

**THIS FILING LETTER DOES NOT CONTAIN ANY PRIVILEGED OR CONFIDENTIAL INFORMATION. REPORT SECTIONS II AND III DO NOT CONTAIN ANY PRIVILEGED OR CONFIDENTIAL INFORMATION. THE BODY OF REPORT SECTION I AND ATTACHMENT II, AND ATTACHMENTS V THROUGH VII DO NOT CONTAIN ANY PRIVILEGED OR CONFIDENTIAL INFORMATION. ATTACHMENT I, ATTACHMENT III AND ATTACHMENT IV CONTAIN PRIVILEGED AND CONFIDENTIAL INFORMATION, AND ARE CLEARLY MARKED.**

December 15, 2017

Kimberly D. Bose, Secretary  
Federal Energy Regulatory Commission  
888 First Street, N.E.  
Washington, D.C. 20426

Re: Annual Report in Docket Nos. ER01-3001-000, ER03-647-000 and  
Request for Privileged Treatment of Attachments I, III, and IV

Dear Ms. Bose:

Enclosed for filing in the above-referenced dockets is the New York Independent System Operator, Inc.'s ("NYISO's") Annual Installed Capacity Report on the NYISO's Capacity Market, Possible Withholding, New Generation Projects, and Net Revenue Analysis (the "Report").<sup>1</sup> By Order dated February 3, 2010, the Commission directed the NYISO to file this report for informational purposes only.<sup>2</sup>

### **I. List of Documents Submitted**

The NYISO submits with this letter, and the below request for confidential treatment, a public version of the Report, with Attachments I, III, and IV redacted. Separately, the NYISO is submitting as confidential, Attachments I, III and IV (the "Confidential Attachments").

As with prior annual Installed Capacity Reports, the Report is comprised of the following separate sections: Section I: Capacity Market Report and Withholding Analysis, Section II: Report on New Generation Projects, and Section III: New Generation Projects and Net Revenue Analysis.

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<sup>1</sup> *New York Indepen. Sys. Operator, Inc.*, 117 FERC ¶ 61,086 (2006); *New York Indepen. Sys. Operator, Inc.*, 103 FERC ¶ 61,201 (2003), 108 FERC ¶ 61,280 (2004), 121 FERC ¶ 61,090 (2007), 123 FERC ¶ 61,206 (2008). In Docket ER03-647, the NYISO files an annual report regarding its Demand Side Management programs on January 15, and a semi-annual report on its Demand Side Management programs and new generation projects on June 15 each year.

<sup>2</sup> *New York Indepen. Sys. Operator, Inc.*, Order, Docket Nos. ER01-3001 and ER03-647 (Feb. 3, 2010).

## **II. Request for Confidential Treatment of Attachments I, III, and IV**

In accordance with Sections 388.107 and 388.112 of the Commission's Regulations,<sup>3</sup> Article 6 of the NYISO's Market Administration and Control Area Services Tariff, Sections 1.0(4) and 4.0 of the NYISO's Code of Conduct, the NYISO requests Privileged and Confidential treatment of the contents of the Confidential Attachments. The NYISO also requests that the Confidential Attachments be exempted from public disclosure under the Freedom of Information Act ("FOIA"), 5 U.S.C. §522.<sup>4</sup>

The Confidential Attachments contain privileged, commercially sensitive, and trade secret information that is not made public by the NYISO and that could cause competitive harm to the affected Market Participants,<sup>5</sup> and could adversely affect competition in the markets administered by the NYISO, if publicly disclosed. This information includes the identity of Installed Capacity Suppliers and their respective offering behavior, and the basis therefor. This confidential, commercially sensitive information is exempt from disclosure under 5 U.S.C. §522(b)(4). For this reason, the NYISO requests that the contents of Confidential Attachments receive Privileged and Confidential treatment and be exempt from FOIA disclosure.

A public version of the contents of Attachment I is set forth in Report Section 1.5.4.2. A public version of Confidential Attachment III, summarizing and masking the contents of Attachment III, is included in the Report as Attachment II. A masked and aggregated version of Confidential Attachment IV is set forth in Report Section 1.5.4.4.

The NYISO requests waiver of any obligation it may have under the Commission's regulations or the Secretary's rules to submit a redacted version of the Confidential Attachments. The NYISO incorporated into the body of Report Section I a masked or aggregated version of the information that is contained in the Confidential Attachments and thereby makes publicly available the information contained in Attachment III that is not confidential and commercially sensitive. In that regard, the NYISO has provided a redacted version of the information contained in the Confidential Attachments.

The Confidential Attachments are identified and marked in accordance with the Commission's regulations and rules published by the Secretary's Office for submitting Privileged information.

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<sup>3</sup> 18 C.F.R. §§ 388.107, 388.112.

<sup>4</sup> The information provided by the NYISO for which the NYISO claims an exemption from FOIA disclosure is labeled "Contains Privileged Information – Do Not Release."

<sup>5</sup> Terms with initial capitalization not defined herein have the meaning set forth in the NYISO's Market Administration and Control Area Services Tariff.

### III. Correspondence

Copies of correspondence concerning this filing should be addressed to:

Robert E. Fernandez, General Counsel  
Raymond Stalter, Director of Regulatory Affairs  
\*Gloria Kavanah, Senior Attorney  
New York Independent System Operator, Inc.  
10 Krey Boulevard  
Rensselaer, N.Y. 12144  
Tel: (518) 356-6000  
Fax: (518) 356-4702  
rfernandez@nyiso.com  
rstalter@nyiso.com  
gkavanah@nyiso.com

\* Person designated to receive service.

Respectfully submitted,

/s/ Gloria Kavanah

Gloria Kavanah  
Counsel for  
New York Independent System Operator, Inc.

cc: Michael Bardee  
Anna Cochrane  
James Ganly  
Jette Gebhart  
Kurt Longo  
David Morenoff  
Daniel Nowak  
Larry Parkinson  
J. Arnold Quinn  
Douglas Roe  
Kathleen Schnorf  
Gary Will

## **CERTIFICATE OF SERVICE**

I hereby certify that I have this day served the foregoing document upon each person designated on the official service list compiled by the Secretary in this proceeding in accordance with the requirements of Rule 2010 of the Rules of Practice and Procedure, 18 C.F.R. §385.2010.

Dated at Rensselaer, NY this 15<sup>th</sup> day of December 2017.

/s/ Joy A. Zimmerlin

Joy A. Zimmerlin  
New York Independent System Operator, Inc.  
10 Krey Blvd.  
Rensselaer, NY 12144  
(518) 356-6207

# **2017 Annual Installed Capacity Report**

*Report on the NYISO's Capacity Market, Possible Withholding,  
New Generation Projects, and Net Revenue Analysis*

**December 15, 2017**

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# I. Capacity Market Report

## I.2 Overview

This report (the “December 2017 Report”) reviews the outcomes of the Installed Capacity (“ICAP”) market administered by the New York Independent System Operator (“NYISO”); assesses the effectiveness of the ICAP Demand Curves<sup>1</sup> (“Demand Curves”) in attracting investment in new and existing capacity resources; and examines potential withholding activity in the NYISO-administered Capacity auctions for the New York Control Area (“NYCA”) within its three Localities, New York City (“NYC”), the G-J Locality (“G-J”), and Long Island (“LI”), and the remaining area that comprises the NYCA, the Rest of State (“ROS”) (referred to in this report as “capacity areas”).<sup>2</sup> The December 2017 Report covers the Winter 2016-2017 and Summer 2017 Capability Periods, which span from November 2016 through October 2017. Similar NYISO reports filed in previous years cover earlier periods.

With the exception of the G-J Locality capacity prices, during the Winter 2016-2017 Capability Period capacity prices were lower, on average, than those of the previous Winter Capability Period. The average ICAP Spot Market Auction (“Spot Market Auction”) prices over the Winter 2016-2017 Capability Period were \$0.47/kW-month, \$3.48/kW-month, \$3.48/kW-month, and \$0.47/kW-month, for NYCA, the G-J Locality, NYC, and LI, respectively. These prices compare with \$0.95/kW-month, \$3.24/kW-month, \$5.97/kW-month and \$1.65/kW-month during the previous winter for NYCA, the G-J Locality, NYC, and LI respectively.

Capacity prices during the Summer 2017 Capability Period in NYC and NYCA were lower on average than those of the previous (2016) Summer Capability Period. The average Spot Market Auction prices in NYC were \$10.04/kW-month compared to \$12.24/kW-month, and were \$2.35/kW-month compared to \$4.09/kW-month for NYCA. The average Spot Market Auction prices over the Summer 2017 Capability Period were higher for G-J and the LI Locality, *i.e.*, \$9.85/kW-month and \$6.66/kW-month compared to \$9.24/kW-month and \$4.63/kW-month respectively during the previous Summer Capability Period.

The average Spot Market Auction prices for Summer 2017 were lower than the Summer 2016 average by \$1.74/kW-month in NYCA; by \$2.20/kW-month in NYC; and higher by \$0.61/kW-month in the G-J Locality; and by \$2.03/kW-month in LI. These price changes were driven primarily by changes in the respective Locational Minimum Installed Capacity Requirements (“LCRs”), as well as by the changes in available capacity compared to the load forecast throughout NYCA. These dynamics are depicted in Table 1.

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<sup>1</sup> Terms in upper case not defined herein shall have the meaning set forth in the NYISO’s Market Administration and Control Area Services Tariff (“Services Tariff”), with the exception of Rest of State (“ROS”) when such term refers to a period before the Summer 2014 Capability Period. Consistent with the Services Tariff revision to establish the G-J Locality beginning with the Summer 2014 Capability Period and change the definition of Rest of State accordingly, when ROS refers to Winter 2013-2014 or a prior period, it means Load Zones A through I. Any other terms not so defined have the meaning set forth in the Open Access Transmission Tariff (“OATT”).

<sup>2</sup> The NYISO’s Capacity auctions have four Market-Clearing Prices: NYCA, New York City, Long Island and the G-J Locality.



For the Winter 2016-2017 and Summer 2017 Capability Periods, there was minimal change in the proportion of Load Serving Entity (“LSE”) Unforced Capacity (“UCAP”) requirements met through purchases in the NYISO-administered capacity auctions versus bilateral transactions when compared to previous Capability Periods. In the Winter 2016-2017 Capability Period, 34.78% of LSE Capacity requirements were met through bilateral transactions (35.71% in the previous Winter Capability Period), while the remaining percent of LSE requirements were met through purchases in the NYISO-administered auctions. Similarly, in the Summer 2017 Capability Period, 39.16% of LSE capacity requirements were met through bilateral transactions (36.38% in Summer 2016), while the remaining LSE requirements were satisfied through purchases made in the NYISO-administered auctions.

The seasonal average quantities of unoffered capacity constituted less than 0.7% of available supply in the NYC, LI, and the G-J Locality (see Chart 10). The seasonal average quantities of unsold capacity (*i.e.*, capacity that was offered but went unsold) was below 1% for each of the three Localities (see Chart 11).<sup>3</sup> Total unsold and unoffered capacity quantities from ROS resources were at or below 1% in the Winter 2016-2017, and at or below 0.5% in Summer 2017. The UCAP offered and purchased in NYCA and each of the three Localities exceeded the LCRs; therefore, prices were below the base reference point on the respective ICAP Demand Curves.

Overall, the Market-Clearing Prices in the ICAP Spot Market Auctions support the conclusion that the ICAP Spot Market Auctions continue to be attractive to Installed Capacity Suppliers. Previously the NYISO stated that it is difficult to correlate the effect of the ICAP Demand Curves on the level of investment in the NYCA, partially because in the past NYC has had capacity in excess of the LCR, and partially due to the lead-time required to site, develop, and construct a new generator. The ICAP Demand Curves provide transparent capacity market price signals that developers consider in their projections of anticipated future revenues when making near-term investment decisions. Capacity market outcomes are reviewed to ensure market signals are aligned with reliability needs. When market changes are identified, the NYISO works with its stakeholders on prioritizing the need for and developing a suitable market rules.

The NYISO continues to monitor potential reliability risks and other issues that may affect the reliability outlook for New York’s bulk electric system. On October 18, 2016, the NYISO Board of Directors approved the 2016 Reliability Needs Assessment (“RNA”) Report (“2016 RNA Report”),<sup>4</sup> which is the first step in preparing the 2016 Comprehensive Reliability Plan. The 2016 RNA Report’s key findings identified two transmission security needs in portion of the Bulk Power Transmission Facilities beginning in 2017. On April 11, 2017 issued the Comprehensive Reliability Plan Final Report (“CRP”).<sup>5</sup> The CRP concluded that the Bulk

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<sup>3</sup> Section I.5.2 of this report provides information and analysis of the unoffered and unsold capacity.

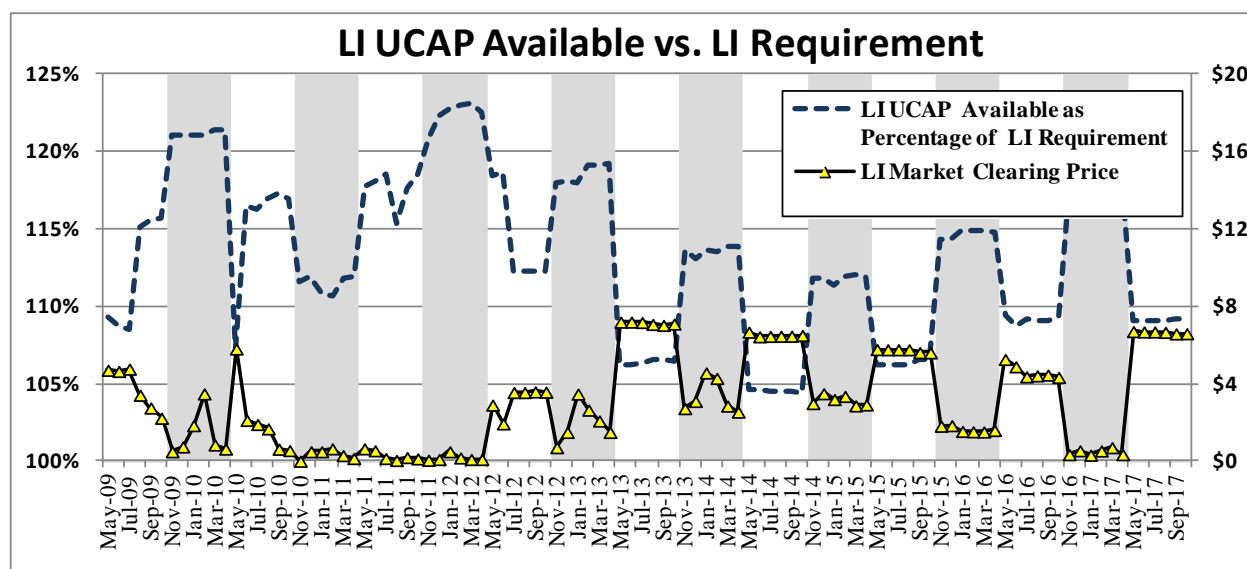
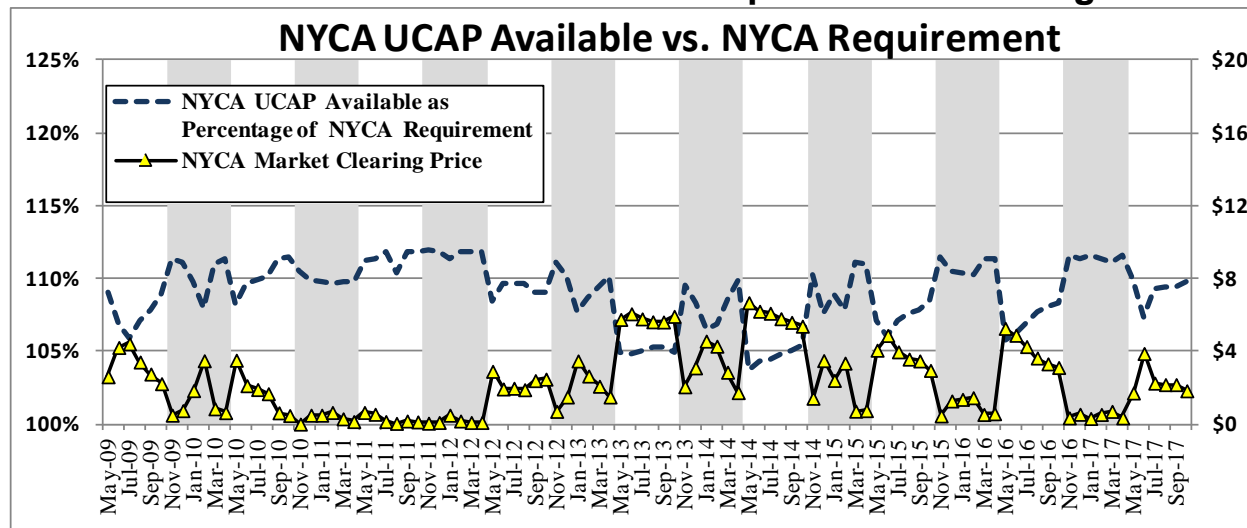
<sup>4</sup> The 2016 RNA Report is available at:  
<[http://www.nyiso.com/public/webdocs/media\\_room/press\\_releases/2016/Child\\_2016\\_RNA/2016RNA\\_Final\\_Oct18\\_2016.pdf](http://www.nyiso.com/public/webdocs/media_room/press_releases/2016/Child_2016_RNA/2016RNA_Final_Oct18_2016.pdf)>.

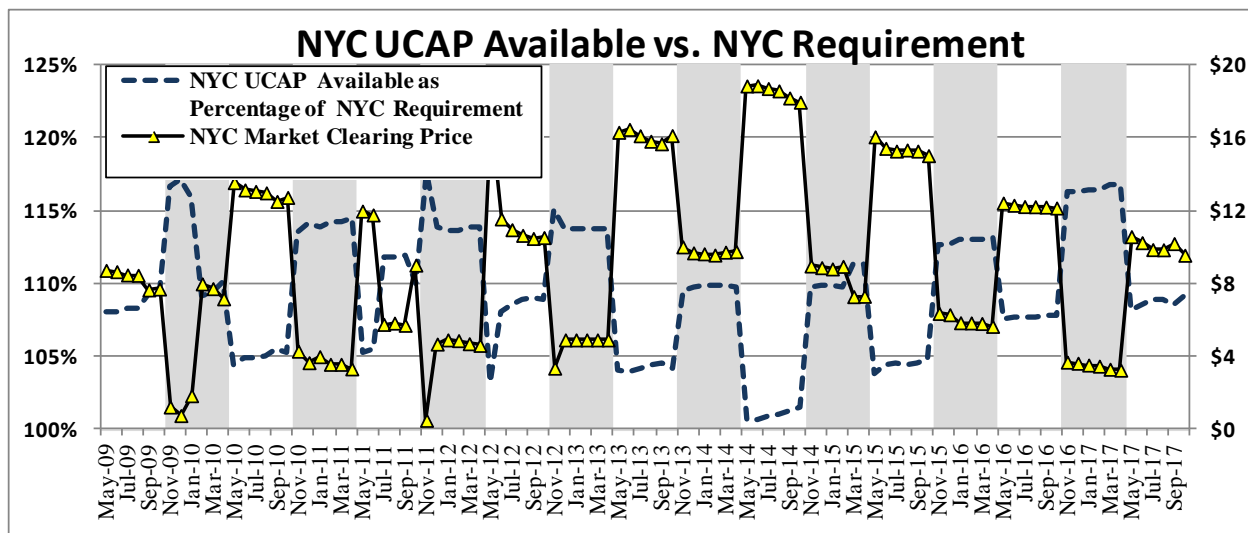
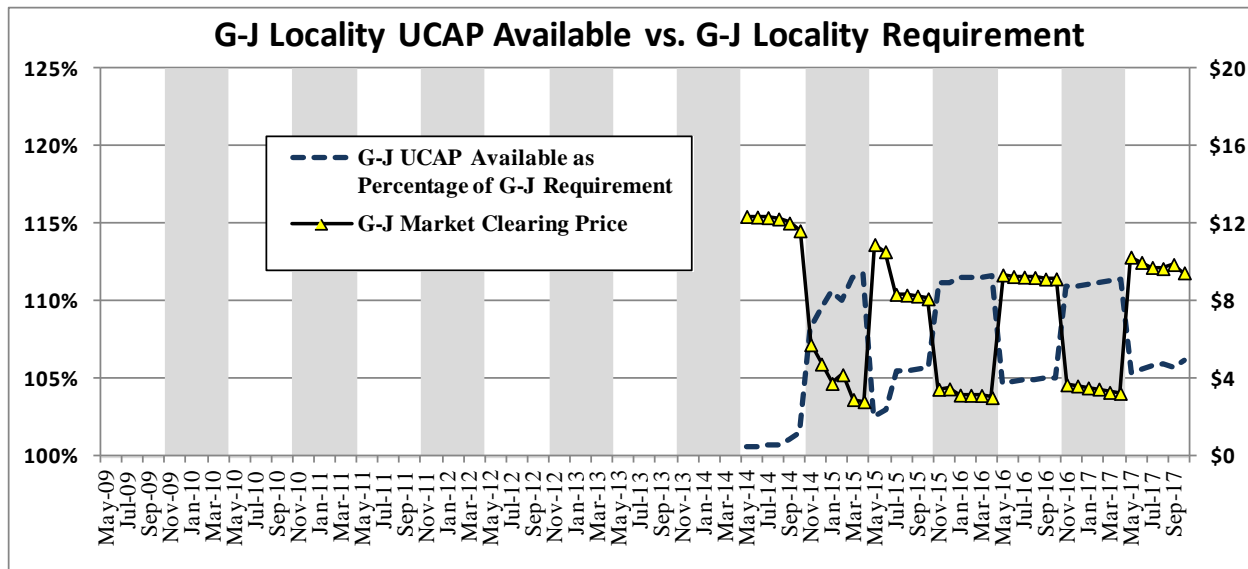
<sup>5</sup> See New York Independent System Operator, “2016 Comprehensive Reliability Plan issued on April 11, 2017, available at:  
<[http://www.nyiso.com/public/webdocs/markets\\_operations/services/planning/Planning\\_Studies/Reliability\\_Planning\\_Studies/Reliability\\_Assessment\\_Documents/2016CRP\\_Report\\_Final\\_Apr11\\_2017.pdf](http://www.nyiso.com/public/webdocs/markets_operations/services/planning/Planning_Studies/Reliability_Planning_Studies/Reliability_Assessment_Documents/2016CRP_Report_Final_Apr11_2017.pdf)>.

Power Transmission Facilities will meet all applicable Reliability Criteria over the 2017 through 2026 Study Period, and confirms that the initially identified in RNA were resolved.

