0
Energy Systems North East LLC	Energy Systems North East		A	11/1/2010	23901	-79.4	-88.0
Project Orange Associates	Project Orange 1		C	11/12/2010	24174	-40.0	-46.7
Project Orange Associates	Project Orange 2		C	11/12/2010	24166	0.0	-47.6
AES Eastern Energy, LP	Greenidge 4 *		C	3/18/2011	23583	-106.1	-105.4
AES Eastern Energy, LP	Westover 8 *		C	3/18/2011	23580	-81.2	-81.5
Total						<b>-306.7</b>	<b>-369.2</b>
<p><i>* As filed with the NY DPS and NYISO, both these units are under “protective lay-up” starting 3/18/2011. Given their inactive status, the units shall be treated as retired (as per PSC order in Case 05-E-0889, footnote 1) and, hence, excluded from Installed Capacity calculations for 2011. These units could return to an active status in the future.</i></p>							

## Gold Book Updates - Generation

### ◆ Table II-1: Summary of Changes in Generating Facilities As of April 2011

Generating Units	Summer MW	Winter MW
2010 Capability	37,416	40,086
Additions	579	694
Retirements	-307	-369
Ratings Changes	20	-3
2011 Capability	37,707	40,408

# Gold Book Updates – Load and capacity

Note: Includes Capacity As of Summer Capability Period

Capacity Totals Include Net Purchases and New Installations

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
<b>Peak Load</b>											
NYCA	32,712	33,182	33,433	33,609	33,678	33,749	33,916	34,190	34,533	34,867	35,192
J	11,505	11,635	11,720	11,785	11,830	11,880	12,015	12,200	12,405	12,585	12,758
K	5,364	5,470	5,520	5,543	5,572	5,633	5,655	5,721	5,775	5,845	5,900
<b>Resources</b>											
<b>NYCA</b>											
Capacity	40,106	40,970	40,965	40,968	40,968	40,968	40,968	40,968	40,968	40,968	40,968
SCRs	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053
Total	<b>42,158</b>	<b>43,022</b>	<b>43,017</b>	<b>43,021</b>	<b>43,021</b>	<b>43,021</b>	<b>43,021</b>	<b>43,021</b>	<b>43,021</b>	<b>43,021</b>	<b>43,021</b>
Res./Load Ratio	128.9%	129.7%	128.7%	128.0%	127.7%	127.5%	126.8%	125.8%	124.6%	123.4%	122.2%
<b>Zone J</b>											
Capacity	9,091	9,796	9,796	9,796	9,796	9,796	9,796	9,796	9,796	9,796	9,796
SCRs	476	476	476	476	476	476	476	476	476	476	476
Total	<b>9,567</b>	<b>10,272</b>	<b>10,272</b>	<b>10,272</b>	<b>10,272</b>	<b>10,272</b>	<b>10,272</b>	<b>10,272</b>	<b>10,272</b>	<b>10,272</b>	<b>10,272</b>
Res./Load Ratio	83.2%	88.3%	87.6%	87.2%	86.8%	86.5%	85.5%	84.2%	82.8%	81.6%	80.5%
<b>Zone J</b>											
Capacity	6,309	6,309	6,309	6,309	6,309	6,309	6,309	6,309	6,309	6,309	6,309
SCRs	154	154	154	154	154	154	154	154	154	154	154
Total	<b>6,464</b>	<b>6,464</b>	<b>6,464</b>	<b>6,464</b>	<b>6,464</b>	<b>6,464</b>	<b>6,464</b>	<b>6,464</b>	<b>6,464</b>	<b>6,464</b>	<b>6,464</b>
Res./Load Ratio	120.5%	118.2%	117.1%	116.6%	116.0%	114.7%	114.3%	113.0%	111.9%	110.6%	109.6%