The NYISO is preparing for the next Reliability Planning Process, which will begin in January 2018, for the New York Control Area Bulk Power Transmission Facilities based on updated assumptions including risk factors and other reliability issues

**Chart 1: UCAP Available Reserve and Spot Market Clearing Prices**





## **I.3 Market Design and Regulatory Developments**

Over the past year there have been several ICAP market design initiatives and regulatory developments pertaining to the NYISO's Installed Capacity market. The significant developments are described below.

### **I.3.1. Buyer-Side Mitigation Enhancements**

On July 14, 2017, NYISO filed proposed Services Tariff revisions to include: (i) enhancements to the rules governing the forecasts determined and used by the NYISO in the course of making determinations under the Buyer-Side Mitigation ("BSM") Rules; and (ii) improvements to rules governing the use of escalation factors and inflation rates under the BSM Rules. Federal Energy Regulatory Commission ("FERC") accepted the revisions on September 11, 2017.

### **I.3.2. Revisions to Pivotal Supplier Rules**

On February 6, 2017, NYISO filed revisions to the Services Tariff to apply across all Mitigated Capacity Zones uniform rule by which a "Pivotal Supplier" can rebut the presumption of control of unforced capacity. Under the revisions, Control of Unforced Capacity will no longer be rebuttable in Zone J through forward capacity sales, such as sales in Strip or Monthly auctions. These revisions are necessary to eliminate incongruities in the rebuttal standard between Mitigated Capacity Zones and that, in so doing, all suppliers will be treated the same, irrespective of the Mitigated Capacity Zone in which they are selling. FERC accepted revisions, effective April 7, 2017.

### **I.3.3 Annual Updates for the ICAP Demand Curves**

FERC accepted proposed revisions to the NYISO's rules to move from a triennial ICAP Demand Curve reset to a quadrennial reset period with annual updates. The ICAP Demand Curves will be updated formulaically for each of the remaining three years of each reset period. The three components of the ICAP Demand Curve input parameters that will be updated annually are the (i) winter-to-summer ratio, (ii) gross cost of new entry for peaking plants using an escalation factor, and (iii) Net Energy and Ancillary Services revenue offset. The updates to the winter-to-summer ratio and the Energy and Ancillary Services revenue will be based on rolling three years of data. On November 2, 2017, the NYISO posted the first annual update for each of the ICAP Demand Curves. The tariff provision for a collar was triggered for the New York City and Long Island Demand Curves.

### **I.3.4 Locality Exchange Factor**

On November 30, 2016, NYISO filed revisions to its Services Tariff to correct a pricing inefficiency that could arise in the event of capacity exports from certain Localities in the NYCA. The methodology recognizes that an exporting generator continues to operate within its Locality, which would be reflected in the ICAP Spot Market Auction clearing prices by accounting for the portion of exported capacity that can be replaced by capacity located in Rest of State. FERC accepted the revisions, effective January 29, 2017.

## I.4. Recent Installed Capacity Auction Results

Capacity committed through self-supply, bilateral transactions, and the NYISO-administered auctions (referred to herein as “committed” capacity) remains above the NYCA Minimum Installed Capacity Requirement and above each Locality’s LCRs. In general, the amount of capacity available from many generators in the NYCA increases in the Winter Capability Period because of higher possible output at lower ambient temperatures. Capacity imports from External Control Areas fluctuate both seasonally and monthly. The NYCA Demand Curve price can decline to zero when supply exceeds the NYCA Minimum Installed Capacity Requirement by 12 percent or more. Accordingly, the NYCA Market-Clearing Prices have been consistently at or above ten percent of the NYCA ICAP Demand Curve reference price<sup>6</sup>, particularly in the Winter Capability Period when prices were consistently below \$1/kW-month on average.

The amount of Capacity committed to the NYCA, including imports, continues to be high relative to the minimum requirements established with the Installed Reserve Margin of 18 percent. The monthly average import levels into the entire NYCA were about 2,440 MW in the Winter 2016-2017 Capability Period and about 3,070 MW in the Summer 2017 Capability Period. Those values represent approximately a 460 MW increase in the monthly average over the amount imported in the previous Winter Capability Period and a 390 MW monthly average increase relative to the 2016 Summer Capability Period.

ICAP Market-Clearing Prices and auction activity levels from November 1999 through October 2017 for the NYCA, G-J Locality, NYC, and LI are summarized in tabular form in Attachment VII. Market-Clearing Prices are depicted graphically in Chart 2, Chart 4, Chart 6 and Chart 8; and the amount of capacity committed, MW that were offered, and unsold MW are depicted in Chart 3<sup>7</sup>, Chart 5, Chart 7<sup>8</sup>, and Chart 9.

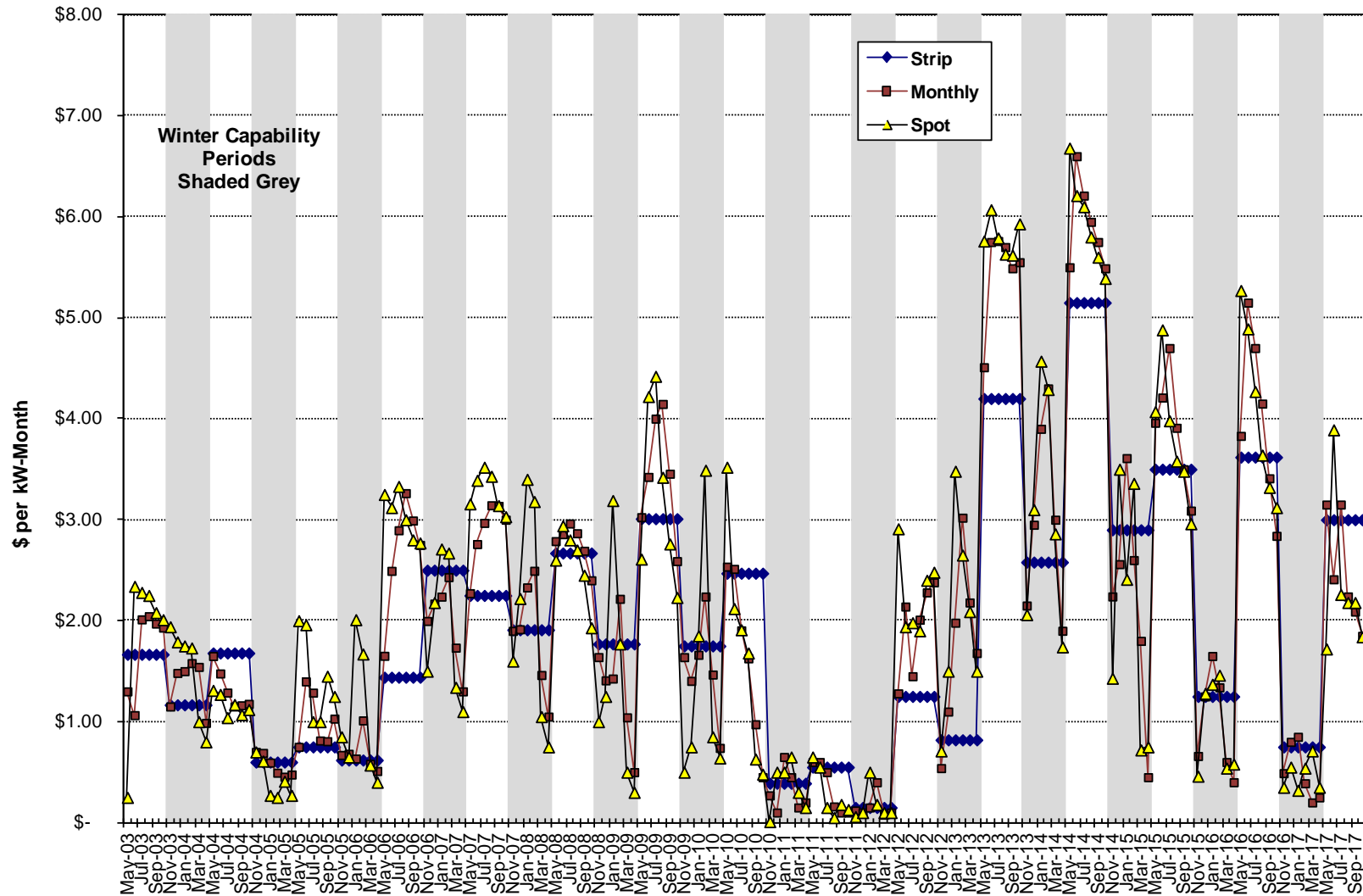
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<sup>6</sup> The reference price when the ICAP Demand Curve is translated to UCAP.

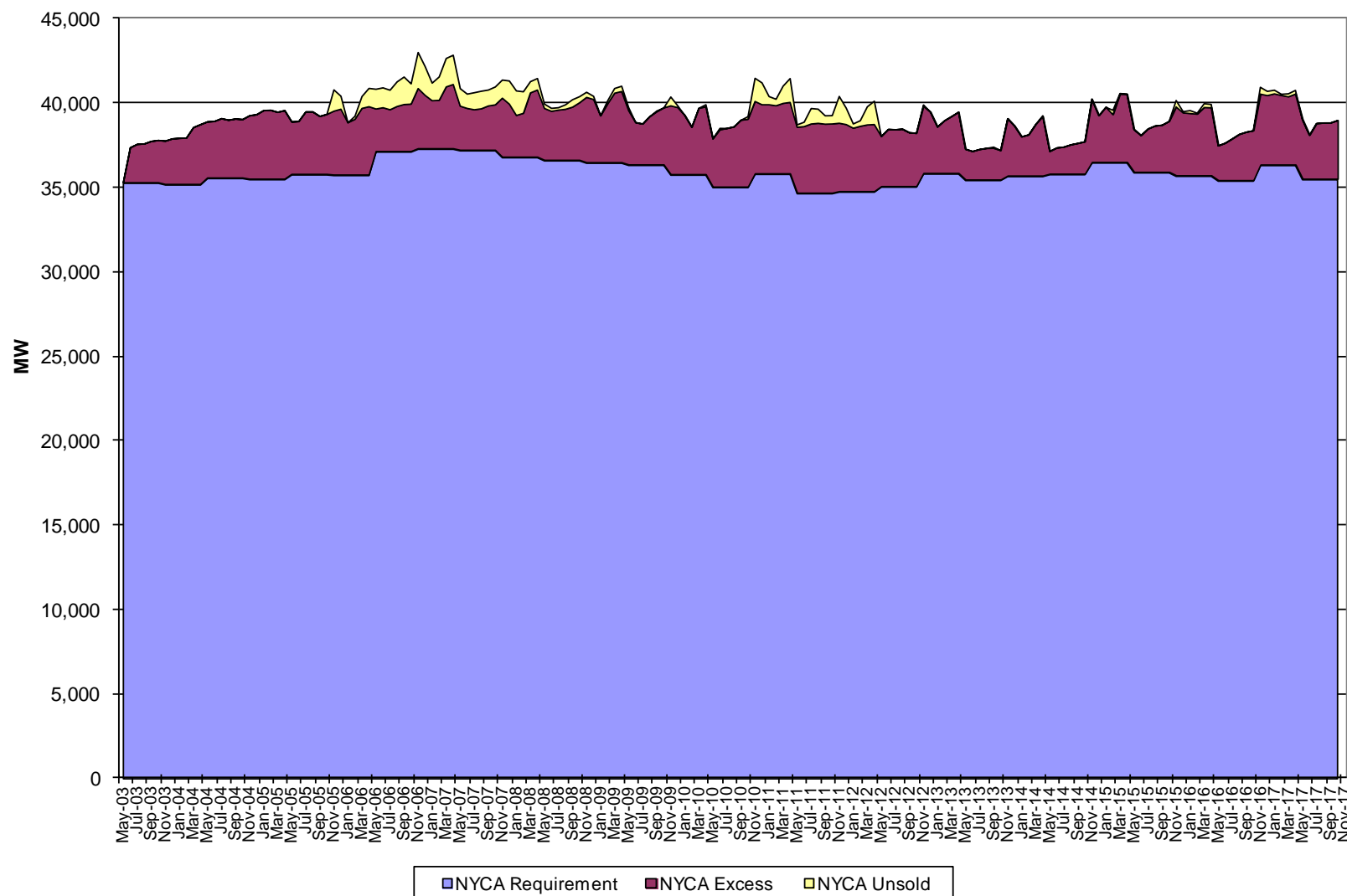
<sup>7</sup> Previous years’ Reports presented only ROS unsold data in Chart 3. This year’s Report presents in Chart 3 the NYCA-wide unsold data.

<sup>8</sup> The previous year’s Report presented only Load Zone G, H and I unsold data in Chart 5. This year’s Report presents in Chart 5 the Zones G, H, I, and J unsold data.

## Chart 2: NYCA Market Clearing Prices



### Chart 3: NYCA Offered MW





### Chart 4: NYC Market Clearing Prices

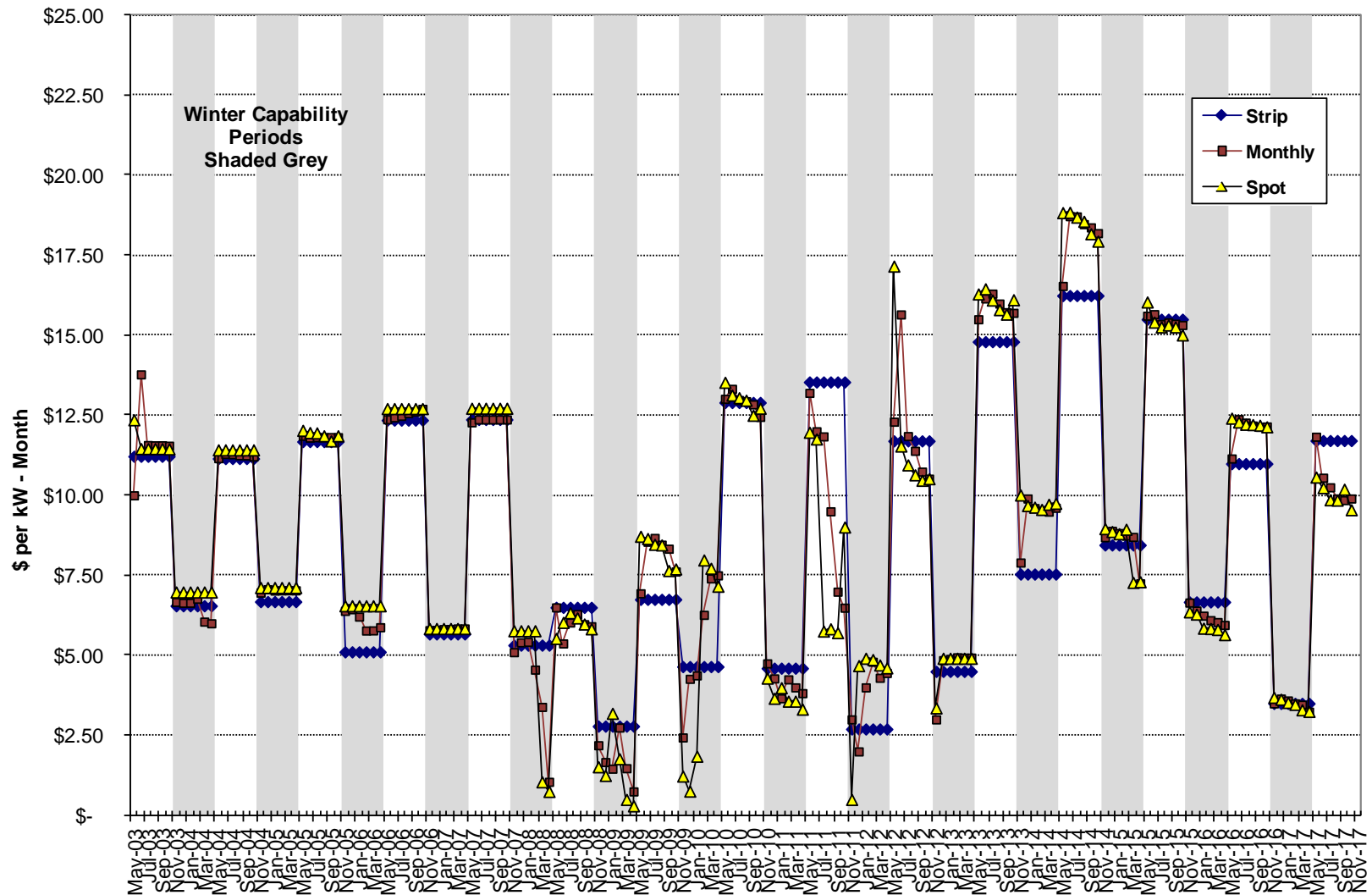
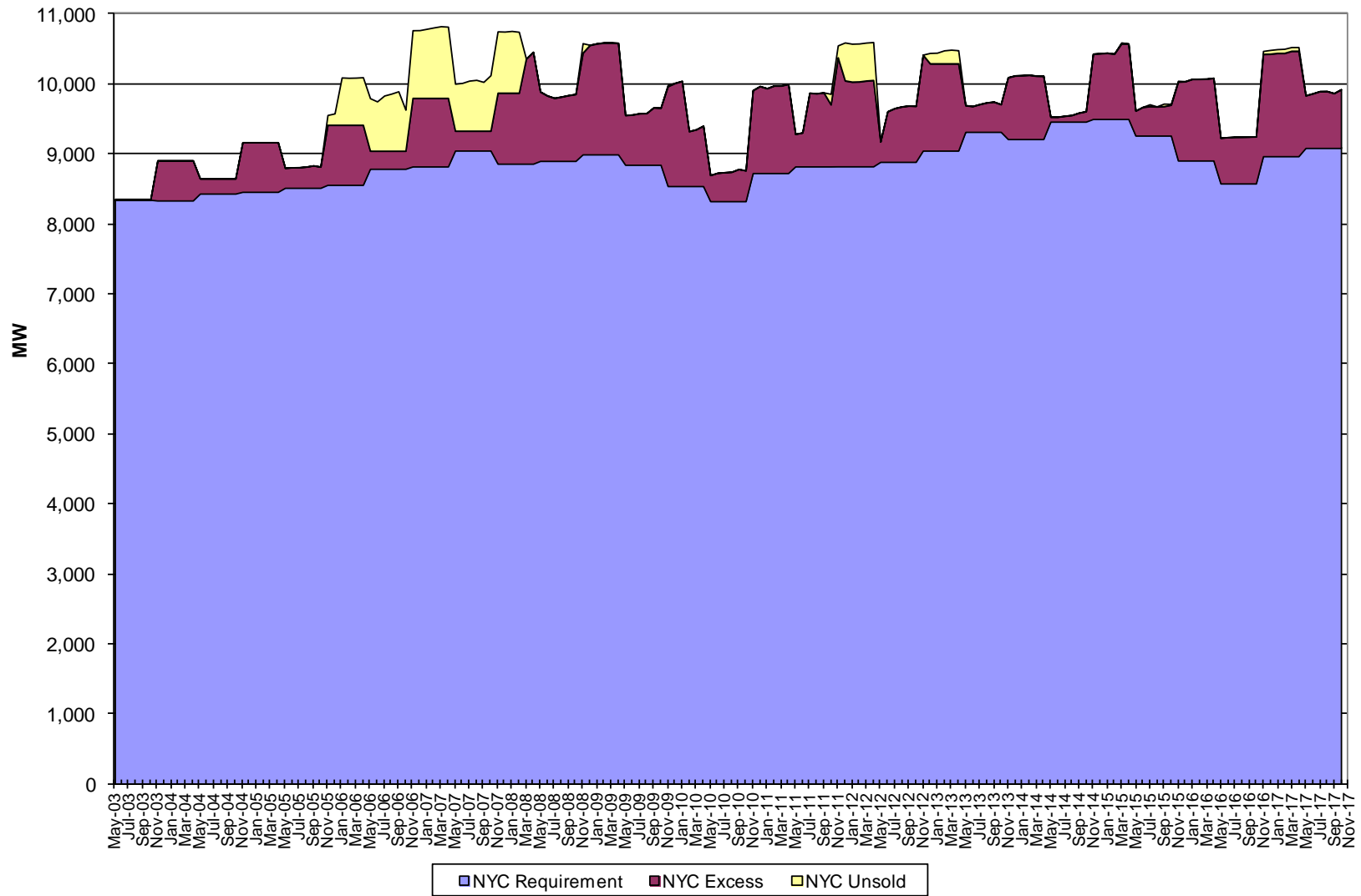
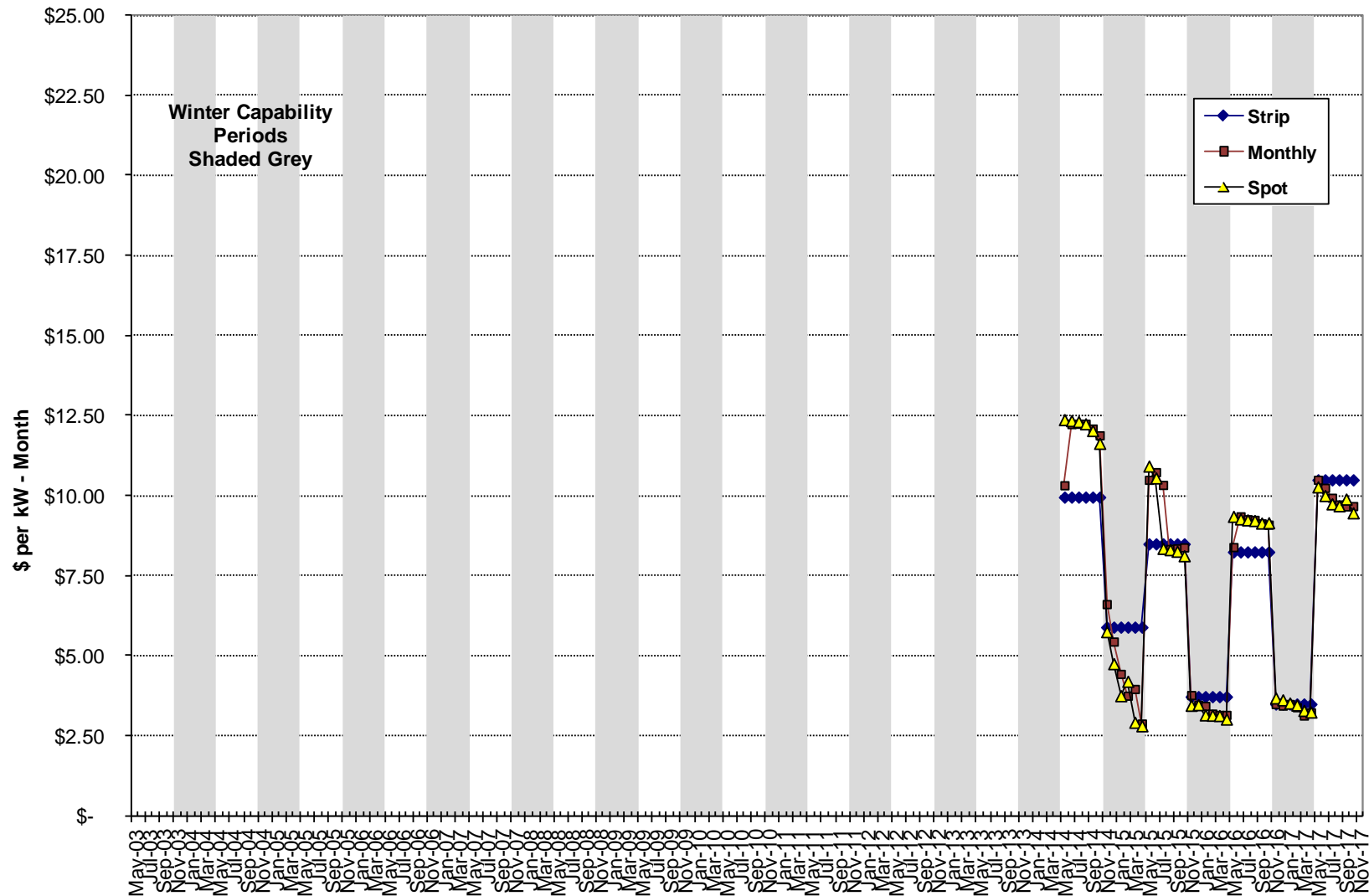


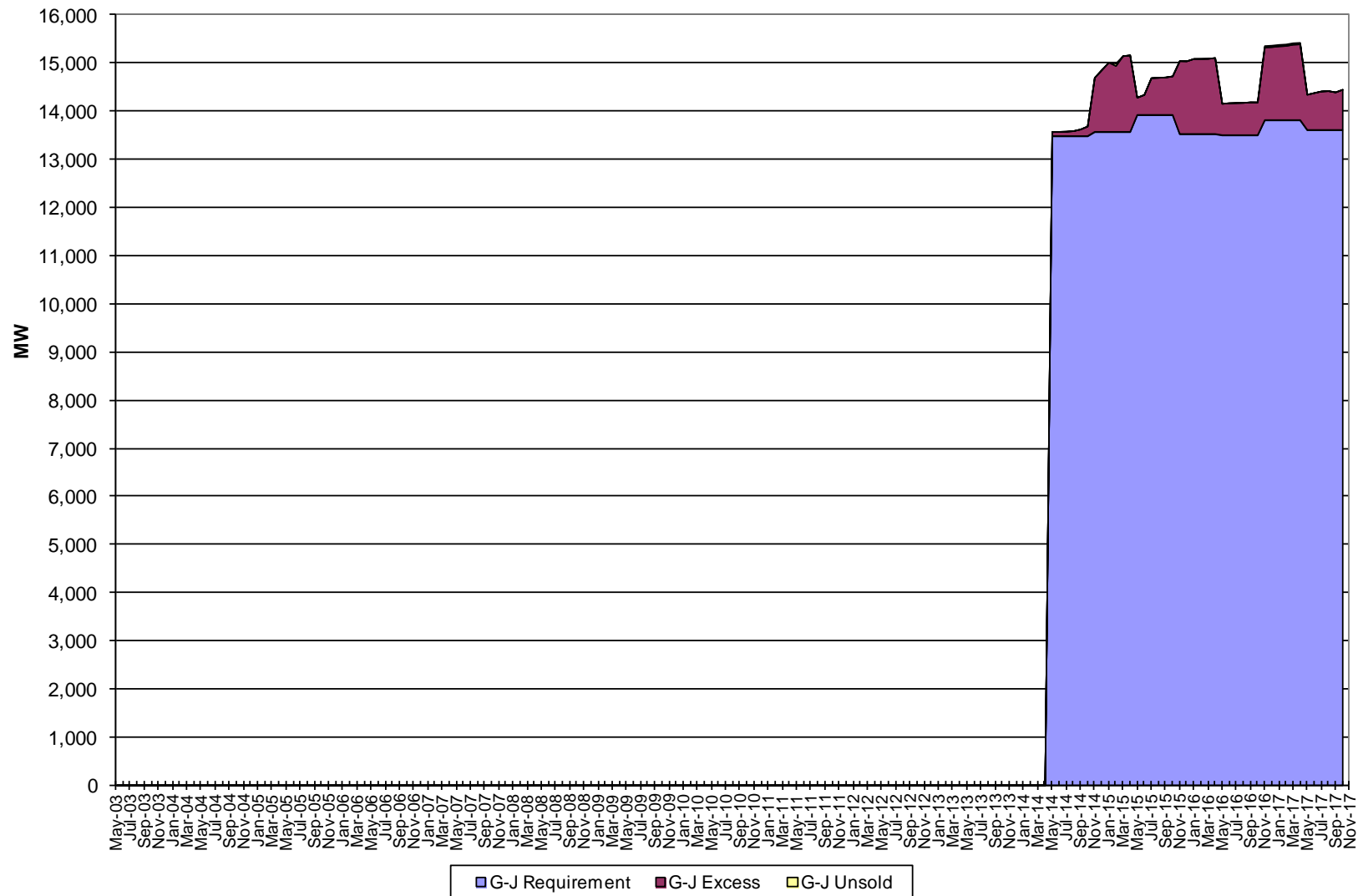
Chart 5: NYC Offered MW



### Chart 6: G-J Locality Market Clearing Prices



**Chart 7: G-J Locality Offered MW**



# Chart 8: Long Island Market Clearing Prices

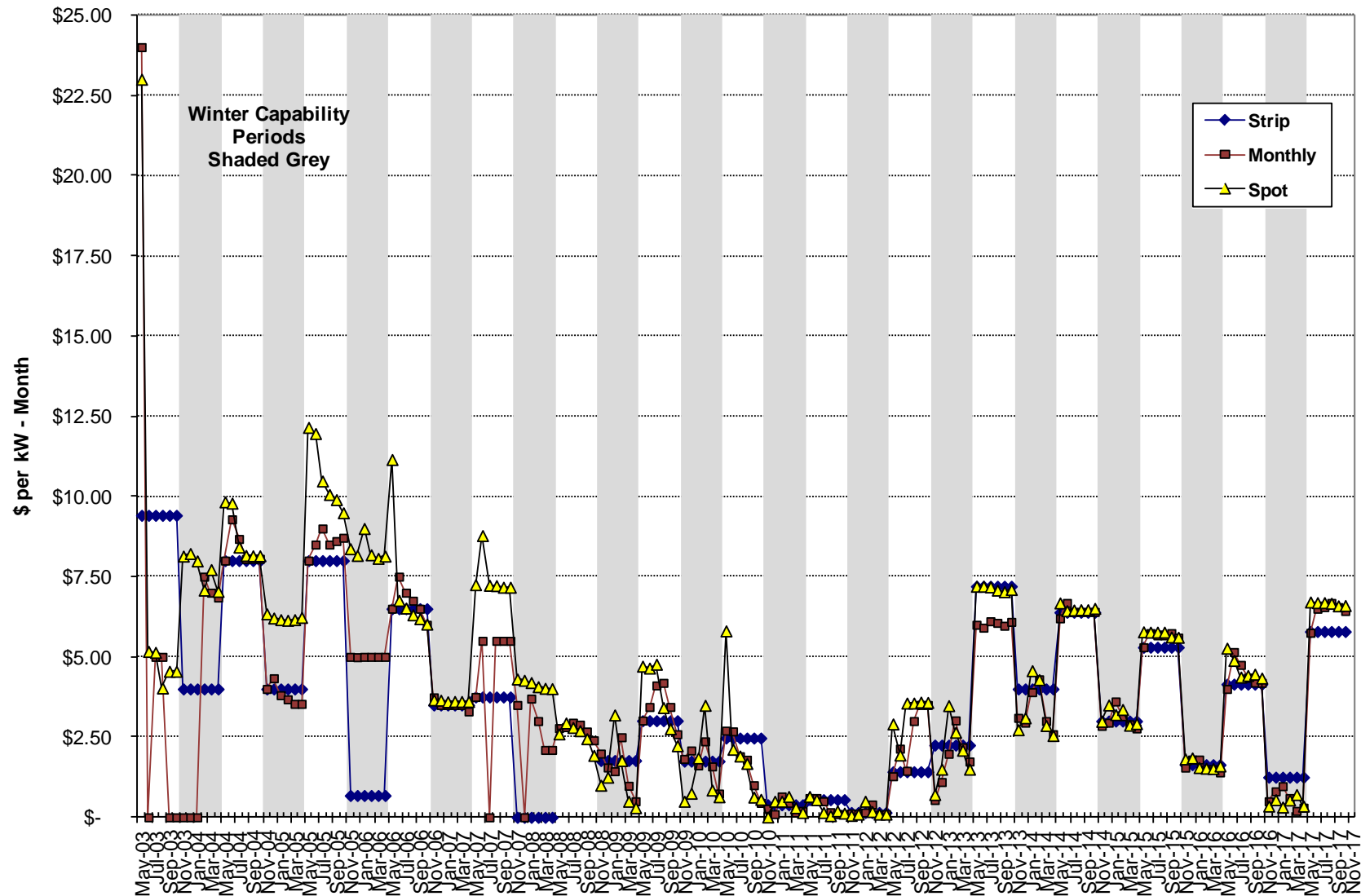


Chart 9: Long Island Offered MW

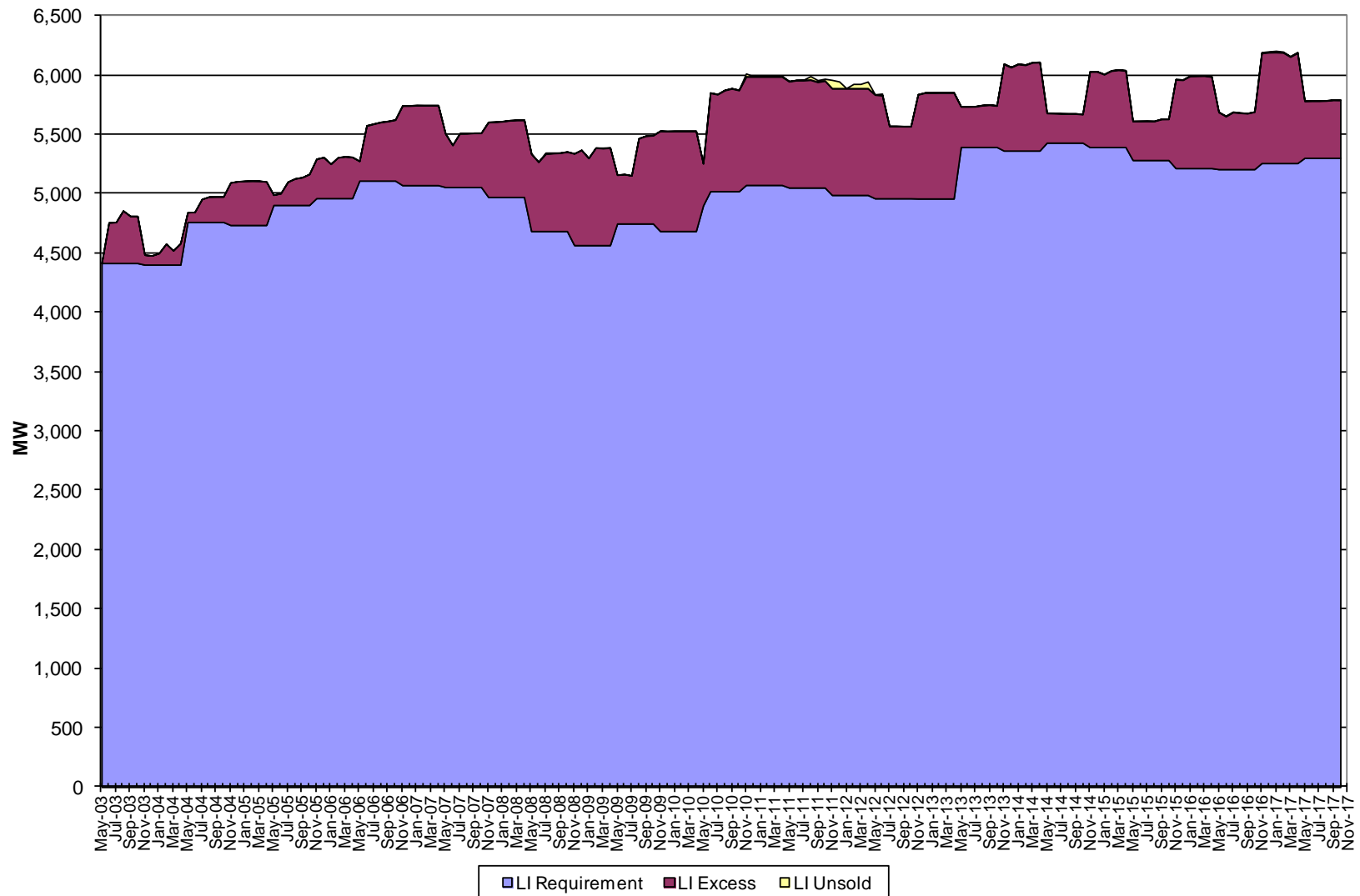


Table 1 summarizes amount of generating capacity throughout the NYCA that has deactivated during the Winter 2009/2010 through November 2017. Over this period, 58 generators (counted by PTID) accounted for 63 instances of generators (counted by PTID) entering or switching between a retired, laid-up, IIFO, or mothballed state. These instances total 4,319.7 MW. Of the 58, 3 generators exited the market (*i.e.*, entered one of the preceding states) and reentered the market, and again exited the market; and 10 generators exited the market one time and reentered and remain in the market. These 13 generators total 967.8 MW. A net of 3,351.9 MW exited the Capacity Market during this timeframe.

**Table 1: List of Mothballed and Retired Units**

Organization Name	Unit Name	Zone	MW <sup>1</sup>	Status <sup>2</sup>	Period
AES Eastern Energy LP	AES Greenidge Unit 3	C	52.80	R	Winter 2009-2010
AES Eastern Energy LP	AES Greenidge Unit 4	C	106.10	M	Winter 2010-2011
Emera Energy U.S. Subsidiary No. 1, Inc.	AES Greenidge Unit 4	C	(106.10)	RTS	Winter 2016-2017
AES Eastern Energy LP	AES Westover Unit 7	C	43.50	R	Winter 2009-2010
NRG Power Marketing, LLC	Astoria GT 05	J	16.00	IIFO	Winter 2015-2016
NRG Power Marketing, LLC	Astoria GT 07	J	15.50	IIFO	Winter 2015-2016
NRG Power Marketing, LLC	Astoria GT 08	J	15.30	M	Summer 2016
NRG Power Marketing LLC	Astoria GT 10	J	24.90	M	Summer 2012
NRG Power Marketing LLC	Astoria GT 10	J	(24.90)	RTS	Summer 2013
NRG Power Marketing, LLC	Astoria GT 10	J	24.90	M	Summer 2016
NRG Power Marketing LLC	Astoria GT 11	J	23.60	M	Summer 2012
NRG Power Marketing LLC	Astoria GT 11	J	(23.60)	RTS	Summer 2013
NRG Power Marketing, LLC	Astoria GT 11	J	23.60	M	Summer 2016
NRG Power Marketing, LLC	Astoria GT 12	J	22.70	IIFO	Winter 2015-2016
NRG Power Marketing, LLC	Astoria GT 13	J	24.00	IIFO	Winter 2015-2016
Astoria Generating Company, LP	Astoria 2	J	177.00	M	Winter 2011-2012
Astoria Generating Company, LP	Astoria 2	J	(177.00)	RTS	Winter 2014-2015
Astoria Generating Company, LP	Astoria 4	J	375.60	M	Summer 2012
Innovative Energy Systems, Inc.	Auburn LFG	C	0.0	IIFO	Summer 2016
Innovative Energy Systems, Inc.	Auburn LFG	C	0.0	IIFO to R	Winter 2016-2017
Erie Blvd. Hydro - Seneca Oswego	Baldwinsville 2	C	0.20	R	Summer 2012
Erie Blvd. Hydro - Seneca Oswego	Baldwinsville 2	C	(0.20)	RTS	Winter 2013-2014
National Grid Generation LLC	Barrett 07	K	17.30	R	Winter 2011-2012
Rochester Gas & Electric Corp.	Beebee GT	B	15.00	R	Winter 2011-2012
Binghamton BOP, LLC	Binghamton Cogen Plant	C	43.80	R	Winter 2011-2012
Binghamton BOP, LLC	Binghamton Cogen Plant	C	(43.80)	RTS	Winter 2014-2015
Dynegy Danskammer, LLC	Danskammer 1	G	67.00	R <sup>3</sup>	Winter 2012-2013
Danskammer Energy, LLC	Danskammer 1	G	(67.00)	RTS	Summer 2014

Organization Name	Unit Name	Zone	MW <sup>1</sup>	Status <sup>2</sup>	Period
Dynegy Danskammer, LLC	Danskammer 2	G	62.70	R <sup>3</sup>	Winter 2012-2013
Danskammer Energy, LLC	Danskammer 2	G	(62.70)	RTS	Summer 2014
Dynegy Danskammer, LLC	Danskammer 3	G	137.20	R <sup>3</sup>	Winter 2012-2013
Danskammer Energy, LLC	Danskammer 3	G	(137.20)	RTS	Winter 2014-2015
Dynegy Danskammer, LLC	Danskammer 4	G	236.20	R <sup>3</sup>	Winter 2012-2013
Danskammer Energy, LLC	Danskammer 4	G	(236.20)	RTS	Winter 2014-2015
Dynegy Danskammer, LLC	Danskammer Diesel (5&6)	G	5.00	R	Summer 2012
NRG Energy, Inc. (Dunkirk Power LLC)	Dunkirk 1	A	96.20	M	Summer 2013
NRG Power Marketing, LLC	Dunkirk 2	A	97.20	MO	Winter 2015-2016
NRG Energy, Inc. (Dunkirk Power LLC)	Dunkirk 3	A	201.40	M	Summer 2012
NRG Energy, Inc. (Dunkirk Power LLC)	Dunkirk 4	A	199.10	M	Summer 2012
Energy Systems North East LLC	Energy Systems North East	A	82.00	R	Winter 2010-2011
National Grid Generation LLC	Far Rockaway_4	K	110.60	R	Summer 2012
Freeport Electric Municipality	Freeport Electric	K	0.00	R	Summer 2013
National Grid Generation LLC	Glenwood 4	K	118.70	R	Summer 2012
National Grid Generation LLC	Glenwood 5	K	122.00	R	Summer 2012
Erie Blvd. Hydro – North Salmon	Hogansburg	D	0.30	R	Winter 2014-2015
NRG Power Marketing, LLC	Huntley 67	A	196.50	R	Winter 2015-2016
NRG Power Marketing, LLC	Huntley 68	A	198.00	R	Winter 2015-2016
Erie Blvd. Hydro - Lower Hudson	Johnsonville 2	F	0.00	R	Winter 2010-2011
Erie Blvd. Hydro - Lower Hudson	Johnsonville 2	F	(0.00)	RTS	Winter 2013-2014
New York Power Authority	Kensico Hydro Project (Units 1, 2, 3)	I	3.00	R	Summer 2012
National Grid Generation LLC	Montauk 2	K	2.00	R	Summer 2013
National Grid Generation LLC	Montauk 3	K	2.00	R	Summer 2013
National Grid Generation LLC	Montauk 4	K	2.00	R	Summer 2013
Niagara Generation, LLC	Niagara Generation Biomass Facility	A	50.50	M	Summer 2013
Niagara Generation, LLC	Niagara Generation Biomass Facility	A	(50.50)	RTS	Winter 2013-2014
Niagara Power Marketing, LLC	Niagara Generation Biomass Facility	A	50.50	IIFO	Winter 2015-2016
New York Power Authority	Poletti 1	J	891.00	R	Winter 2009-2010
Project Orange Associates	Project Orange 1	C	43.60	R	Winter 2010-2011
Project Orange Associates	Project Orange 2	C	44.00	R	Winter 2010-2011
ReEnergy Chateaugay LLC	ReEnergy Chateaugay Biomass-to-Energy	D	18.60	M	Summer 2013
ReEnergy Chateaugay LLC	ReEnergy Chateaugay Biomass-to-Energy	D	18.60	M to R	Summer 2016
Rochester Gas & Electric	Rochester Station 9 Unit 2 CT	B	15.80	R	Winter 2013-2014
Erie Blvd. Hydro – Seneca Oswego	Seneca Oswego Fulton 1	C	0.70	R	Summer 2013
Erie Blvd. Hydro – Seneca Oswego	Seneca Oswego Fulton 2	C	0.30	R	Summer 2013
Syracuse Energy Corporation	Syracuse Energy ST1	C	11.00	R	Summer 2013
Syracuse Energy Corporation	Syracuse Energy ST2	C	58.90	R	Summer 2013
TC Ravenswood, LLC	TC Ravenswood GT 04	J	15.20	MO	Summer 2016



Organization Name	Unit Name	Zone	MW <sup>1</sup>	Status <sup>2</sup>	Period
TC Ravenswood, LLC	TC Ravenswood GT 3-3	J	37.70	M	Summer 2014
TC Ravenswood, LLC	TC Ravenswood GT 3-4	J	35.80	R	Summer 2011
TC Ravenswood, LLC	TC Ravenswood GT 3-4	J	(38.60)	RTS	Summer 2014
TC Ravenswood, LLC	TC Ravenswood GT05	J	15.70	MO	Summer 2016
TC Ravenswood, LLC	TC Ravenswood GT06	J	16.70	MO	Summer 2016
TC Ravenswood, LLC	TC Ravenswood GT07	J	16.50	M	Winter 2013-2014
AES Eastern Energy LP	Westover Unit 8	C	83.80	M	Winter 2010-2011
AES ES Westover LLC	Westover LESR	C	0.00	R	Summer 2013
Helix Ravenswood, LLC	Ravenswood GT09	J	16.30	IIFO	Winter 2017-2018

Notes to Table 1:

Note 1: The capacity values listed are the CRIS MW values stated in the NYISO's Load and Capacity Data Report (referred to as the "Gold Book").

Note 2: "IIFO" means ICAP Ineligible Forced Outage, "R" indicates "retired" (including "Retired,") "M" indicates "mothballed", MO means "Mothball Outage", and "RTS" indicates returned to service after being M, MO, or R. RTS" Changes in status of generators that were IIFO and subsequently changed their status are indicated on this table. Services Tariff provisions defining the terms ICAP Ineligible Force Outage, Mothball, and Retire apply to outages pursuant to the rules effective May 1, 2015.