# Gold Book Updates – Transmission

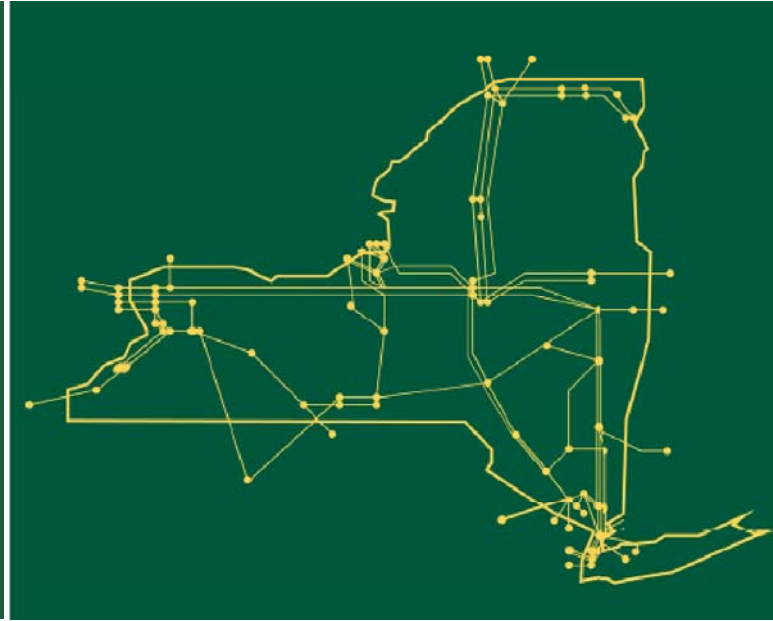
## PROPOSED TRANSMISSION FACILITIES (10)

Queue Pos.	Transmission Owner	Terminals	Line Length miles (1)	Expected Service Date/Yr		Nominal Voltage in kV		
				Prior to (2)	Year	Operating	Design	
<b>Merchant</b>								
206	Hudson Transmission Partners	Bergen 230 kV (New Jersey)	West 49th Street 345kV			2013	345	345
<b>Firm Plans (included in 2011 Base Cases)</b>								
CHGE		E. Fishkill	E. Fishkill	xfmr #2	S	2012	345/115	345/115
CHGE (4)		Pleasant Valley	Todd Hill	5.60	W	2015	115	115
CHGE (4)		Todd Hill	Fishkill Plains	5.23	W	2015	115	115
CHGE		Hurley Ave	Saugerties	11.11	S	2018	115	115
CHGE		Saugerties	North Catskill	12.25	S	2018	115	115
ConEd (3)		Vernon	Vernon	Phase Shifter	S	2010	138	138
ConEd		Farragut	East 13th Street	1.98	S	2011	345	345
ConEd		Farragut	East 13th Street	1.98	S	2011	345	345
LIPA		Shore Road	Lake Success	8.72	S	2012	138	138
LIPA		Riverhead	Canal	16.40	S	2013	138	138
NYPA		Willis	Duley	-24.38	S	2012	230	230
NYPA (5)		Willis	Patnode	9.11	S	2012	230	230
NYPA (5)		Patnode	Duley	15.27	S	2012	230	230
NYPA		Niagara	Rochester	-70.20	W	2013	345	345
NYPA (5)		Niagara	BPS Station	66.40	W	2013	345	345
NYPA		Dysinger Tap	Rochester	-44.00	W	2013	345	345
NYPA (5)		Dysinger Tap	BPS Station	40.20	W	2013	345	345
NYPA (5)		BPS Station	Rochester	3.80	W	2013	345	345
NYPA (11)		Pannell	Clay	-61.60	W	2016	345	345
NYPA (5) (11)		Pannell	Auburn New 345/115 kV Sub	21.00	W	2016	345	345
NYPA (5) (11)		Auburn New 345/115 kV Sub	Clay	40.60	W	2016	345	345
NYSEG (3)		Clarks Corners	Clarks Corners	xfmr	W	2010	345/115	345/115
NYSEG (3)		Clarks Corners	Clarks Corners	xfmr	W	2010	345/115	345/115
NYSEG		Avoca	Stony Ridge	20.10	S	2011	230	230
NYSEG		Stony Ridge	Hillside	26.70	S	2011	230	230
NYSEG		Stony Ridge	Stony Ridge	xfmr	S	2011	230/115	230/115
NYSEG		Stony Ridge	Sullivan Park	6.20	S	2011	115	115
NYSEG		Sullivan Park	West Erie	3.20	S	2011	115	115
NYSEG		Meyer	Meyer	Cap Bank	S	2011	115	115
NYSEG (6)		Wood Street	Carmel	1.34	S	2012	115	115
NYSEG (6)		Wood Street	Katonah	11.70	S	2012	115	115
NYSEG		Klinekill Tap	Klinekill	<10	S	2012	115	115
NYSEG		Wethersfield	Meyer	-31.50	S	2013	230	230
NYSEG (5)		Wethersfield	South Perry	11.50	S	2013	230	230
NYSEG (5)		South Perry	Meyer	20.00	S	2013	230	230
NYSEG		South Perry	South Perry	xfmr	S	2013	230/115	230/115
NYSEG		Watercure Road	Watercure Road	xfmr	S	2013	345/230	345/230
NYSEG (5)		BPS Station	Rochester	3.80	W	2013	345	345
NYSEG		Auburn New 345/115 kV Sub	Auburn New 345/115 kV Sub	xfmr	W	2016	345/115	345/115
NYSEG		Auburn New 345/115 kV Sub	State Street	15.00	W	2016	115	115
NGRID		Greenbush	Hudson	-26.43	S	2012	115	115
NGRID (5)		Greenbush	Klinekill Tap	20.30	S	2012	115	115
NGRID (5)		Klinekill Tap	Hudson	6.13	S	2012	115	115
NGRID		Lockport	Mortimer	56.18	S	2014	115	115