Note 3: *Helios Power Capital, LLC, et al.*, Joint Petition for Expedited Approval for the Lease, Sale and Operation of the Danskammer Generating Facility Under Lightened Regulation and for Related Relief, PSC Case No. 14-E-0117 (Jun. 27, 2014).

## I.5 Capacity Withholding Analysis

### I.5.1 All Capacity Areas in the NYCA

This section of the report addresses potential withholding issues in the NYISO-administered capacity auctions for all four capacity areas during the period of November 2016 to October 2017: ROS, NYC, the G-J Locality, and LI. For purposes of this report, in order to identify whether any potential withholding occurred, the NYISO analyzed the differences between available capacity<sup>9</sup> and the supply committed through self-supply, bilateral transactions, and the NYISO-administered auctions. In particular, the NYISO examined:

- The NYCA capacity that was available to be offered into the ICAP Spot Market Auctions, but was not offered (“unoffered capacity”),
- Available NYCA capacity that was offered into the ICAP Spot Market Auctions but was not sold (“unsold capacity”),
- Unoffered capacity as a percentage of available capacity, and
- Unsold capacity as a percentage of offered capacity.

When capacity is available but not offered, it is an indication that physical withholding may have occurred. Similarly, if available capacity is offered at a price that causes it to not clear, it is an indication of possible economic withholding. The amounts of unoffered and unsold capacity are determined from the ICAP Spot Market Auction results because this auction is the last opportunity for an Installed Capacity Supplier to sell its capacity. The existence of unoffered and unsold capacity, however, does not necessarily imply the intent to manipulate market prices.

As reflected in the NYISO's previous reports on the Installed Capacity Demand Curves, patterns of unsold capacity have varied across the three Localities and the NYCA. For the entire NYCA there generally has been more unsold capacity in Winter months than Summer months, due in part to lower prices in the Winter months. The monthly average of unsold MW for the Winter 2016-2017 Capability period in relation to the Winter 2015-2016 Capability Period was as follows: NYC 51 MW compared to 2 MW, G-J Locality 31 MW compared to 2 MW, Long Island 4 MW compared to 1 MW, and NYCA-wide 227 MW compared to 187 MW. The seasonal monthly average amount of unsold MW for the Summer 2017 Capability Period for all of the NYCA was zero MW, while it was near zero (0.46) MW in the Summer 2016 Capability Period.

In Long Island, there was a monthly average of 4 MW of unsold capacity in the Winter 2016-2017 Capability Period, compared to near 1 MW in the Winter 2015-2016 Capability Period; and 0 MW in the Summer 2017 Capability Period compared to near 1 MW in the Summer 2016 Capability Period.

In NYC, there was a monthly average of 51 MW of unsold capacity in the Winter 2016-2017 Capability Period, compared to 2 MW in the Winter 2015-2016 Capability Period; and 0

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<sup>9</sup> Available capacity is defined as the lesser of the NYISO-accepted DMNC and the Capacity Resource Interconnection Service (“CRIS”) MW value, with the Equivalent Demand Forced Outage Rates (“EFORd”) reduction applied.

MW in the Summer 2017 Capability Period compared to near 0 MW in the Summer 2016 Capability Period.

In the G-J Locality, there was a monthly average of 31 MW of unsold capacity in the Winter 2016-2017 Capability Period, compared to 2 MW in the Winter 2015-2016 Capability Period; and 0 MW in the Summer 2017 Capability Period compared to near 0 MW in the Summer 2016 Capability Period. The increase in unsold capacity in NYC and the G-J Locality from the prior Capability Year is due in part to offers from particular resources that cleared in prior years but did not clear in Winter 2016-2017 due to lower Spot Market Auction clearing prices.

There are three types of capacity auctions in each Capability Period: a Capability Period Auction (also referred to as the “strip auction”), six Monthly Auctions, and six ICAP Spot Market Auctions. Available capacity may be offered into any or all of the auctions. There are three distinct minimum ICAP requirements: one each for the NYC, G-J, and LI Localities, as well as one for the NYCA as a whole. LSEs with Load in NYC, G-J, or LI Localities are required to procure minimum levels of capacity that is electrically located within the respective Locality – the “LCRs” in terms of Unforced Capacity, *i.e.*, the Locational Minimum Unforced Capacity Requirement. Such capacity is also credited toward each NYC and Long Island LSE’s overall NYCA obligation. The NYISO establishes the NYCA Minimum Installed Capacity Requirement and the LCRs annually.

The Services Tariff does not require Installed Capacity Suppliers to offer UCAP into the ICAP markets except for certain suppliers in Mitigated Capacity Zones (*i.e.*, NYC and the G-J Locality). Until the implementation of the ICAP market power mitigation measures set forth in Attachment H of the Services Tariff, which were effectuated in May 2008, the majority of capacity in NYC – that of the “Divested Generation Owners” – had been subject to Commission-approved ICAP mitigation measures that imposed bid caps and required the units’ capacity to be offered into the ICAP auctions. The Commission’s March 7, 2008 Order<sup>10</sup> removed the requirements unique to the Divested Generation Owners and approved mitigation measures applicable to all In-City capacity. The March 7, 2008 Order effectuated new In-City mitigation measures, based on Pivotal Supplier determinations combined with offering conduct and price impact thresholds, to determine whether market power had been exercised. ICAP market power mitigation measures became effective for the G-J Locality concurrent with its implementation. These measures for NYC and G-J Locality are set forth in Section 23.4.5 (Attachment H) of the Services Tariff (as revised over time, “Supply-side Mitigation Measures”).

In developing the information for this report, the NYISO examined auction outcomes of the Capability Periods from Summer 2007, which began May 1, 2007, through Summer 2017, which ended October 31, 2017. Since the capacity product transacted in the NYISO-administered ICAP auctions is UCAP, the following information was examined:

- Certification data, reflecting the certified MW of UCAP from all the Resources physically located within New York available to supply capacity to the NYCA. The analysis did not include resources physically located outside of the NYCA.

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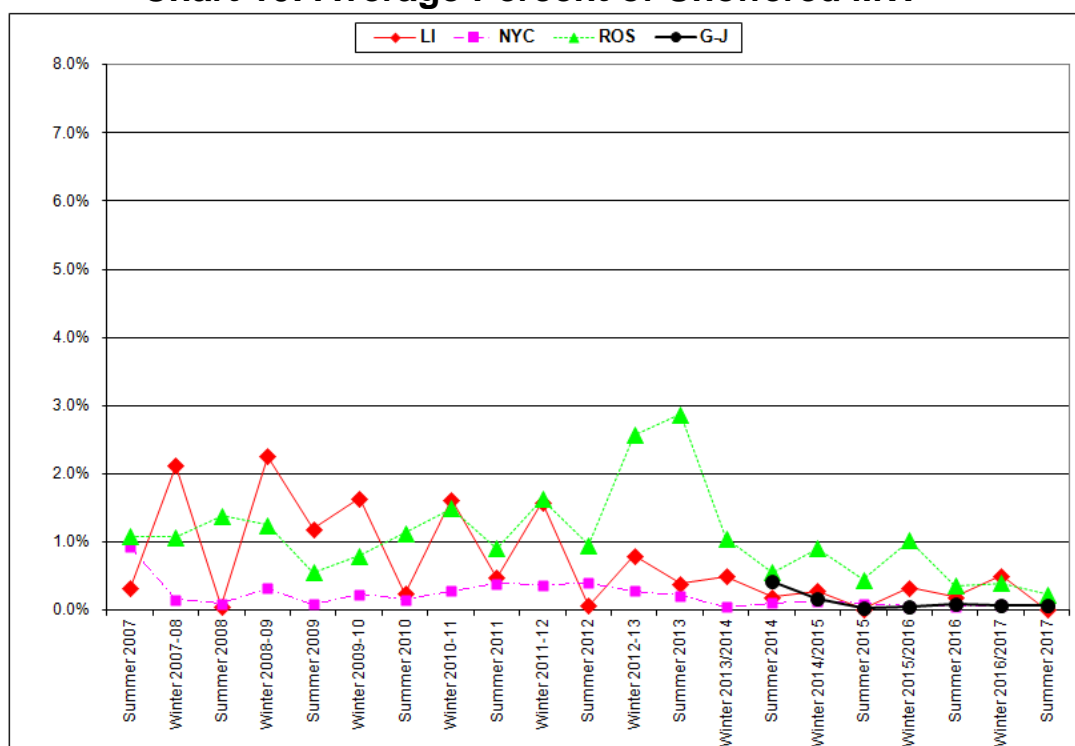
<sup>10</sup> See *New York Independent System Operator, Inc.*, Docket No. EL07-39-000, Order Conditionally Approving Proposal, 122 FERC ¶ 61,211 (2008).

- Certification data, reflecting the certified MW of UCAP from all the Resources within the G-J Locality (Load Zones G, H, I, and J) available to supply capacity to the NYCA. The analysis did not include resources physically located outside of the NYCA.
- The amount of UCAP supplied, which includes UCAP sold in any of the NYISO ICAP auctions, UCAP certified as self-supplied against an LSE's Unforced Capacity obligation, and UCAP committed through bilateral transactions.

## I.5.2 Unoffered and Unsold Capacity

Chart 10 presents seasonal averages of unoffered capacity as a percentage of available Capacity for each of the three capacity areas.

**Chart 10: Average Percent of Unoffered MW**



The Long Island Locality has fairly consistent seasonal fluctuations in the amounts of unoffered capacity, which can be seen in Chart 10. The LI Locality is characterized by procurement chiefly through bilateral transactions and self-supply. The amount of unoffered capacity in the LI Locality fluctuates between 0.02% and 2.3%. A portion of that unoffered capacity is not actually available due, in some instances, to site permit restrictions. Another portion arises from purchases due to bidders for NYCA capacity (*i.e.*, not requiring capacity located in Long Island) in the Capability Period and Monthly Auctions.<sup>11</sup> The NYISO has observed that these NYCA bidders sometimes fail to offer the Long Island capacity in the ICAP Spot Market Auction.

<sup>11</sup> When the Market Clearing Price in these auctions is the same for NYCA and Long Island capacity, offers of capacity located in the Long Island Locality is used to meet NYCA bids.

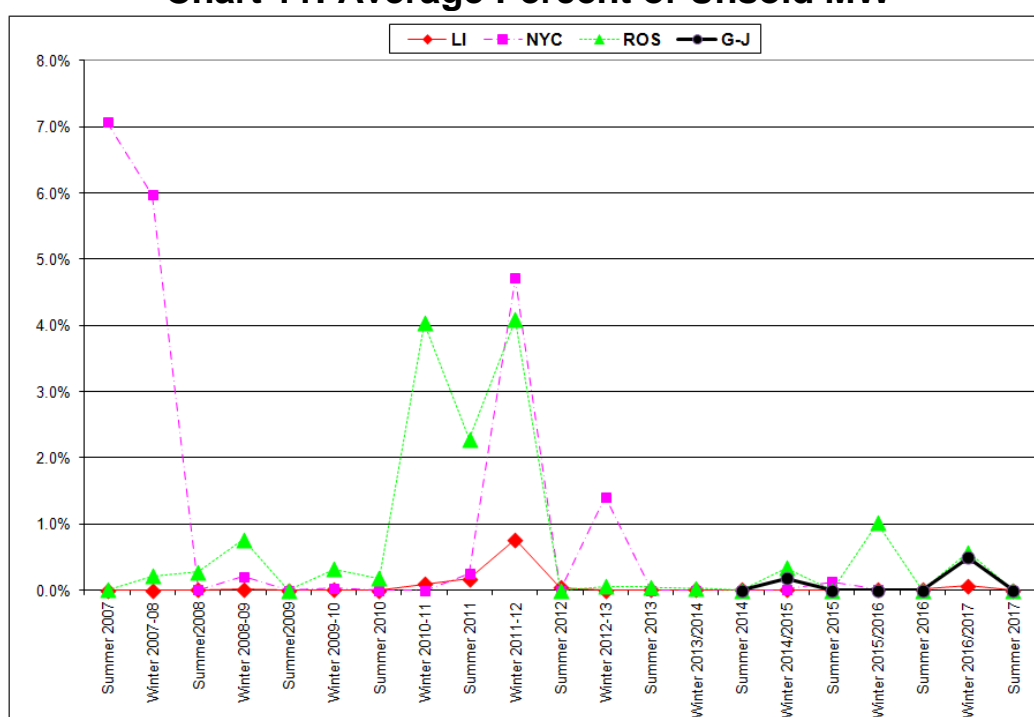
In the NYC Locality, prior to the Summer 2008 Capability Period, the low level of unoffered capacity was principally due to the offer requirement applicable to the Divested Generation Owners. Beginning with the Summer 2008 Capability Period, the near absence of unoffered capacity can be attributed to the Supply-side Mitigation Measures effectuated in 2008.

The G-J Locality became effective beginning in May 2014. Initially, the level of unoffered capacity was at the level of that in ROS, but fell to near zero.

In ROS the unoffered MW for the Winter 2016-2017 and Summer 2017 Capability Periods was consistently below 0.5%.<sup>12</sup>

Chart 11 displays unsold capacity as a percent of available UCAP in each of the four capacity areas, which has been below 1% for the past nine Capability Periods.<sup>13</sup>

**Chart 11: Average Percent of Unsold MW**



For all Capability Periods beginning with the Summer 2007 Capability Period, nearly all Long Island offered capacity was sold. In NYC, the average amount of unsold capacity as a percentage of available capacity trended at near zero levels from the start of the Summer 2008 Capability Period, except for the Winter 2011-2012, and Winter 2012-2013 Capability Periods when some offered capacity did not clear because it was offered at a price greater than the UCAP Offer Reference Level. The UCAP Offer Reference Level is the price at which the ICAP Spot Market Auction would clear if all available capacity was offered and sold. For the Winter

<sup>12</sup> As noted in n. 1, the definition of Rest of State prior to the Summer 2014 Capability Period was Load Zones A through I, and beginning with the Summer 2014 Capability Period is Load Zones A through F.

<sup>13</sup> Section I.5.4.3 of this report provides information and analysis of the unsold capacity in ROS.

2016-2017 and Summer 2017 Capability Periods, nearly all of the capacity offered in NYC auctions was sold. The G-J Locality had less than 0.5% unsold MW in the 2016-2017 Capability Year. The increase in unsold capacity in NYC and the G-J Locality from the prior Capability Year is due in part to offers from particular resources that cleared in prior years but did not clear in Winter 2016-2017 due to lower Spot Market clearing prices.

The NYCA Minimum Installed Capacity Requirement and LCRs increased for each capacity area since last Capability Year. .

Table 2 summarizes these values for NYC, G-J, LI, and the NYCA over the past eleven years.

**Table 2: Minimum Installed Capacity Requirements (%)<sup>14</sup>**

Capability Year	NYC	G-J	LI	NYCA
2007/2008	80	-	99	116.5
2008/2009	80	-	94	115
2009/2010	80	-	97.5	116.5
2010/2011 (May)	80	-	102	118
2010/2011 (June-April)	80	-	104.5	118
2011/2012	81	-	101.5	115.5
2012/2013	83	-	99	116
2013/2014	86	-	105	117
2014/2015	85	88	107	117
2015/2016	83.5	90.5	103.5	117
2016/2017	80.5	90	102.5	117.5
2017/2018	81.5	91.5	103.5	118

Table 3 displays the breakdown of unsold capacity for each Locality and NYCA. These unsold MW were not cleared in the NYC, G-J, LI, or NYCA spot auctions. As part of the NYISO's August 24, 2010 ICAP compliance filing,<sup>15</sup> the NYISO stated that it would include unoffered and unsold capacity in the NYC Locality in its annual Installed Capacity Demand Curves reports. Table 3 also displays the unoffered capacity values for MWs that came from NYC, GHI, LI, and ROS to give a full representation of the data that underlies this report.

Beginning with November 2016, the amount of unoffered MW stayed very low in NYC, LI, and G-J Locality, totaling 256 MW in the Winter 2016-2017 and 57 MW in the Summer 2017.

<sup>14</sup> The New York State Reliability Council issues an annual IRM Study Report, which presents the lowest feasible amount of capacity for the NYCA. Each report includes a comparison of the IRM and LCR values to the previous year along with an explanation of each parameter that contributed to the changes. The NYISO determines the actual LCRs for each Locality taking into consideration changes that have occurred since the Reliability Council approved the IRM Study Report. The 2016 IRM Study Report covering the period of May 2017 through April 2018 is available at: <[http://www.nysrc.org/NYSRC\\_NYCA\\_ICR\\_Reports.html](http://www.nysrc.org/NYSRC_NYCA_ICR_Reports.html)>.

<sup>15</sup> See *New York Independent System Operator, Inc.*, Resubmittal of August 24, 2010 Filing, Docket Nos. ER10-2210-000, EL07-39-000, and ER08-695-0004 at p. 16.

The total amount of unsold MW in NYC, G-J and LI was 137.6 MW in the Winter 2016-2017, and zero MW in the Summer 2017.

Section I.5.4.2 discusses explanations provided by Market Participants for unoffered MW in ROS in Winter 2016-2017. There was no unsold MW in ROS in the Summer 2017. Section I.5.4.3 presents the Market Participant explanations for and an analysis of unsold MW in ROS in the Winter 2016-2017.

**Table 3: Unoffered and Unsold MW**

Month	Unoffered				Unsold			
	NYC	GHI	LI	ROS	NYC	G-J	LI	NYCA
Nov-16	17.3	2.2	28.1	94.3	40.4	30.8	4.20	408.80
Dec-16	5.4	8.1	19.1	82.1	52.4	30.8	4.2	251.8
Jan-17	4.8	3.5	19.3	150.2	52.4	30.8	8.3	221.9
Feb-17	4.8	0.1	26.2	97.3	57.3	30.8	4.1	75.9
Mar-17	3.7	4	64.7	99.2	52.4	30.8	1.1	180.8
Apr-17	13.3	1.4	30.4	177.3	52.4	30.8	3.8	224.6
May-17	4.6	0.2	0	101.6	0	0	0	0
Jun-17	2.1	0.5	0	118.3	0	0	0	0
Jul-17	1.1	0.7	0.7	35.2	0	0	0	0
Aug-17	1.2	1.5	0	93	0	0	0	0
Sep-17	36.5	0.3	1	67.8	0	0	0	0
Oct-17	5.3	0.5	1.1	37.5	0	0	0	0

### I.5.3 New York City and G-J Localities

To administer the Supply-side Mitigation Measures, the NYISO identifies Pivotal Suppliers by examining the NYC UCAP and G-J Locality UCAP that each ICAP Supplier, along with its Affiliated Entities, Controls in excess of the pivotal control threshold.<sup>16</sup> The UCAP under the Control of Pivotal Suppliers ("Mitigated UCAP") must be offered into the ICAP Spot Market Auction at a price at or below the lesser of the UCAP Offer Reference Level or the ICAP Supplier's Going-Forward Costs determined by the NYISO ("GFCs"). Chart 12 and Chart 14 illustrate the effects of the Supply-side Mitigation Measures. The UCAP Offer Reference Level, as shown in these Charts, becomes the price cap that the Pivotal Supplier must offer at or below in the ICAP Spot Market Auction, unless the Pivotal Supplier's GFCs are higher.

The level of unoffered and unsold MW can be inferred from Chart 12 and Chart 14 by comparing the Locality Spot Market Auction price to the UCAP Offer Reference Level, while Chart 13 and Chart 15 depict the levels of available generator and SCR UCAP in the Locality. The difference between the ICAP Spot Market Auction clearing price and UCAP Offer Reference Level can be attributed to Locality capacity that is either not offered or is offered at a price above the UCAP Offer Reference Level. Note that the Locality Spot Market Auction price will diverge from the UCAP Offer Reference Level when the NYCA ICAP Spot Market Auction

<sup>16</sup> See Market Services Tariff Sections 23.2.1 and 23.4.5.

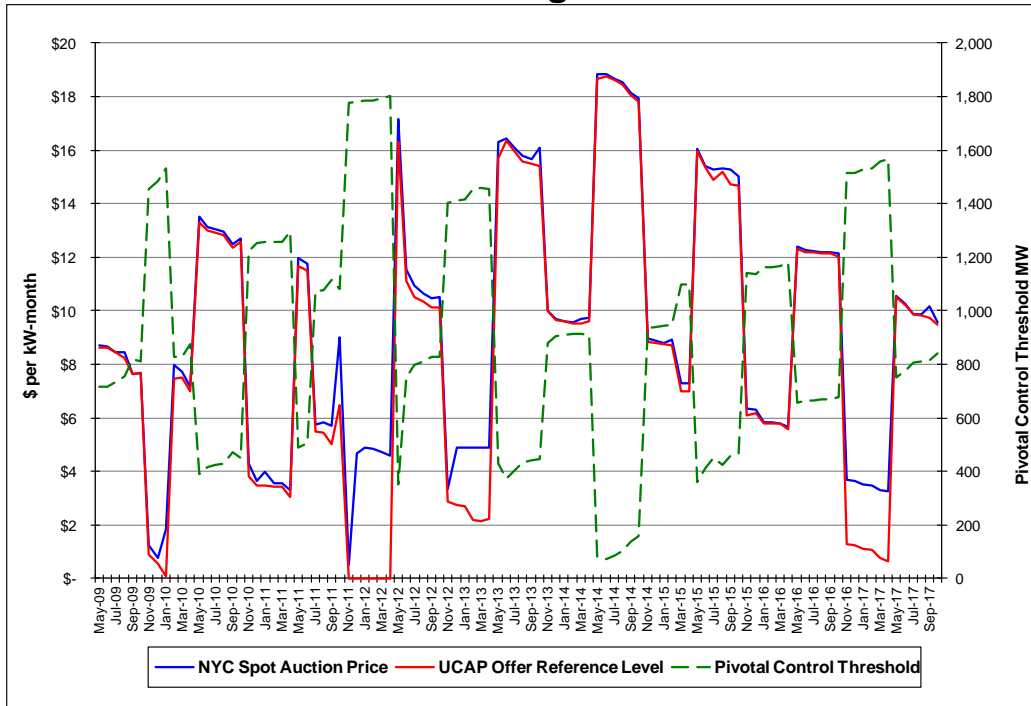
sets the Locality ICAP Spot Market Auction price.<sup>17</sup> This divergence is the result of the auction rules, and is not caused by unoffered or unsold Locality Capacity.

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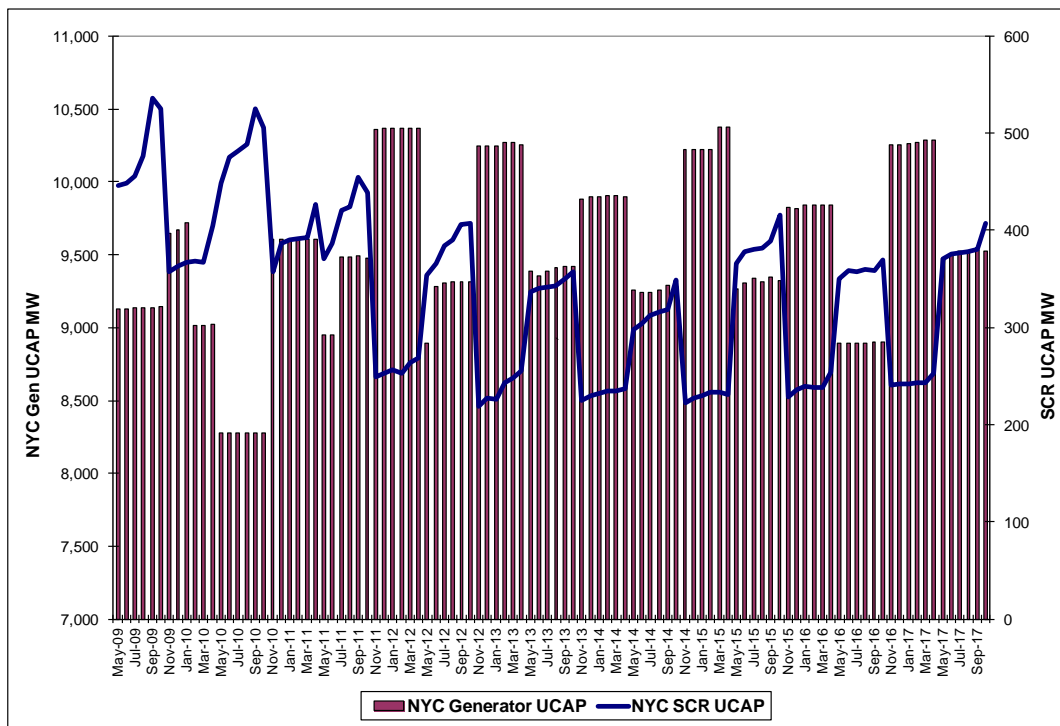
<sup>17</sup> In the 2015/2016 Capability Year, the NYCA ICAP price set the Long Island ICAP price in May 2016 and June 2016.



### Chart 12: NYC Mitigation Results<sup>18</sup>

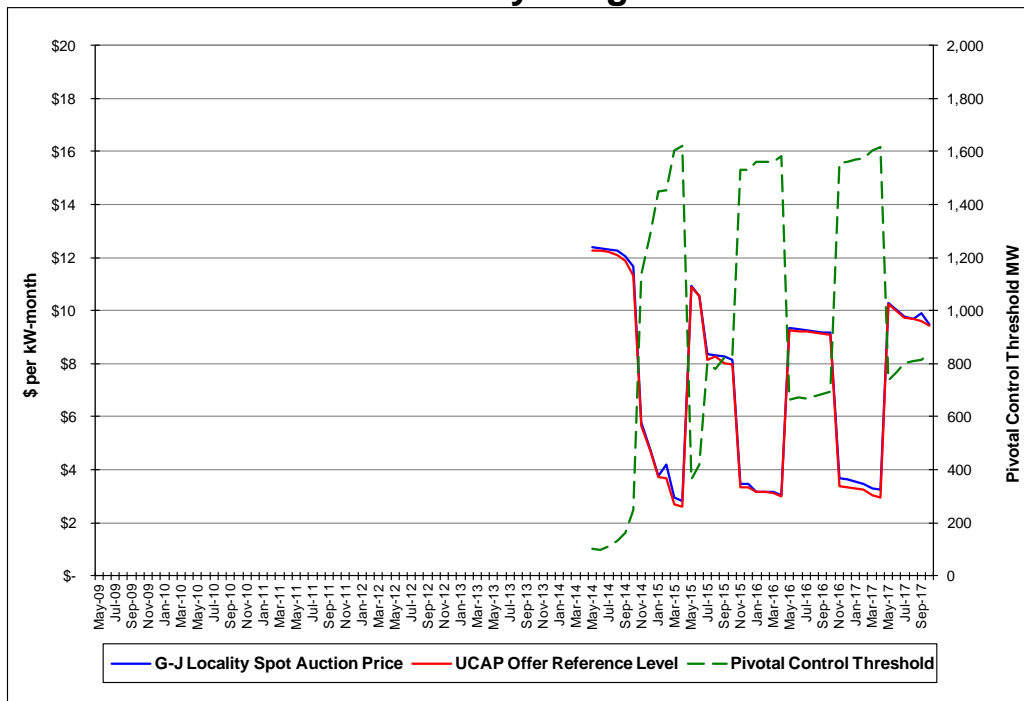


### Chart 13: NYC Generator and SCR UCAP

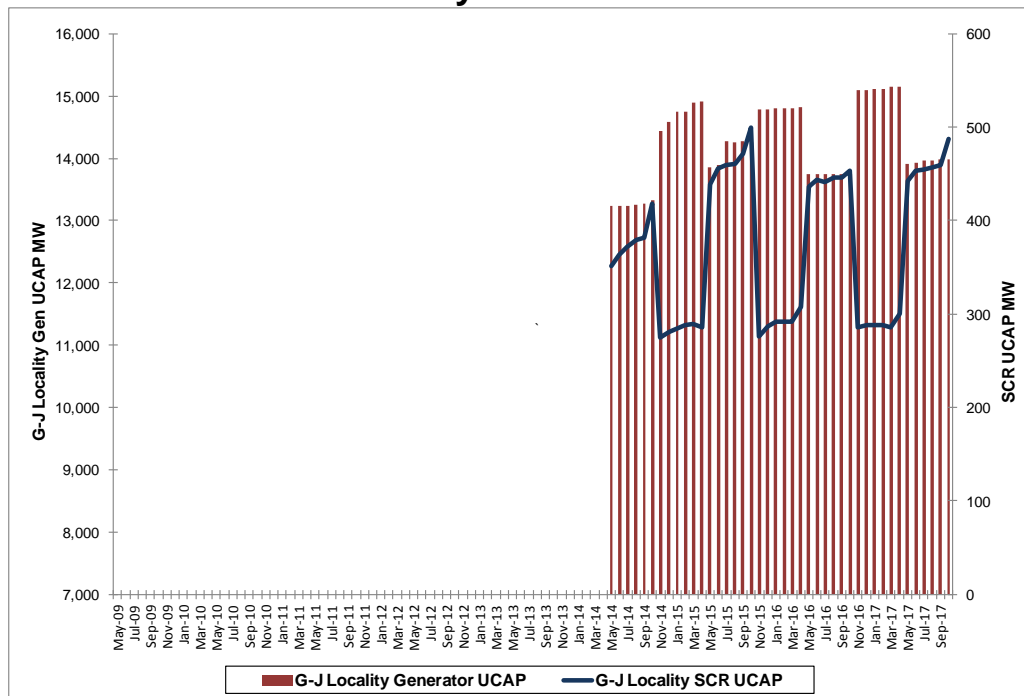


<sup>18</sup> Per Services Tariff Section 23.2, a “Pivotal Supplier” in NYC needs to control at least 500 MW of Unforced Capacity, and a specified portion of the capacity necessary to meet the NYC LCR in an ICAP Spot Market Auction.

### Chart 14: G-J Locality Mitigation Results<sup>19</sup>



### Chart 15: G-J Locality Generator and SCR UCAP



<sup>19</sup> Per Services Tariff Section 23.2, a “Pivotal Supplier” in the G-J Locality needs to control at least 650 MW of Unforced Capacity, and a specified portion of the capacity necessary to meet the G-J Locality LCR in an ICAP Spot Market Auction.

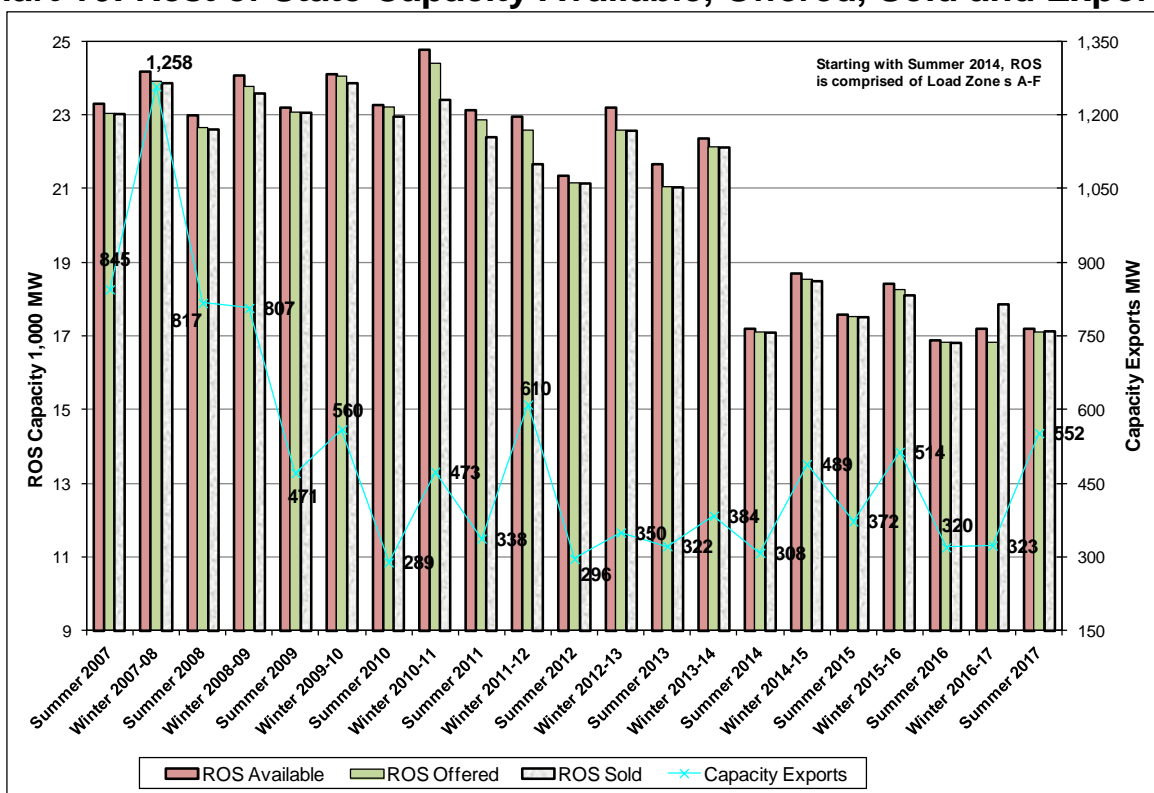
## I.5.4 Rest of State

### I.5.4.1 Overview

This section of the report addresses possible withholding of Capacity located in the Rest of State<sup>20</sup> from November 2016 through October 2017. For this review, the NYISO conducted a detailed analysis of unoffered and unsold capacity. This section of the report pertains primarily to the NYCA but also contains some explanations for unoffered capacity in NYC, the G-J Locality, and Long Island.

Chart 16 shows the monthly average values over each Capability Period for four ROS capacity types: available, offered, sold, and exported MW.

**Chart 16: Rest of State Capacity Available, Offered, Sold and Exported**



Examination of Rest of State capacity data pertaining to individual Market Participants revealed general patterns in unsold and unoffered capacity. The patterns suggest a three-way classification of suppliers by market sector: all generation-owning transmission owners, ROS generation owners, and other suppliers (a category which includes SCRs.) Table 4 of this December 2017 Report summarizes the monthly averages of unoffered and unsold capacity for each Capability Period since the Summer 2008.

<sup>20</sup> Prior to the Summer 2014 Capability Period, ROS consisted of transmission zones A through I; starting May 2014, ROS is defined as transmission zones A through F.

**Table 4: ROS Unoffered and Unsold Capacity MW by Type of Market Participant**

ROS Monthly Average Unoffered Capacity MW by Type of Market Participant							
	GenCo	% of GenCo	Others	% Other	TO	% TO	Capability Period Monthly Average
Summer 2008	114.2	32.74%	30.32	8.69%	204.37	58.57%	348.9
Summer 2009	49.2	41.06%	1.42	1.18%	69.25	57.76%	119.9
Summer 2010	98.1	37.13%	7.87	2.98%	158.22	59.90%	264.2
Summer 2011	54.1	25.80%	76.70	36.56%	78.97	37.64%	209.8
Summer 2012	60.1	29.48%	75.32	36.96%	68.40	33.56%	203.8
Summer 2013	486.6	78.28%	64.20	10.33%	70.77	11.39%	621.5
Summer 2014	58.9	62.03%	24.23	25.52%	11.82	12.45%	95.0
Summer 2015	21.3	26.97%	30.73	38.98%	26.85	34.05%	78.9
Summer 2016	6.6	10.81%	15.5	25.42%	38.8	63.77%	60.9
Summer 2017	45.2	59.75%	18.4	24.39%	12.0	15.85%	75.6

ROS Monthly Average Unoffered Capacity MW by Type of Market Participant							
	GenCo	% of GenCo	Others	% Other	TO	% TO	Capability Period Monthly Average
Winter 2008-2009	236.8	78.54%	0.6	0.19%	64.1	21.27%	301.5
Winter 2009-2010	93.3	48.14%	9.5	4.88%	91.0	46.98%	193.7
Winter 2010-2011	212.6	57.39%	30.4	8.19%	127.5	34.41%	370.4
Winter 2011-2012	138.5	36.98%	93.7	25.00%	142.4	38.02%	374.6
Winter 2012-2013	437.3	73.43%	21.0	3.52%	137.3	23.05%	595.5
Winter 2013-2014	118.2	50.12%	54.1	22.94%	63.6	26.94%	235.9
Winter 2014-2015	70.6	41.63%	47.0	27.72%	52.0	30.65%	169.6
Winter 2015-2016	82.5	57.83%	9.2	6.41%	51.0	35.76%	142.7
Winter 2016-2017	38.2	32.70%	32.5	27.86%	46.1	39.45%	116.7

ROS Monthly Average Unsold Capacity MW by Type of Market Participant							
	GenCo	% of GenCo	Others	% Other	TO	% TO	Capability Period Monthly Average
Summer 2008	61.6	99.49%	0.3	0.51%	0	0%	61.9
Summer 2009	0	0%	0	0%	0	0%	0
Summer 2010	15.4	35.56%	27.8	64.44%	0	0%	43.2
Summer 2011	479.9	91.01%	44.9	8.52%	2.5	0.47%	527.3
Summer 2012	0	0%	0	0%	0	0%	0
Summer 2013	11.6	100%	0	0%	0	0%	11.6
Summer 2014	0	0%	0	0%	0	0%	0
Summer 2015	0	0%	0	0%	0	0%	0
Summer 2016	0	0%	0	0%	0	0%	0
Summer 2017	0	0%	0	0%	0	0%	0

ROS Monthly Average Unsold Capacity MW by Type of Market Participant							
	GenCo	% of GenCo	Others	% Other	TO	% TO	Capability Period Monthly Average
Winter 2008-2009	178.7	97.65%	4.3	2.35%	0	0%	183.0
Winter 2009-2010	73.4	95.30%	3.6	4.70%	0	0%	77.0
Winter 2010-2011	895.6	89.53%	104.7	10.47%	0	0%	1000.3
Winter 2011-2012	811.3	86.49%	88.4	9.43%	38.4	4.09%	938.0
Winter 2012-2013	8.3	60.98%	5.3	39.02%	0	0%	13.7
Winter 2013-2014	0	0%	7.0	100%	0	0%	7.0
Winter 2014-2015	5.0	7.79%	59.0	92.21%	0	0%	64.0
Winter 2015-2016	127.5	67.86%	17.6	9.38%	42.8	23%	187.9
Winter 2016-2017	172.1	88.39%	22.6	11.61%	0.0	0.00%	194.7

Salient facts from the above tables are:

- The group of all ROS generation-owning Transmission Owners consistently had unoffered capacity which ranged from 11% to 65% of total unoffered capacity.
- The group of all ROS generation-owning Transmission Owners had up to 23% of offered and unsold capacity.
- The group of generation owners consistently had unoffered capacity which ranged from 25% to 79% of total unoffered capacity.
- The group of generation owners had unsold capacity which accounted for 0% to 100% of total capacity that was offered and unsold capacity.
- The group of all others including SCRs consistently had unoffered capacity that ranged from 0% to 39% of total unoffered capacity.
- The group of all others including SCRs had capacity that was offered and unsold capacity that ranged from 0% to 100%.

#### **I.5.4.2 Analysis of ROS Unoffered Capacity**

This section provides a detailed analysis of the unoffered capacity located in the ROS. The section also presents the maximum price impact of the unoffered capacity, in each month and averaged over the six months of each Capability Period. Market Participants with a significant amount of unoffered capacity were provided an opportunity to justify their unoffered MW. Generally, responses suggest that the Installed Capacity Suppliers' reasons for not offering the Capacity were benign, and none of the instances evidenced behavior intended to artificially raise prices.

Instances of unoffered capacity in Mitigated Capacity Zones are potentially subject to a non-discretionary penalty assessment (Services Tariff Section 23.4.5.4.2), and are not included in this section.

The NYISO contacted each Installed Capacity Supplier with at least 15 MW of unoffered capacity in any one month during the period November 2016 through October 2017 for an explanation of why it did not offer all of its capacity. There were eleven Market Participants with 15 MW or more of unoffered capacity in any given month in ROS, and the NYISO sought and received explanations from each of them.<sup>21</sup>

Eight Market Participants reported that their failure to offer capacity into the ICAP market was due to an administrative oversight. Six of the instances failed to offer in just one month over the two capability periods. One instance failed to offer in two consecutive months and the remaining instance had several months in which they failed to offer. Out of the eight Market Participants that had reported that the failure to offer was due to an administrative oversight reason, five indicated that new procedures would be put in place to avoid failing to offer capacity in the future. One of the eight also indicated its offering pattern as part of its explanation.

Three Market Participants reported environmental and/or physical conditions as cause for not offering capacity. These responses detailed causes including conservative operating strategies, SCR aggregation changes, and planned maintenance.

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<sup>21</sup> Confidential Attachment I provides a detailed summary of the Market Participants' explanations for having unoffered capacity.

Table 5 shows the maximum price impact of the unoffered capacity (15 MW or higher per incident) based on the slopes of the ICAP Demand Curves for the relevant Capability Periods. The maximum price impact is calculated as the lesser of (1) the product of the monthly unsold MW and the slope of the ICAP Demand Curve and (2) the ICAP Spot Market Auction Market-Clearing Price, since the price impact cannot exceed the auction price. Monthly values and seasonal averages of the maximum price impact are reported. The maximum price impact of the unoffered capacity, averaged over the six months of the Winter 2016-2017 and Summer 2017 Capability Periods, was \$0.17/kW-month (ranging from \$0.06/kW-month to \$0.25/kW-month) and \$0.08/kW-month (ranging from \$0.00/kW-month to \$0.21/kW-month), respectively.

**Table 5: Maximum Price Impact of ROS Unoffered Capacity (15MW+)<sup>22</sup>**

Month	Total Unoffered MW	Monthly Maximum Price Impact	Seasonal Average Maximum Price Impact
Nov-16	43.7	\$0.10	\$0.17
Dec-16	25.0	\$0.06	
Jan-17	110.9	\$0.25	
Feb-17	66.2	\$0.15	
Mar-17	68.2	\$0.16	
Apr-17	142.6	\$0.33	
May-17	84.2	\$0.20	\$0.08
Jun-17	88.0	\$0.21	
Jul-17	0.0	\$0.00	
Aug-17	21.2	\$0.05	
Sep-17	0.0	\$0.00	
Oct-17	0.0	\$0.00	

### I.5.4.3 Analysis of ROS Unsold Capacity

This section analyzes and reports on ROS unsold capacity in the ICAP Spot Market Auction. It also presents the maximum price impact of the ROS unsold capacity, in any one month and the price impact average for the six months of the Capability Period. Attachment II summarizes masked unsold capacity offers.<sup>23</sup>

For each Installed Capacity Supplier that had 15 MW or more of unsold capacity in a given month, the NYSIO (a) requested and received its explanation of its behavior; and (b) performed a unit-specific GFC analysis if the aggregated monthly average price impact over the capability period was greater than or equal to \$0.20/kW-month, or \$0.35/kW-month in any month.

The process utilized by the NYISO in performing this analysis only requires the development of a unit-specific GFC if the generator had an ICAP Spot Market Auction offer that

<sup>22</sup> The price impact of *all* ROS unoffered capacity average \$0.25/kW-month for the Winter 2016-2017 (ranging from \$0.19/kW-month to \$0.35/kW-month), and \$0.18/kW-month for the Summer 2017 (ranging from \$0.08/kW-month to \$0.28/kW-month). The monthly price impact cannot exceed the ICAP Spot Market Auction clearing price for that month.

<sup>23</sup> Attachment II is a redacted version of the unsold capacity offers

was greater than the generator's class average Net GFC with half net revenues.<sup>24</sup> In order to comply with the requirement in the Analysis Plan while making the analysis more useful to the Commission and stakeholders, this report is using unit-specific GFCs. The unit-specific GFC data utilized represents an increase in accuracy when compared to class average Net GFCs, and is used in place of the class average NET GFC with half net revenue step.

#### I.5.4.4 Monthly Price Impacts

includes the average monthly maximum price impact of unsold capacity for each Capability Period. The average price impacts were \$0.33/kW-month in Winter 2016-2017 and \$0.00/kW-month in the Summer 2017. The Capability Period impact threshold of \$0.20/kW-month was exceeded for Winter 2016-2017. Additionally, monthly maximum price impact exceeds the \$0.35/kW-month threshold for months of November 2016, December 2016, and April 2017.

**Table 6: Maximum Price Impact of ROS Unsold MW**

Month	Total Unsold MW	Monthly Maximum Price Impact	Seasonal Average Maximum Price Impact
Nov-16	374.8	\$0.35	\$0.33
Dec-16	220.1	\$0.50	
Jan-17	188.2	\$0.32	
Feb-17	44.3	\$0.10	
Mar-17	150.0	\$0.34	
Apr-17	191.0	\$0.35	
May-17	0.0	\$0.00	\$0.00
Jun-17	0.0	\$0.00	
Jul-17	0.0	\$0.00	
Aug-17	0.0	\$0.00	
Sep-17	0.0	\$0.00	
Oct-17	0.0	\$0.00	

In addition to calculating the monthly maximum and average maximum price impacts, price impacts of unsold capacity offered at varying levels of Going Forward Costs ("GFCs"), as described in

Table 7, were estimated. For the purpose of this report, the GFCs are defined as costs that could be reasonably expected to be avoided if the plant was mothballed for at least one year less projected net revenues from energy and ancillary services markets. These GFCs may

<sup>24</sup> Going Forward Cost terminology and elements for purposes of ROS unsold capacity analysis were discussed in detail at Table 7 in the 2012 Annual Installed Capacity Report. See 2012 Annual Report at Table 7, filed in FERC Docket Nos. ER01-3001-000, E03-647-000 (Feb. 14, 2013) (see also, *New York Indep. Sys. Operator, Inc.* Docket Nos. ER01-3001-000, E03-647-000, "Updated Status Report on Stakeholder Discussions Regarding Annual Installed Capacity Demand Curve Reports and Plan for Further Reports at Attachment A (Nov 12, 2009) ("Analysis Plan").



provide insight into why a generator offered its capacity at a non-zero offer price. In this analysis, GFCs are calculated for the entire capacity of the plant.