# Gold Book Updates - Transmission

Queue Pos.	Transmission Owner	Terminals	Line Length miles (1)	Expected Service Date/Yr		Nominal Voltage in kV		
				Prior to (2)	Year	Operating	Design	
<b><u>Firm Plans (included in 2011 Base Cases)</u></b>								
O & R		Ramapo	Sugarloaf	16.00	W	2011	138	138
O & R		Hillburn	Sloatsburg	3.00	S	2011	69	69
O & R		Harriman	-	-	S	2011	69	69
O & R		Snake Hill	-	-	W	2012	138	138
O & R		Hartley	-	-	W	2012	69	69
O & R		East Walkkill	-	-	S	2012	69	69
O & R		Montvale (PJM)	-	-	S	2013	69	69
O & R		Little Tor	-	-	W	2013	138	138
O & R		Tappan	-	-	W	2013	69	69
O & R		O&R's Line 26	Sterling Forest	xfmr	W	2014	138/69	138/69
O & R		New Hempstead	-	-	W	2014	138	138
O & R		Hillburn	Pomona	7	W	2016	138	138
O & R		Sugarloaf	Shoemaker	7.00	W	2016/17	69	138
O & R		ConEd's Line Y94	Lovett	xfmr	S	2017	345/138	345/138
O & R		Lovett	West Nyack	12.80	W	2018	138	138
O & R		Pomona	West Haverstraw	5	W	2018	138	138
O & R		Burns	Nanuet	2.6	W	2019	69	69
RGE		Station 135	Station 424	4.98	W	2011	115	115
RGE		Station 13A	Station 135	3.17	W	2011	115	115
RGE		Station 180	Station 180	Cap Bank	S	2011	115	115
RGE		Station 128	Station 128	Cap Bank	S	2011	115	115
RGE		Station 42	Station 124	Phase Shifter	W	2012	115	115
RGE		Station 67	Station 418	3.50	W	2012	115	115
RGE		Station 124	Station 124	Phase Shifter	S	2013	115	115
RGE		Station 124	Station 124	SVC	S	2013	115	115
RGE		Bulk Power System (BPS) Station	Rochester, NY	New Station	W	2013	345/115	345/115
RGE		NYPA SR1-39 345kV Line	Rochester, NY	xfmr	W	2013	345/115	345/115
RGE		NYPA NR-2 345kV Line	Rochester, NY	xfmr	W	2013	345/115	345/115
RGE		BPS Station	Station 418	TBD	W	2013	115	115
RGE		BPS Station	Station 23	TBD	W	2013	115	115

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.



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