Generators face uncertainty about net revenues, among other things, which may influence the prices at which they offer capacity. To account for this uncertainty, the calculated GFCs including varying levels of net revenues: full, half, and no net revenues. Confidential Attachment IV to this report shows the specific generator's costs and/or SCR's heuristic methods for ICAP Suppliers with at least 15 MW of unsold capacity in any one month during November 2016 – April 2017 time period less the varying levels of net revenues.

Table 7 describes and defines the GFCs.

**Table 7: Going Forward Cost Definitions**

<b>Avoidable Costs (ACs)</b>	Costs that would be avoided or deferred if a generator was mothballed for a year or more, based on the calculation of the industry average cost data for the type of generator.
<b>Net energy and ancillary services revenues (net revenues)</b>	Estimated energy plus ancillary services revenues minus estimated production costs, with a minimum value of zero.
<b>GFCs with full net revenues</b>	ACs minus net revenues. This value is used to represent Net GFCs with certainty of net revenues.
<b>GFCs with half net revenues</b>	ACs minus 0.5 times net revenues. This value is used to represent Net GFCs with some uncertainty.
<b>GFCs with no net revenues</b>	ACs. This value is used to represent Net GFCs without certainty of net revenues.

The Winter 2016-2017 ICAP Strip Auction Price in ROS is \$0.75/kW-month, while the ICAP Monthly Auction Price for the upcoming auction month varied between \$0.20/kW-month and \$0.85/kW-month for Winter 2016-2017 Capability Period. Table 8 below shows the amount of unsold capacity by month for which calculated GFCs with full net revenue were exceeding the ICAP Monthly Auction Price for the upcoming auction month.

**Table 8: ROS Unsold MW with reported GFCs costs above ICAP Monthly Auction Prices (15MW+)**

Month	Total Unsold MW (15+)	ICAP Monthly Auction Price	Total Unsold with GFCs above ICAP Monthly Auction Price (15MW+)
Nov-16	373.1	\$ 0.49	373.1
Dec-16	220.1	\$ 0.80	220.1
Jan-17	186.5	\$ 0.85	186.5
Feb-17	33.9	\$ 0.39	33.9
Mar-17	150.0	\$ 0.20	150
Apr-17	189.3	\$ 0.25	189.3

There are three generators associated with unsold capacity and two SCR resources. Attachment IV contains the confidential information provided by the Market Participants in response to the NYISO's request for information regarding their bidding strategy and cost data for the months in which there was unsold capacity.

All Market Participants responded to the NYISO's information request with the following information regarding their behavior for months in which they had unsold capacity.



- Three generators submitted avoidable cost estimates in support of a calculated GFC value.
- Two SCRs submitted heuristic strategies in support of a GFC value, citing approximate shutdown costs or administrative and operational costs.

The NYISO performed ICAP Spot Market Auction simulations for a more detailed understanding of how the non-zero price offers may have affected Market Clearing Prices. The NYISO simulated auction outcomes under three scenarios: GFCs with full net revenues, GFCs with half net revenues and GFCs with no net revenues. These scenarios are labeled scenarios 1, 2, and 3 in Table 9. The NYISO performed the simulations by replacing offers that originally did not clear with the unit-specific GFC at varying levels of net revenues. It is important to note that offers were only replaced with the GFCs value if the offers were not awarded any MW. If the offer was marginal and only cleared a portion of its MW, or if the offer was inframarginal, the specific offers at the original offer prices were used. The offers that were analyzed for purposes of the simulations are provided in Attachment II.<sup>25</sup>

Table 9 shows the results of the auction simulations in each of the scenarios, for each month of the analysis period (Winter 2016/2017). For comparison, the original ROS ICAP Spot Market Auction prices are reported, in addition to the simulated ROS ICAP Spot Auction Prices under each of the scenarios. The simulation price deltas relative to the original clearing prices should not be positive because only entire offers that did not clear and which were originally priced above the ICAP Monthly Auction clearing price were replaced with GFCs. The amount of the price reduction shown in the simulations is static or decreasing as half or no revenues are recognized in the GFC calculations. That outcome is consistent with what would be expected.

**Table 9: ROS ICAP Spot Auction Price Impact Analysis Results**

Month	ROS Spot Prices	S1 <sup>[1]</sup>	S2 <sup>[2]</sup>	S3 <sup>[3]</sup>	S1 delta	S2 delta	S3 delta
Nov-16	\$0.35	\$0.35	\$0.35	\$0.35	\$0.00	\$0.00	\$0.00
Dec-16	\$0.55	\$0.55	\$0.55	\$0.55	\$0.00	\$0.00	\$0.00
Jan-17	\$0.32	\$0.32	\$0.32	\$0.32	\$0.00	\$0.00	\$0.00
Feb-17	\$0.54	\$0.54	\$0.54	\$0.54	\$0.00	\$0.00	\$0.00
Mar-17	\$0.71	\$0.71	\$0.71	\$0.71	\$0.00	\$0.00	\$0.00
Apr-17	\$0.35	\$0.35	\$0.35	\$0.35	\$0.00	\$0.00	\$0.00

Notes to Table 9:

Note 1: GFCs with full net revenues

Note 2: GFCs with half net revenues

Note 3: GFCs with no net revenues

The results of the simulations shown in Table 9 indicate that the NYCA ICAP Spot Market Auction prices likely would not have been lower if the entire offers did not clear were offered at their respective GFC values. In all three scenarios, there would be no price impact. As noted earlier, the simulations were performed by replacing only entire offers that did not clear

<sup>25</sup> The unmasked unsold capacity offers are provided in Confidential Attachment III.

with their respective GFCs. The associated potential zero price impacts do not indicate that economic withholding occurred.

The analysis shows that no economic withholding occurred over the Winter 2016-2017. During this period, the ICAP Spot Market Auction Market-Clearing Price for the NYCA was below the Capability Period Market-Clearing Price and both above and below the Monthly Auction clearing prices for the NYCA. The Capability Period and Monthly Auctions reflect market place expectations for upcoming Spot Auction Market-Clearing Prices. In addition the Winter 2016-2017 ICAP Spot Market Auction Market-Clearing Price for the NYCA was below the estimated Going Forward Costs for all of the ROS generators with unsold capacity.

## II. NYISO Report on New Generation Projects

In its October 23, 2006 order, the Commission ordered the NYISO to submit “a list of investments in new generation projects in New York (including a description and current status of each such project), regardless of the stage of project development at the time of the filing.”<sup>26</sup> The NYISO keeps a list of Interconnection Requests and Transmission Projects for the New York Control Area that includes information about all generation projects in the State that have requested interconnection.

The NYISO interconnection process for generators and Merchant Transmission Facilities is described in two attachments of the NYISO OATT: OATT Attachment X entitled, “Standard Large Facility Interconnection Procedures,” and OATT Attachment Z entitled, “Small Generator Interconnection Procedures.” OATT Attachment X applies to Generating Facilities that exceed 20 MW in size and to Merchant Transmission Facilities, collectively referred to as “Large Facilities.” OATT Attachment Z applies to Generating Facilities no larger than 20 MW.

Under OATT Attachment X, Developers of Large Facilities must submit an Interconnection Request to the NYISO. The NYISO assigns a Queue Position to all valid Interconnection Requests. Under OATT Attachment X, proposed generation and Merchant Transmission Facility projects undergo up to three studies: the Feasibility Study, the System Reliability Impact Study, and the Class Year Interconnection Facilities Study. The Class Year Interconnection Facilities Study is performed on a Class Year basis for a group of eligible projects pursuant to the requirements of OATT Attachment S. Under OATT Attachment Z, proposed small generators undergo a process that is similar, but with different paths and options that are dependent on the specific circumstances of the project.

Proposed generation and transmission projects currently in the NYISO interconnection process are listed on the list of Interconnection Requests and Transmission Projects for the New York Control Area (“NYISO Interconnection Queue”). The generation projects on that list are shown in Attachment IV to this report, which is dated November 30, 2017. The NYISO updates the NYISO Interconnection Queue on at least a monthly basis and posts the most recent list on the NYISO’s public web site<sup>27</sup> at the “Planning Documents and Resources”, underneath the “Interconnection Studies” section.

The status of each project on the NYISO Interconnection Queue is shown in the column labeled “S.” An explanation of this column is provided in Attachment V to this report. Also, note that the proposed In-Service Date for each project is the date provided to the NYISO by the respective Owner/Developer, is updated only on a periodic basis, and is subject to change.

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<sup>26</sup> See *New York Independent System Operator Inc.*, 117 FERC ¶ 61,086, at P 14 (2006).

<sup>27</sup> See <[http://www.nyiso.com/public/markets\\_operations/services/planning/documents/index.jsp](http://www.nyiso.com/public/markets_operations/services/planning/documents/index.jsp)>.

## III. New Generation Projects and Net Revenue Analysis

### III.1 Overview

The ICAP Demand Curves are designed to send efficient price signals to developers to build new generation and to generation owners to invest in existing generation when and where it is needed. In past ICAP annual reports, the NYISO stated that it is difficult to relate the investment in new generation to the ICAP Demand Curves given the lead-time required to site, develop, and construct new generation, and to address other barriers to new entry; however, the ICAP Demand Curves provide transparency for projecting Spot Market capacity price signals that developers and owners consider prior to making investment decisions. Further, since the creation of the new G-J Locality (encompassing Load Zones G, H, I and J) and the implementation of the ICAP Demand Curves for it, there has been investment in resources in Load Zones G, H, I, and J. This section of the report provides net revenue analysis on a comparable basis to that used in the prior reports.

### III.2 Market Design Developments to Enhance ICAP Demand Curve Performance

On January 17, 2017, FERC accepted the tariff revisions that establish the ICAP Demand Curves for the 2017-2018 Capability Year.<sup>28</sup> The January 2017 Order accepted the NYISO's proposal to use the dual-fuel F-class frame combustion turbine (Siemens SGT6-5000(F)) with selective catalytic reduction emission controls ("selective catalytic reduction") to develop the ICAP Demand Curves for NYC, LI, and the G-J Locality for purposes establishing the ICAP Demand Curves effective through April 2021. A gas-only Siemens SGT6-5000(F) frame combustion turbine with an operational limit in lieu of selective catalytic reduction was selected as the representative peaking plant for the NYCA ICAP Demand Curve. The current ICAP Demand Curves are sending appropriate price signals.

### III.3 Interconnection Queue Projects

The NYISO's interconnection queue lists the projects that are being and will be evaluated in the interconnection study processes. In-service dates stated on the interconnection queue for projects are provided by the developers, and the NYISO periodically updates the queue (Attachment V). Chart 177 was compiled using data from Attachment V. Chart 17 depicts the amount of generation listed on the NYISO's interconnection queue since 2003 in NYC, LI, and Rest of State ("ROS"), and starting with Summer 2014 Capability Period it includes the G-J Locality. Wind projects are depicted separately from generation projects with other fuel types. The ROS depiction in Chart 177 does account for the change in its composition starting in Summer 2014 Capability Period with the creation of the G-J Locality ("G-J"). From 2003 through April 2014, ROS was comprised of Load Zones A through I. Since May 2014, it has been comprised of Load Zones A through F.

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<sup>28</sup> As discussed in [Section I[ ] above, the NYISO's tariff now has a quadrennial ICAP Demand Curve reset, with annual updates in the intervening years.

**Chart 17: NYISO Interconnection Queue Projects**

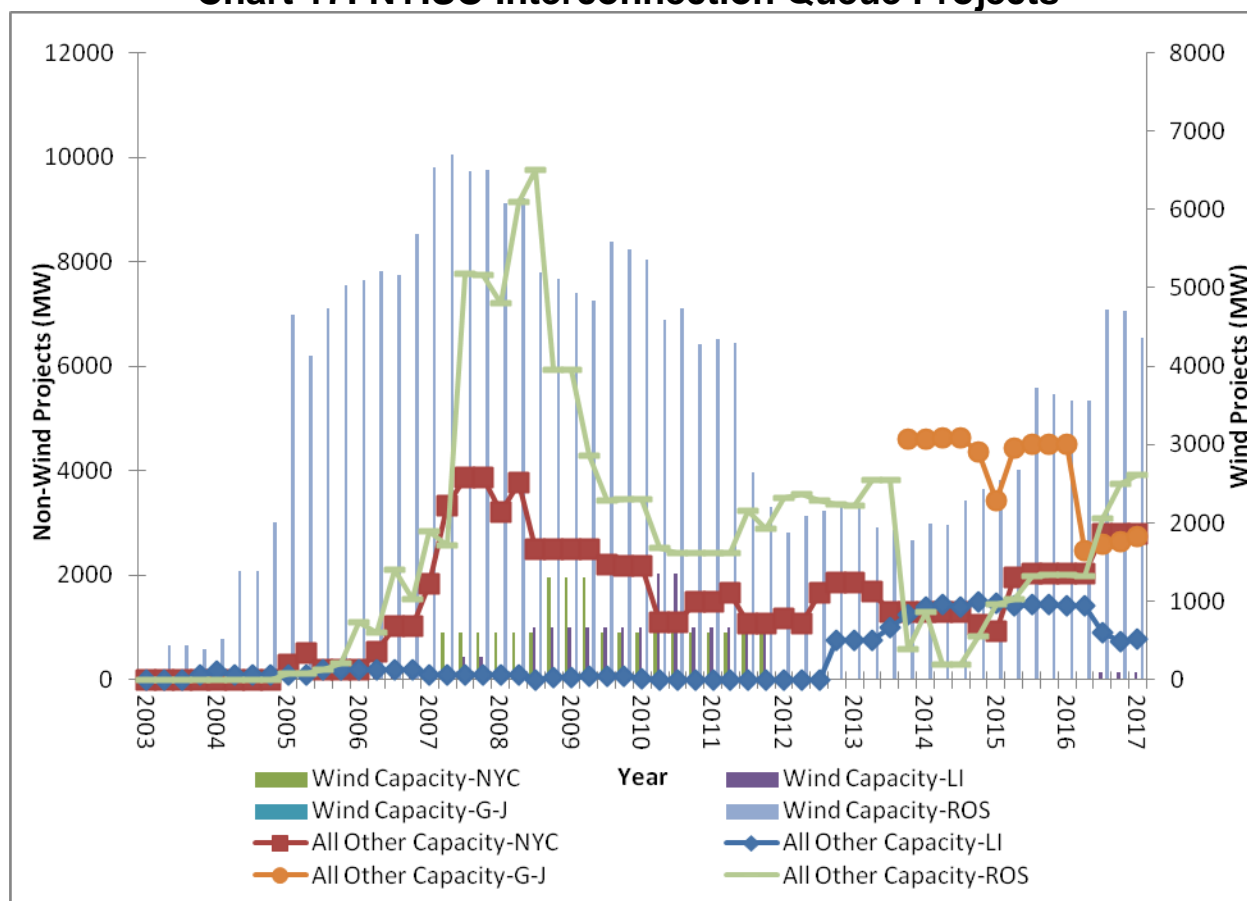


Chart 177 reports only those projects that were placed in the queue after May 1, 2003.<sup>29</sup> Since the queue includes projects at various stages, for purposes of the analysis for this section of the report, the NYISO included those projects that are identified as active. Accordingly, pre-2005 period projects with codes 'I', 'W', or 'C' were excluded; and for 2005 and beyond projects, status codes 0, 1, 12, 13, and 14 were omitted.

The number of generation projects and the amount of MW in the interconnection process has increased since the ICAP Demand Curves became effective in May 2003. The number of MW associated with projects based on technologies other than wind (measured on the left Y-axis, above) did not increase significantly until the summer of 2005. Chart 177 shows that

<sup>29</sup> Each project in the queue is provided a status code that identifies its position in the study process that ranges from the initial scoping meeting to entering service. Prior to 2005, each project was provided a status-code based on the NYISO System Reliability Impact Study from the following: *P=Pending, A=Active, I=Inactive, R=Under Review, C=Completed, W=Withdrawn*. Starting in 2005, the classification system was changed and status-codes were based on the standard steps in the NYISO's interconnection process as follows: *1=Scoping Meeting Pending, 2=FES Pending, 3=FES in Progress, 4=SRIS Pending, 5=SRIS in Progress, 6=SRIS Approved, 7=FS Pending, 8=Rejected Cost Allocation/Next FS Pending, 9=FS 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*, where *FES=Feasibility Study, SRIS=System Reliability Impact Study, FS=Facilities Study*.

beginning with the Winter 2007-2008 Capability Period, the number of MW listed in the interconnection queue for the Rest of State rose sharply, particularly new non-wind projects. By the end of 2011, this trend had largely reversed to pre-Winter 2007-2008 Capability Period levels. The sharp decrease in proposed new non-wind generation in ROS shown in Chart 177 beginning with the Summer 2014 Capability Period is indicative of Load Zones G, H, I no longer being part of ROS. Non-wind generation projects have increased in both ROS and all localities since 2015. Wind generation projects have increased in ROS since 2015, and one wind project was proposed in LI in 2017. No wind projects have been proposed in NYC or the G-J Locality in 2015, 2016, or to-date in 2017.

In addition to the proposed projects reflected in Chart 177, there are proposed HVDC transmission lines. Two of the projects are from External Control Areas, one project with a terminus in NYC, and the other project with a terminus in LI. A third project is proposed to be a connection between Load Zone F (in the ROS) and Load Zone H (in the G-J Locality). If these projects receive CRIS and Unforced Capacity Deliverability Rights (“UDRs”), the UCAP associated with the UDRs can be used to satisfy the applicable LCR in which the facility has a terminus.

### III.4 Proposed Resource Additions

On October 18, 2016, the NYISO Board of Directors approved the 2016 Reliability Needs Assessment Report (RNA).<sup>30</sup> This report assessed resource adequacy, transmission security and transmission adequacy of the New York Control Area (NYCA) bulk power transmission system for calendar years 2017 through 2026. In April of 2017, the NYISO issued the 2016 Comprehensive Reliability Plan (CRP), which reflected a reliable system.<sup>31</sup>

As mentioned above, the G-J Locality and its ICAP Demand Curve are providing market price signals for resources to locate new units and invest in existing units, including returning capacity to service in this area. For example, CPV Valley and Taylor Biomass are new generation that is being built in Load Zone G, and Bowline 2 received additional CRIS MW in order to restore its full capacity. Other indications that the Demand Curve price signals are working include units in the NYCA returning to service. These resource additions are included among the capacity resource changes summarized in Table 10.

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<sup>30</sup> The 2016 RNA report is available at:  
<[http://www.nyiso.com/public/webdocs/markets\\_operations/services/planning/Planning\\_Studies/Reliability\\_Planning\\_Studies/Reliability\\_Assessment\\_Documents/2016RNA\\_Final\\_Oct18\\_2016.pdf](http://www.nyiso.com/public/webdocs/markets_operations/services/planning/Planning_Studies/Reliability_Planning_Studies/Reliability_Assessment_Documents/2016RNA_Final_Oct18_2016.pdf)>

<sup>31</sup> The 2016 CRP report is available at:  
<[http://www.nyiso.com/public/webdocs/markets\\_operations/services/planning/Planning\\_Studies/Reliability\\_Planning\\_Studies/Reliability\\_Assessment\\_Documents/2016CRP\\_Report\\_Final\\_Apr11\\_2017.pdf](http://www.nyiso.com/public/webdocs/markets_operations/services/planning/Planning_Studies/Reliability_Planning_Studies/Reliability_Assessment_Documents/2016CRP_Report_Final_Apr11_2017.pdf)>.

**Table 10: Capacity Resource Changes  
since the publication of the 2017 NYISO Gold Book<sup>32</sup>**

Zone	CRIS MW	Status
C	1274	In Service
D	78	In Service
D	19	Retired
K	139	In Service

Table 11 presents the market-based solution projects and Transmission Owners' plans that were submitted in response to previous requests for solutions pursuant to the NYISO's reliability planning process. These solutions were included in the 2012 Comprehensive Reliability Plan. A number of other projects that are in the NYISO Interconnection Queue continue to move through the interconnection process.

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<sup>32</sup> Based on information as of 11/30/17 contained in "Generator Status Updates" and "Planned Generation Retirements" documents available at:  
<[http://www.nyiso.com/public/markets\\_operations/services/planning/documents/index.jsp](http://www.nyiso.com/public/markets_operations/services/planning/documents/index.jsp)>

**Table 11: Current Status of Tracked Market-Based Solutions and Transmission Owner Plans**

Queue #	Project	Submitted	Zone	Original I/S Date	Name Plate (MW)	CRIS (MW)	Summer (MW)	Proposal Type	Current Status	Included in the 2016 RNA Base Case
339	Station 255	CRP 2012	B	-	N/A	N/A	N/A	TO Plan	Q4 2019-2020	Yes
N/A	Clay-Teall #10 115kV	CRP 2012	C	2016	N/A	N/A	N/A	TO Plan	Q4 2017	Yes
N/A	NYSEG/RGE's terminal upgrades, increasing the ratings on Stolle Road-Gardenville 230 kV Line #66, addressing a preliminary Reliability Need identified in preliminary ("1st pass") 2016 RNA	RNA 2016	A	2019	N/A	N/A	N/A	TO Plan	I/S	Yes
N/A	NYSEG/RGE's terminal upgrades, increasing the ratings on both Clay-Pannell PC1 and PC2 345 kV lines, addressing a preliminary Reliability Need identified in preliminary ("1st pass") 2016 RNA	RNA 2016	C	2019	N/A	N/A	N/A	TO Plan	2019	Yes
N/A	Oakdale 345/115 kV 3rd transformer and substation reconfiguration, addressing the Oakdale 345/115 kV Reliability Need identified in final 2016 RNA	CRP 2016 CRP 2014	C	2015	N/A	N/A	N/A	TO Plan	2021	No



## III.5 Net Revenue Analysis

FERC's order directing the NYISO to submit an ICAP annual report stated that the NYISO should include a complete net revenue analysis to provide information about whether NYISO market revenues are adequate to incent new capacity resources in regions where capacity is needed. Where there is growing pressure on existing capacity, e.g., the reserve margin is shrinking; there should be a rise in combined revenues from the Energy and Capacity markets.

As in the prior annual reports, the NYISO examined the level of "need" for additional capacity by looking at the percentage of capacity in excess of the applicable minimum Installed Capacity requirement. The NYISO then looked at possible revenues from the Capacity, Energy, and Ancillary Services markets for a hypothetical gas turbine which is similar to what was used to complete the net revenue analysis in the prior reports. This analysis shows, in general, that there is a tendency for revenues to increase as the percentage of excess capacity decreases and vice versa.

### III.5.1 Quantification of "Need"

For purposes of this analysis, the excess of capacity relative to the applicable minimum requirement was used as a proxy for need. Capacity margin is calculated as:

$$\text{Capacity margin \%} = \frac{\text{Availability}}{\text{Requirement}} \times 100$$

Using this definition, a value in excess of 100% reflects an excess capacity margin. A relatively high value indicates less of a need for additional capacity and, conversely, declining values suggest an increased need.<sup>33</sup> Table 12 displays the required and available amounts of UCAP as calculated from detailed data from monthly certified capacity, auction offers, and sales awards.

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<sup>33</sup> The use of "need" in this context is based on the revenue analysis and is not intended to infer whether there may be a system-specific need.

**Table 12: Summer Available Capacity vs. Required Capacity**

		2012	2013	2014	2015	2016	2017
<b>NYCA</b>	Requirement (MW)	35,076	35,467	35,812	35,920	35,430	35,513
	Availability (MW)	37,881	36,177	36,081	37,340	36,350	36,749
	Capacity margin %	<b>108.0%</b>	<b>102.0%</b>	<b>100.7%</b>	<b>104.0%</b>	<b>102.6%</b>	<b>103.5%</b>
<b>NYC</b>	Requirement (MW)	8,897	9,325	9,471	9,272	8,589	9,095
	Availability (MW)	9,696	9,721	9,568	9,680	9,251	9,888
	Capacity margin %	<b>109.0%</b>	<b>104.2%</b>	<b>101.0%</b>	<b>104.4%</b>	<b>107.7%</b>	<b>108.7%</b>
<b>LI</b>	Requirement (MW)	4,961	5,394	5,431	5,284	5,207	5,303
	Availability (MW)	5,858	5,740	5,675	5,618	5,679	5,785
	Capacity margin %	<b>118.1%</b>	<b>106.4%</b>	<b>104.5%</b>	<b>106.3%</b>	<b>109.1%</b>	<b>109.1%</b>
<b>G-J</b>	Requirement (MW)	n/a	n/a	13,495	13,934	13,515	13,622
	Availability (MW)	n/a	n/a	13,610	14,581	14,182	14,407
	Capacity margin %	n/a	n/a	<b>100.9%</b>	<b>104.6%</b>	<b>104.9%</b>	<b>105.8%</b>

In Table 12, the NYCA Minimum Unforced Capacity Requirement is based on the annual NYCA Minimum Installed Capacity Requirement. For each of the NYC, LI, and the G-J Locality, the respective Locational Minimum Unforced Capacity Requirement is derived from their respective Locational Minimum Installed Capacity Requirement. “Available Capacity” reflects the aggregate of UCAP ratings excluding the amount of imported capacity via external transactions.<sup>34</sup>

Since November 2014, the ICAP Demand Curves were established based on a different peaking plant than that used to establish prior curves. For the 2016 data in Table 12, the NYISO assumed a revenue requirement based on the same plant used for the analysis in the 2013 annual report; *i.e.*, the respective peaking plant used to establish the ICAP Demand Curves for the 2013-2014 Capability Year. This representation provides a direct comparison of the revenues and revenue margins for the twelve months of market outcomes prior to 2014-2015 Capability Year to those in previous annual reports. For the 2014 G-J Locality revenue analysis, the NYISO used cost assumptions for the LMS100 used in the NYCA region and adjusted the costs based upon information developed by the ICAP Demand Curve reset independent consultant in 2014.

Table 13 shows the annual revenue requirement for the hypothetical plants based on the assumptions used in the previous ICAP Demand Curves and the 2017 ICAP Demand Curves. For the G-J Locality the annual revenue requirements for 2014 have been adjusted for six months only — the 2014 Summer Capability Period — the period that corresponds with the initial implementation for the ICAP Demand Curves for the G-J Locality. The notional values used for the New York City, LI, and G-J Localities are based on an LMS100 technology, and for NYCA, figures are based on GE 7FA combustion turbine without selective catalytic reduction for the years 2011 to 2014. For 2015 and 2016 figures, a dual-fuel Siemens F class Frame unit with selective catalytic reduction was used as the peaking plant for the G-J, J, and LI Localities. A

<sup>34</sup> In contrast to the forecasted figures used in the Gold Book, this table reflects data based on realized outcomes over the Summer Capability Periods.

gas-only Siemens F class Frame unit without selective catalytic reduction was used for the NYCA. For 2017, the same technology from 2016 was used assuming the 2017-2018 ICAP Demand Curve parameters.

**Table 13: Annual Revenue Requirements in UCAP terms (\$/MW)**

	2012	2013	2014	2015	2016	2017
<b>NYCA</b>	\$122,650	\$124,094	\$126,111	\$113,738	\$117,709	\$117,970
<b>NYC</b>	\$282,388	\$284,578	\$288,371	\$217,390	\$231,098	\$228,487
<b>LI</b>	\$263,070	\$262,912	\$263,455	\$176,031	\$179,684	\$179,236
<b>NCZ</b>			\$116,966	\$154,522	\$162,388	\$161,911

Note to Table 13: As with prior annual reports, this table is based on November of the year prior to the year stated in the first row, through October of the year stated, except that the Annual Revenue Requirements for the G-J Locality for 2014 are based on the six month revenue requirement calculated beginning with the Summer 2014 Capability Period when the G-J Locality and its ICAP Demand Curve were first implemented.

Table 14 shows the revenues for individual markets (*i.e.*, the Energy, Ancillary Services (A/S)), and the ICAP Spot Market Auction that the identified hypothetical peaking plant may have received based on actual LBMPs, natural gas prices, and other reasonable parameters used to calculate variable costs from the corresponding Demand Curve reports.

For previous reports, a model was used to calculate the Energy and Ancillary Services revenue for the respective hypothetical peaking plants. Net Energy revenues are earned in hours when the Day-Ahead Market LBMP exceeds the calculated variable cost. Otherwise, Day-Ahead Ancillary Services revenues are earned. This approach is similar to the “standard method” used by the Market Monitoring Unit for the NYISO in its annual State of the Market reports. This year’s report relied upon the FERC-approved Net EAS Model used within the 2017 ICAP Demand Curves to calculate Net EAS revenues. This model utilizes both Day-Ahead and Real-Time prices to provide a more accurate estimate of a proxy plant’s hypothetical revenue.

For 2012, 2013 and the Winter 2013/2014 Capability Period, the Ancillary Services revenues earned by the hypothetical LMS100 technology were based upon 10-Minute Non-Synchronized Reserve prices, whereas Ancillary Service revenues for the hypothetical NYCA peaking plant were based on Day-Ahead 30-Minute Reserve prices. For the Capability Year beginning May 2014, the Frame Combustion Turbine technology Ancillary Services revenues for the hypothetical peaking plant technology in all capacity regions were based upon Day-Ahead 30-Minute Operating Reserve prices. The decrease in Net EAS from 2016-2017 was likely attributable to the improved data available through the new model.

ICAP Market revenues were based on the ICAP Spot Market clearing prices for each Locality.

**Table 14: Benchmark Annual Revenues in UCAP terms (\$/MW)**

		Revenue Elements in \$						Revenue Elements as % of Total					
		2012	2013	2014	2015	2016	2017	2012	2013	2014	2015	2016	2017
NYCA[1]	Energy	\$35,147	\$42,916	\$72,191	\$38,006	\$8,775	\$14,165	70%	47%	56%	50%	12%	33%
	A/S	\$666	\$1,873	\$2,342	\$3,602	\$33,496	\$11,491	1%	2%	2%	5%	46%	27%
	Capacity	\$14,650	\$46,730	\$54,400	\$35,120	\$30,200	\$16,890	29%	51%	42%	46%	42%	40%
	<b>Total</b>	<b>\$50,463</b>	<b>\$91,519</b>	<b>\$128,933</b>	<b>\$76,729</b>	<b>\$72,471</b>	<b>\$42,546</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
NYC	Energy	\$55,634	\$59,779	\$67,397	\$27,493	\$25,577	\$14,996	35%	31%	27%	16%	16%	15%
	A/S	\$9,300	\$10,366	\$14,722	\$4,123	\$23,399	\$5,058	6%	5%	6%	2%	15%	5%
	Capacity	\$95,550	\$124,320	\$169,380	\$142,450	\$109,260	\$81,130	60%	64%	67%	82%	69%	80%
	<b>Total</b>	<b>\$160,483</b>	<b>\$194,465</b>	<b>\$251,499</b>	<b>\$174,066</b>	<b>\$158,235</b>	<b>\$101,184</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
Long Island	Energy	\$117,016	\$130,905	\$137,433	\$70,875	\$66,945	\$33,811	81%	68%	67%	56%	55%	41%
	A/S	\$6,971	\$6,388	\$9,322	\$2,840	\$17,428	\$6,427	5%	3%	5%	2%	14%	8%
	Capacity	\$20,180	\$54,720	\$59,130	\$53,160	\$37,620	\$42,770	14%	28%	29%	42%	31%	52%
	<b>Total</b>	<b>\$144,168</b>	<b>\$192,013</b>	<b>\$205,885</b>	<b>\$126,875</b>	<b>\$121,992</b>	<b>\$83,008</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
G-J [2]	Energy			\$5,174	\$14,591	\$8,883	\$11,153			6%	15%	8%	11%
	A/S			\$11,162	\$5,219	\$34,522	\$10,284			12%	5%	29%	10%
	Capacity			\$72,980	\$78,810	\$74,850	\$79,970			82%	80%	63%	79%
	<b>Total</b>			<b>\$89,316</b>	<b>\$98,620</b>	<b>\$118,255</b>	<b>\$101,407</b>			<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Note to Table 14: As with prior annual reports, this table is based on November of the year prior to the year stated in the first row, through October of the year stated, except for the G-J Locality, which is based on the six months of revenues calculated for the Summer 2014 Capability Period.

In order to assess revenue adequacy for purposes of this report, “Revenue Margin” is the metric used. “Revenue Margin” is Benchmark Revenues (as reflected in Table 14) expressed as a percentage of Required Revenues. Revenue Margins are calculated as:

$$\text{Revenue Margin \%} = \frac{\text{Benchmark Revenue}}{\text{Required Revenue}} \times 100$$

A higher value indicates a greater degree of adequacy of revenues using this approach. The following table displays the values of Revenue Margins for the hypothetical peaking plant.

**Table 15: Revenue Margins**

	2012	2013	2014	2015	2016	2017
<b>NYCA</b>	41%	74%	102%	67%	62%	36%
<b>NYC</b>	57%	68%	87%	80%	68%	44%
<b>LI</b>	55%	73%	78%	72%	68%	46%
<b>G-J</b>			76%	64%	73%	63%

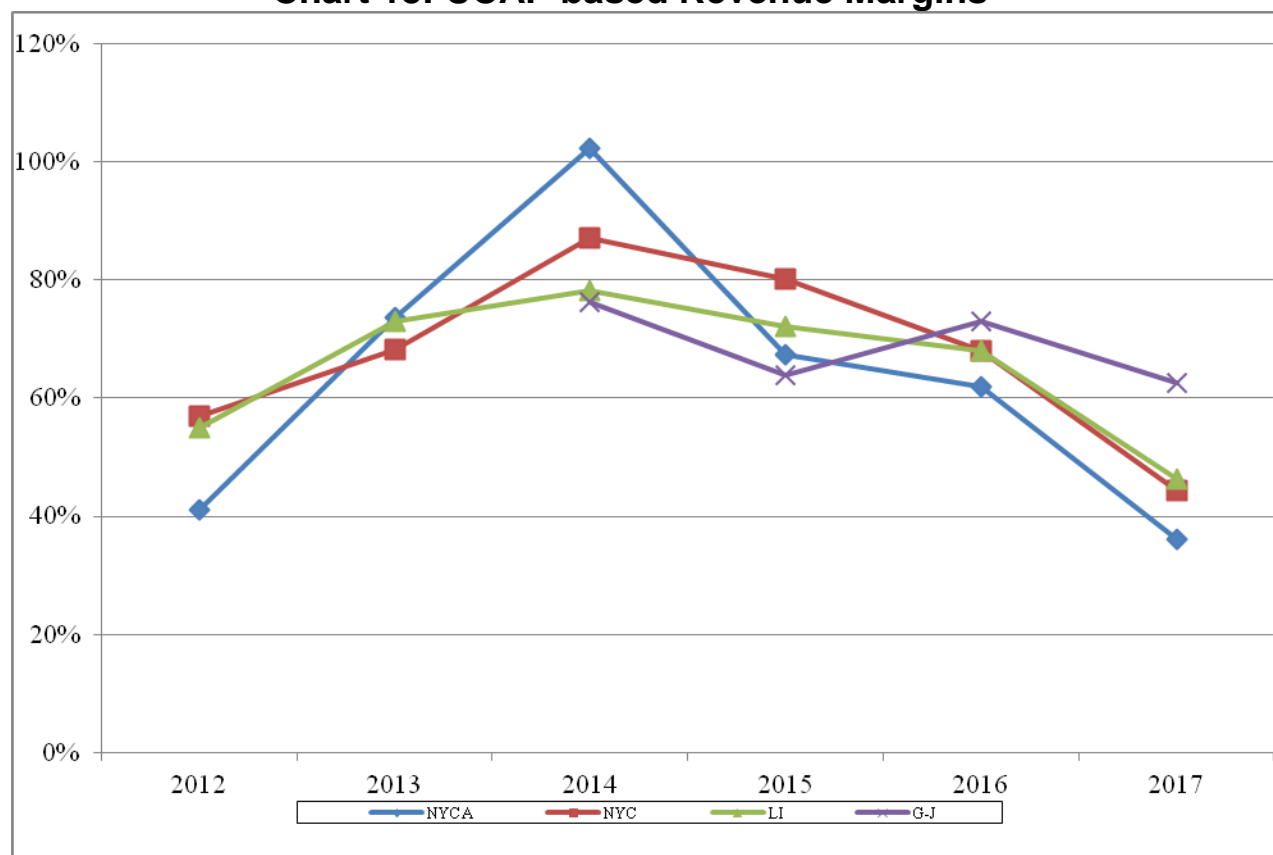
Note to Table 15: As with prior annual reports, this table is based on November of the year prior to the year stated in the first row, through October of the year stated; except for the G-J Locality for 2014, which is based on the six months of revenues and revenue requirement calculated for the Summer 2014.

In 2017, Revenue Margins decreased from prior levels in NYCA and NYC largely due to the decrease in capacity revenues. In 2017, the changes in Revenue Margins for LI and the G-J Locality were a result of the changes in the estimated Energy and Ancillary Services revenues. This may be attributed to a change in the model used to estimate these revenues. To assess whether the revenue streams for the hypothetical plant are adequate in relation to the level of need for new capacity, data from Tables 12, 13, and 14 are graphed below, showing revenue

(Chart 18) and Capacity (Chart 19), as well as revenue relative to value used for the cost of new entry (Chart 20).

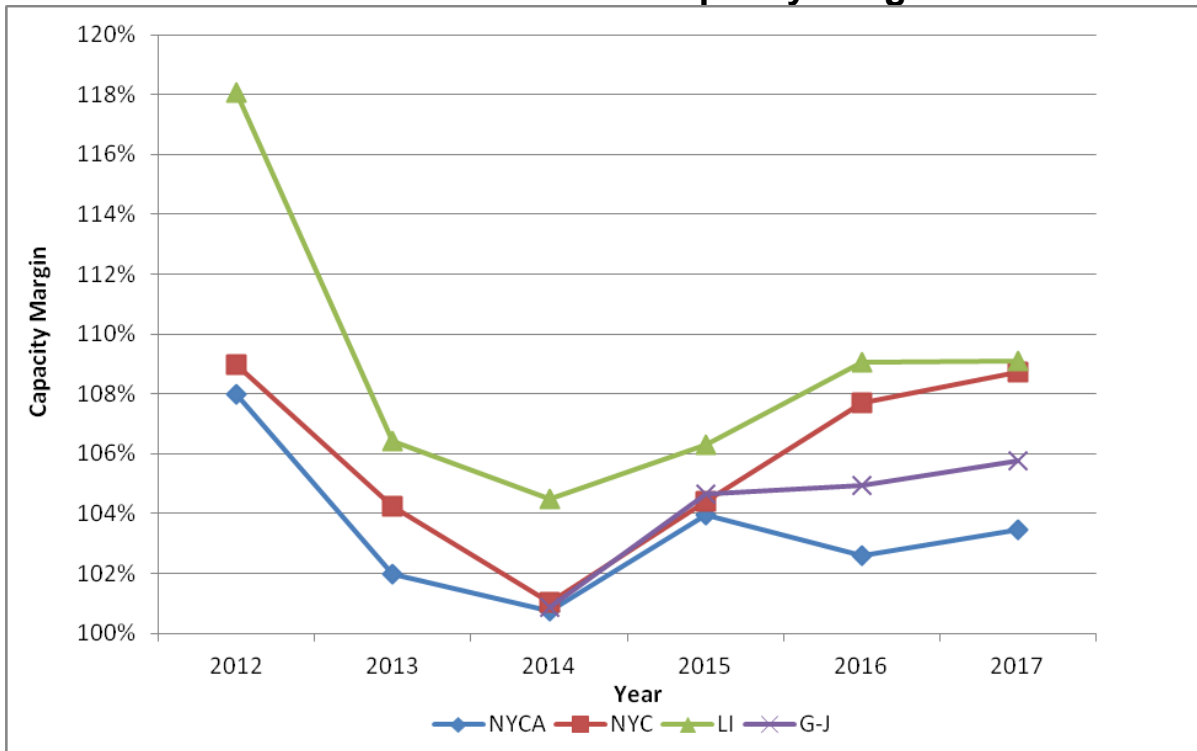
The capacity revenue component of the total net revenue as a percentage of the cost of new entry in the NYCA and in each Locality is depicted in Chart 20. The amount of excess capacity peaked in NYCA, NYC, and LI in 2011, and as a result, the capacity market revenues relative to the cost of new entry requirements shown in this chart dropped precipitously, thereby appropriately signaling to the market that sufficient capacity already existed.<sup>35</sup> As the amount of excess capacity above requirements shrinks, capacity market revenues increase. The effect of the recent increases to the level of excess capacity is reflected in the generally lower revenue margins calculated for 2016 and 2017 compared to other recent prior years

**Chart 18: UCAP based Revenue Margins**

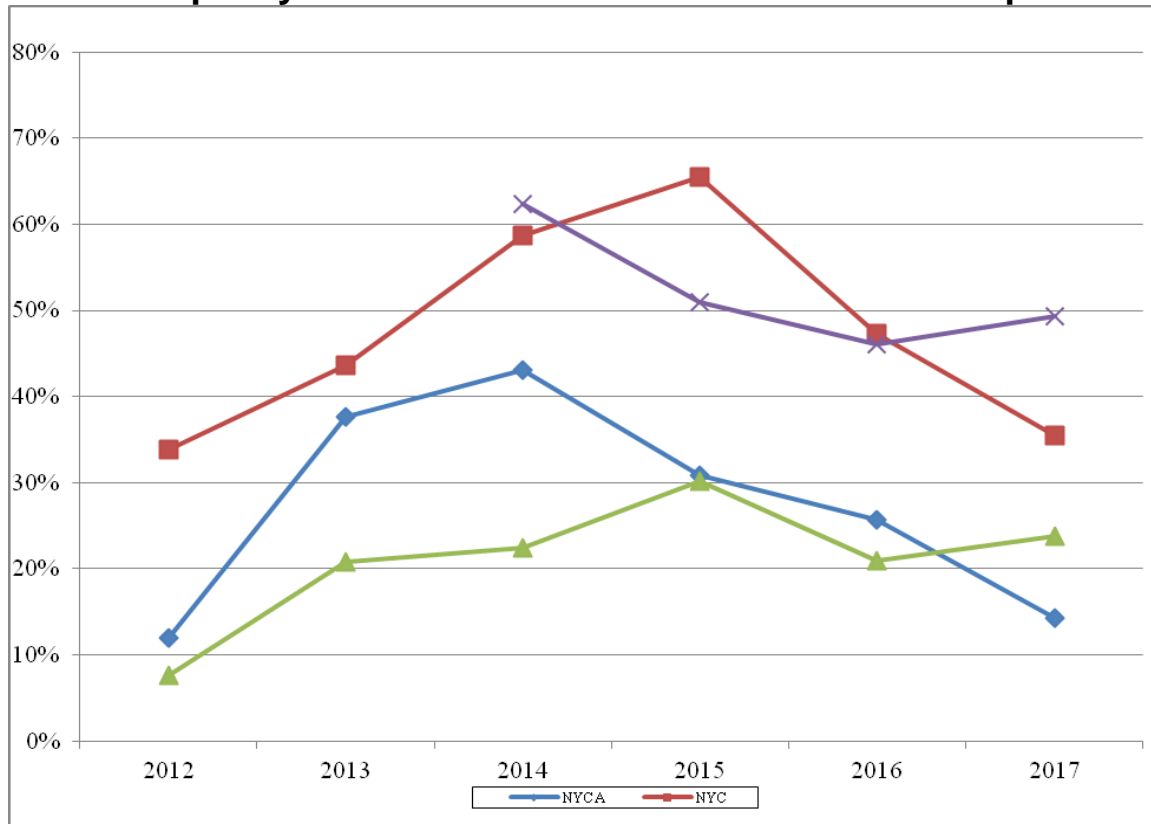


<sup>35</sup> 2011 State of Market Report, p. A-13.

**Chart 19: UCAP based Capacity Margins**



**Chart 20: Capacity Market Revenues Relative to CONE Requirements**



## Attachments

**Attachment I: Confidential.**

**Unoffered Capacity: Market Participant Explanations**

(Not included with the public filing.)



## Attachment II: Unsold Capacity Offers (Masked)

AUCTION TYPE	AUCTION MONTH	LOCATION DESCRIPTION	Masked PTID Name	OFFER CAPACITY MW	OFFER PRICE	AWAREDED CAPACITY MW	MARKET CLEARING PRICE	UNSOLD MW
Spot	Nov-2016	ROS	Offer I	36.2	\$1.00	0.0	\$0.35	36.2
Spot	Nov-2016	ROS	Offer II	50.0	\$0.95	0.0	\$0.35	50.0
Spot	Nov-2016	ROS	Offer III	50.0	\$0.85	0.0	\$0.35	50.0
Spot	Nov-2016	ROS	Offer IV	33.9	\$1.48	0.0	\$0.35	33.9
Spot	Nov-2016	ROS	Offer V	1.7	\$0.50	0.0	\$0.35	1.7
Spot	Nov-2016	ROS	Offer VI	50.0	\$0.90	0.0	\$0.35	50.0
Spot	Nov-2016	ROS	Offer VII	53.0	\$0.50	0.0	\$0.35	53.0
Spot	Nov-2016	ROS	Offer VIII	100.0	\$0.75	0.0	\$0.35	100.0
<b>Nov-2016 Total</b>								<b>374.8</b>
Spot	Dec-2016	ROS	Offer I	86.2	\$1.00	0.0	\$0.55	86.2
Spot	Dec-2016	ROS	Offer II	100.0	\$0.75	0.0	\$0.55	100.0
Spot	Dec-2016	ROS	Offer III	33.9	\$2.22	0.0	\$0.55	33.9
<b>Dec-2016 Total</b>								<b>220.1</b>
Spot	Jan-2017	ROS	Offer I	50.0	\$0.54	0.0	\$0.32	50.0
Spot	Jan-2017	ROS	Offer II	52.6	\$0.50	0.0	\$0.32	52.6
Spot	Jan-2017	ROS	Offer III	33.9	\$2.22	0.0	\$0.32	33.9
Spot	Jan-2017	ROS	Offer IV	1.7	\$0.35	0.0	\$0.32	1.7
Spot	Jan-2017	ROS	Offer V	50.0	\$0.77	0.0	\$0.32	50.0
<b>Jan-2017 Total</b>								<b>188.2</b>
Spot	Feb-2017	ROS	Offer I	33.9	\$2.22	0.0	\$0.54	33.9
Spot	Feb-2017	ROS	Offer II	50.0	\$0.54	39.6	\$0.54	10.4
<b>Feb-2017 Total</b>								<b>44.3</b>
Spot	Mar-2017	ROS	Offer I	50.0	\$1.09	0.0	\$0.71	50.0
Spot	Mar-2017	ROS	Offer II	50.0	\$1.32	0.0	\$0.71	50.0
Spot	Mar-2017	ROS	Offer III	50.0	\$0.86	0.0	\$0.71	50.0
<b>Mar-2017 Total</b>								<b>150.0</b>
Spot	Apr-2017	ROS	Offer I	50.0	\$1.01	0.0	\$0.35	50.0
Spot	Apr-2017	ROS	Offer II	50.0	\$0.35	10.7	\$0.35	39.3
Spot	Apr-2017	ROS	Offer III	50.0	\$0.57	0.0	\$0.35	50.0
Spot	Apr-2017	ROS	Offer IV	1.7	\$0.50	0.0	\$0.35	1.7
Spot	Apr-2017	ROS	Offer V	50.0	\$0.79	0.0	\$0.35	50.0
<b>Apr-2017 Total</b>								<b>191.0</b>
<b>Grand Total</b>								<b>1168.4</b>

## **Attachment III: Unsold Capacity Offers (UnMasked)**

(Not included with the public filing.)

**Attachment IV: Confidential. Unsold Capacity Offers:  
Market Participant Explanations**

(Not included with the public filing.)

## Attachment V: Interconnection Queue

Queue Pos.	Owner/Developer	Project Name	Date of IR	SP (MW)	WP (MW)	Type/Fuel	Location County/State	Z	Interconnection Point	Utility	S	Last Update	Availability of Studies	FS Complete/ SGIA Tender	Proposed In-Service	Proposed COD
251	CPV Valley, LLC	CPV Valley Energy Center	7/5/07	677.6	690.6	CC-D	Orange, NY	G	Coopers – Rock Tavern 345kV	NYP&A	11	7/31/16	FES, SRIS, FS	10/15/13	2017/06	2018/02
276	Air Energie TCI, Inc.	Crown City Wind Farm	1/30/08	90	90	W	Cortland, NY	C	Cortland - Fenner 115kV	NM-NG	7	1/31/15	FES, SRIS		2018/12	2018/12
331	National Grid	Northeast NY Reinforcement	4/22/09	N/A	N/A	AC	Saratoga, NY	F	NGrid 230kV	NM-NG	12,14	5/31/16	SIS		2010-2019	N/A
333	National Grid	Western NY Reinforcement	5/5/09	N/A	N/A	AC	Cattaraugus, NY	A	NGrid 115kV	NM-NG	12,14	5/31/16	SIS		2015-2019	N/A
338	RG&E	Brown's Race II	8/11/09	6.3	6.3	H	Monroe, NY	B	Station 137 11kV	RG&E	11	5/31/17	FS		2018/09	2018/09
339	RG&E	Transmission Reinforcement	8/17/09	N/A	N/A	AC	Monroe, NY	B	Niagara - Kintigh 345kV	RG&E	12	12/31/16	SIS		2019/W	N/A
347	Franklin Wind Farm, LLC	Franklin Wind	12/2/09	50.4	50.4	W	Delaware, NY	E	Oakdale - Delhi 115kV	NYSEG	7	4/30/16	FES, SRIS		2019/10	2019/12
349	Taylor Biomass Energy-Montgomery, LLC	Taylor Biomass	12/30/09	19	22.5	SW	Orange, NY	G	Maybrook - Rock Tavern 69kV	CHGE	12	11/30/16	SRIS, FS	10/15/13	2017/12	2018/04
358	West Point Partners, LLC	West Point Transmission	9/13/10	1000	1000	DC	Greene, Westchester, NY	F, H	Leeds - Buchanan North 345kV	NM-NG/ConEd	7	4/30/17	FES, SRIS		2021/01	2021/05
361	US PowerGen Co.	Luyster Creek Energy	2/15/11	401	444	CC-D	Queens, NY	J	Astoria West Substation 138kV	CONED	7	6/30/17	FES, SRIS		2021/06	2021/06
363	Poseidon Transmission 1, LLC	Poseidon Transmission	4/27/11	500	500	DC	NJ - Suffolk, NY	K	Ruland Rd. 138kV	LIPA	10	7/31/17	FES, SRIS, FS	2/2/2017	2020/03	2021/01
367	Orange & Rockland	North Rockland Transformer	9/14/11	N/A	N/A	AC	Rockland, NY	G	Line Y94 345kV	ConEd	6	5/31/16	SIS		2018/06	N/A
371	South Mountain Wind, LLC	South Mountain Wind	10/31/11	18	18	W	Delaware, NY	E	River Rd Substation 46kV	NYSEG	7	10/31/17	FES		2020/11	2020/12
372	Dry Lots Wind, LLC	Dry Lots Wind	10/31/11	33	33	W	Herkimer, NY	E	Schuyler - Whitesboro 46kV	NM-NG	7	10/31/17	FES, SRIS		2020/11	2020/12
382	Astoria Generating Co.	South Pier Improvement	5/30/12	91.2	95.5	CT-NG	Kings, NY	J	Gowanus Substation 138kV	ConEd	7	6/30/17	SRIS		2020/06	2020/06
383	NRG Energy, Inc.	Bowline Gen. Station Unit #3	5/30/12	775	814	CC-NG	Rockland, NY	G	Ladentown Substation 345kV	O&R/ConEd	7	6/30/16	SRIS		2022/01	2022/06
386	Vermont Green Line Devco, LLC	Grand Isle Intertie	6/28/12	400	400	DC	Clinton, NY - VT	D	Plattsburgh 230kV-New Haven, VT 345kV	NYP&A	7	9/30/16	FES, SRIS		2018/06	2018/06
387	Cassadaga Wind, LLC	Cassadaga Wind	7/19/12	126	126	W	Chautauqua, NY	A	Dunkirk - Moon Station 115 kV	NM-NG	9	4/30/17	FES, SRIS		2019/09	2019/12
393	NRG Berrians East Development, LLC	Berrians East Replacement	10/16/12	94.2	57	CT-D	Queens, NY	J	Astoria East Substation 138kV	CONED	9	7/31/17	FES, SRIS		2018/06	2018/06
395	Copenhagen Wind Farm, LLC	Copenhagen Wind	11/12/12	79.9	79.9	W	Lewis, NY	E	Black River-Lighthouse Hill 115kV	NM-NG	10	7/31/17	FES, SRIS, FS	2/2/2017	2018/05	2018/11
396	Baron Winds, LLC	Baron Winds	11/30/12	300	300	W	Steuben, NY	C	Hillside - Meyer 230kV	NYSEG	9	5/31/17	FES, SRIS		2019/09	2019/12
396A	New York State Electric & Gas	Wood Street Transformer	12/14/12	N/A	N/A	AC	Putnam, NY	G	Wood St. 345/115kV	NYSEG	6	5/31/16	SIS		2021/12	N/A
398	Black Oak Wind Farm, LLC	Black Oak Wind	1/10/13	12.5	12.5	W	Tompkins, NY	C	Montour - Coddington 115kV	NYSEG	10	5/31/17	SIS, FS	8/28/15	2018/01	2018/03
401	Caitheath Long Island II, LLC	Caitheath Long Island II	3/22/13	599	632	CC-D	Suffolk, NY	K	Sills Road Substation 138kV	LIPA	8	6/30/17	SRIS		2018/04	2019/05
403	PSEG Power New York	Bethlehem Energy Center Up	5/28/13	72	51.2	CC-D	Albany, NY	F	Bethlehem Energy Center	NM-NG	10	2/28/17	FES, SRIS, FS	2/2/2017	2017-2019	2017-2019
414	North America Transmission, LLC	Segment B Enhanced	9/5/13	N/A	N/A	AC	Albany-Dutchess, NY	F, G	New Scotland - P. Valley 345kV	NM-NG/ConEd	5	3/31/17	None		2019	2019
421	EDP Renewables North America	Arkwright Summit	11/1/13	78	78	W	Chautauqua, NY	A	Dunkirk - Falconer 115 kV	NM-NG	9	7/31/17	SRIS		2017/10	2018/10
422	NextEra Energy Resources, LLC	Eight Point Wind Energy Center	11/7/13	101.2	101.2	W	Steuben-Allegany, NY	C	Bennett 115kV	NYSEG	9	6/30/17	FES, SRIS		2018/12	2018/12
429	Orange & Rockland	North Rockland Station	2/12/14	N/A	N/A	AC	Rockland, NY	G	Line Y88 345kV	ConEd	6	5/31/16	SIS		2018/06	N/A
430	H.Q. Energy Services U.S. Inc.	Cedar Rapids Transmission	3/5/14	N/A	N/A	AC	St. Lawrence, NY	D	Dennison - Alcoa 115kV	NM-NG	9	11/30/17	SIS		2019/Q4	N/A
431	Greenidge Generation	Greenidge Unit #4	4/11/14	106.3	106.3	ST-NG	Yates, NY	C	Greenidge Substation 115kV	NYSEG	14	3/31/17	SRIS, FS		I/S	I/S
432	New York State Electric & Gas	South Perry Transformer	4/15/14	N/A	N/A	AC	Wyoming, NY	B	South Perry Substation 115kV	NYSEG	6	5/31/17	SIS		2019/07	N/A
440	Erie Power, LLC	Erie Power	6/2/14	79.4	88	CC-NG	Chautauqua, NY	A	South Ripley Substation 230kV	NM-NG	9	7/31/17	SRIS		2019/02	2019/02
444	Cricket Valley Energy Center, LLC	Cricket Valley Energy Center II	6/18/14	1020	1132	CC-NG	Dutchess, NY	G	Pleasant Valley - Long Mt. 345kV	ConEd	9, 11	7/31/17	SRIS		2017/12	2020/01
445	Lighthouse Wind, LLC	Lighthouse Wind	6/30/14	201.3	201.3	W	Niagara, NY	A	AES Somerset Substation 345kV	NYSEG	7	8/31/17	FES, SRIS		2020/08	2020/12
448	Alps Interconnector, LLC	Alps HVDC	8/12/14	600	600	DC	NE-Rensselaer, NY	F	Alps Substation 345kV	NM-NG	5	1/31/16	FES		2019/06	2019/06
449	Stockbridge Wind, LLC	Stockbridge Wind	8/13/14	72.6	72.6	W	Madison, NY	E	Whitman - Oneida 115kV	NM-NG	7	10/31/17	SRIS		2019/08	2019/12
458	TDI-USA Holdings, Inc.	CH Interconnection	10/24/14	1000	1000	DC	Quebec - NY, NY	J	Astoria Annex Substation 345kV	NYP&A	9	6/30/17	FES, SRIS		2021/Q1	2021/Q2
461	Consolidated Edison Co. of NY	East River 1 Uprate	12/1/14	2	2	CT-NG	New York, NY	J	East River Complex	ConEd	9, 14	4/30/17	SRIS, FS	2/2/2017	I/S	I/S
462	Consolidated Edison Co. of NY	East River 2 Uprate	12/1/14	2	2	CT-NG	New York, NY	J	East River Complex	ConEd	9, 14	4/30/17	SRIS, FS	2/2/2017	I/S	I/S
465	Hudson Transmission Partners	Hudson Transmission NY to PJM	12/15/14	675	675	DC/AC	New York, NY	J	W49th St 345kV - Bergen 230kV	ConEd	7	5/31/17	SRIS		2021/01	2021/05
466	Atlantic Wind, LLC	Bone Run Win	12/16/14	132	132	W	Cattaraugus, NY	A	Falconer - Homer Hill 115kV	NM-NG	7	11/30/16	FES, SRIS		2019/12	2019/12
467	Invernergy Solar Development, LLC	Shoreham Solar	12/22/14	25	25	S	Suffolk, NY	K	Ridge - Wildwood 69kV	LIPA	9	3/31/17	SRIS		2018/06	2018/06
468	Apex Clean Energy LLC	Galloo Island Wind	12/30/14	110.4	110.4	W	Oswego, NY	C	Hammermill - Wine Creek 115kV	NM-NG	9	5/31/17	FES, SRIS		2019/10	2019/12
473	Calverton Solar LLC	Calverton Solar	1/21/15	10	10	S	Suffolk, NY	K	Riverhead - Wildwood 69kV	LIPA	5	12/31/16	FES		2017/Q3	2017/Q3
474	EDP Renewables North America	North Slope Wind	1/30/15	200	200	W	Cattaraugus-Clinton, NY	D	Franklin-230kV	NYP&A	7	3/31/17	FES, SRIS		2021/10	2021/10
477	Riverhead Solar Farm LLC	Riverhead Solar	2/18/15	20	20	S	Suffolk, NY	K	Edwards Substation 138kV	LIPA	9	6/30/17	FES, SIS		2018/10	2018/10
487	LI Energy Storage System	Far Rockaway Battery Storage	3/9/15	20	20	ES	Suffolk, NY	K	Far Rockaway Substation 69kV	LIPA	4	5/31/17	FES		2018/10	2018/10
494	Alabama Ledge Wind Farm LLC	Alabama Ledge Wind	3/31/15	79.8	79.8	W	Genesee, NY	A	Oakfield - Lockport 115kV	NM-NG	9	5/31/17	SRIS		2020/07	2020/10
495	Mohawk Solar LLC	Mohawk Solar	4/2/15	98	98	S	Montgomery, NY	F	St. Johnsville - Marshville 115kV	NM-NG	6	8/31/17	FES, SRIS		2018/09	2018/12

## Attachment V: Interconnection Queue

Queue Pos.	Owner/Developer	Project Name	Date of IR	SP (MW)	WP (MW)	Type/Fuel	Location County/State	Z	Interconnection Point	Utility	S	Last Update	Availability of Studies	FS Complete/ SGIA Tender	Proposed In-Service	Proposed COD
496	Renovo Energy Center, LLC	Renovo Energy Center	4/13/15	480	504	CC-NG	Chemung, NY - PA	C	Homer City - Watercure 345kV	NYSEG	9	11/30/17	FES, SRIS		2019/09	2020/06
497	Invenery Wind Development LLC	Bull Run Wind	4/24/15	303.6	303.6	W	Clinton, NY	D	Patnode 230kV	NYP&A	5	6/30/16	FES		2018/10	2018/12
498	ESC Tioga County Power, LLC	Tioga County Power	4/29/15	550	550	CC-NG	Chemung, NY - PA	C	Homer City - Watercure 345kV	NYSEG	9	4/30/17	FES, SRIS		2020/06	2021/05
505	RES America Developments Inc.	Ball Hill Wind	6/2/15	100	100	W	Chautauqua, NY	A	Dunkirk - Gardenville 230kV	NM-NG	9	4/30/17	SRIS		2018/09	2018/12
506	Empire State Connector Corp.	Empire State Connector	6/10/15	1000	1000	DC	Onondaga-New York, NY	C, J	Clay - Gowanus 345kV	NYP&A/NM-NG/ConEd	4	5/31/17	FES		2021/10	2022/01
510	Bayonne Energy Center	Bayonne Energy Center II	8/3/15	120.4	129.4	CT-D	Bayonne, NJ	J	Gowanus Substation 345kV	ConEd	9	7/31/17	SRIS		2017/11	2018/02
511	AG Energy, LP	Ogdensburg	9/4/15	79	90.1	CT-NG	St. Lawrence, NY	E	North Ogdensburg Substation	NM-NG	9	10/31/17	SRIS		2018/05	2018/05
512	Northbrook Lyons Falls	Lyons Falls Mill Hydro	9/11/15	14.1	14.1	H	Lewis, NY	E	Taylorville- Boonville 115 kV	NM-NG	7	11/30/16	SIS		2018/03	2018/03
513	Stony Creek Energy LLC	Orangeville	9/21/15	20	20	ES	Wyoming, NY	A	Stony Creek 230kV	NYSEG	7	8/31/17	SIS		2018/03	2018/03
514	RES Americas Developments Inc.	Empire Wind	10/1/15	120	120	W	Rensselaer, NY	F	Stephentown - Greenbush 115kV	NM-NG	4	2/28/17	FES		2019/10	2019/10
515	North Bergen Liberty Generation Center LLC	Liberty Generation	10/7/15	1000	1000	CC-NG	New York, NY	J	W49th St 345kV	ConEd	3	9/30/17	None		2019/06	2019/06
516	East Coast Power LLC	Linden Cogen Uprate	10/12/15	234.4	234.4	CT-NG	Linden, NJ-NY, NY	J	Linden Cogen 345kV	ConEd	9	5/31/17	SRIS		2020/05	2020/05
518	PPL Electric Utilities	Compass	10/27/15	N/A	N/A	AC	PA-Rockland, NY	G	Lackawanna - Ramapo 345kV	ConEd	5	8/31/17	FES		2023/12	2023/12
519	Canisteo Wind Energy LLC	Canisteo Wind	11/2/15	290.7	290.7	W	Steuben, NY	C	Bennett 115kV	NYSEG	5	10/31/16	FES		2019/10	2019/12
520	EDP Renewables North America	Rolling Upland Wind	12/3/15	72.6	72.6	W	Madison, NY	E	County Line - Boethertown 115kV	NYSEG	5	6/30/17	FES		2019/07	2019/10
521	Invenery NY, LLC	Bull Run II Wind	12/15/15	145.4	145.4	W	Clinton, NY	D	Patnode 230kV	NYP&A	5	6/30/17	FES		2018/10	2018/12
522	NYC Energy LLC	NYC Energy	12/16/15	79.9	79.9	CT-NG	New York, NY	J	Hudson Avenue East 138kV	ConEd	5	11/30/17	FES		2019/10	2019/10
523	Dunkirk Power LLC	Dunkirk Unit 2	12/17/15	75	75	ST-NG	Chautauqua, NY	A	Dunkirk 115kV	NM-NG	9	11/30/17	SRIS		2018/08	2018/12
524	Dunkirk Power LLC	Dunkirk Unit 3 & 4	12/17/15	370	370	ST-NG	Chautauqua, NY	A	Dunkirk 230kV	NM-NG	9	11/30/17	SRIS		2018/08	2018/12
525	New York Power Authority	Western NY Energy Link	12/18/15	N/A	N/A	AC	Niagara, NY	A	Niagara - Stolle - Gardenville	NYP&A/NYSEG	6	5/31/17	SIS		2020	N/A
526	Atlantic Wind, LLC	North Ridge Wind	12/23/15	100	100	W	St. Lawrence, NY	E	Colton - Malone 115kV	NM-NG	6	11/30/17	FES, SRIS		2019/11	2019/12
530	NextEra Energy Transmission New York, Inc.	Empire State Line	1/4/16	N/A	N/A	AC	Niagara-Erie, NY	A	Dysinger - Stolle 345kV	NYP&A/NYSEG	6	10/31/17	SIS		2020/05	2020/05
531	Invenery Wind Development LLC	Number 3 Wind Energy	1/11/16	105.8	105.8	W	Lewis, NY	E	Lowville - Bremen 115kV	NM-NG	5	2/28/17	FES		2019/10	2019/12
532	RES America Developments LLC	Allegany Wind	2/1/16	100	100	W	Allegany, NY	B	Freedom Substation	Village of Arcade	5	4/30/17	None		2018/09	2018/12
534	OneEnergy Development, LLC	Great Valley Solar	2/3/16	20	20	S	Washington, NY	F	Battenkill Substation	NM-NG	7	11/30/17	FES, SIS		2018/02	2018/02
535	sPower Development Company, LLC	Riverhead Expansion	2/23/16	36	36	S	Suffolk, NY	K	Edwards Substation 138kV	LIPA	5	11/30/17	FES		2020/11	2020/12
537	NextEra Energy Transmission New York, Inc.	Segment A	4/25/16	N/A	N/A	AC	Oneida-Albany NY	E, F	Edic - New Scotland 345kV	NM-NG/NYP&A	5	8/31/17	None		2018/11	2018/11
538	NextEra Energy Transmission New York, Inc.	Segment B	4/25/16	N/A	N/A	AC	Albany-Dutchess, NY	F, G	Greenbush - PV 345kV	NM-NG/NYSEG/CHGE/ConEd	5	8/31/17	None		2018/11	2018/11
539	NextEra Energy Transmission New York, Inc.	Segment B Alt	4/25/16	N/A	N/A	AC	Albany-Dutchess, NY	F, G	Greenbush - PV 345kV	NM-NG/NYSEG/CHGE/ConEd	5	8/31/17	None		2018/11	2018/11
540	AVANGRID	Connect NY Edic - PV	4/28/16	1000	1000	DC	Oneida-Dutchess, NY	E, G	Edic - PV 345kV	NM-NG/NYSEG/CHGE/ConEd	5	12/31/16	None		2020/12	2020/12
541	AVANGRID	Connect NY Edic - Ramapo	4/28/16	1000	1000	DC	Oneida-Dutchess, NY	E, G	Edic - Ramapo 345kV	NM-NG	5	10/31/16	None		2020/12	2020/12
542	National Grid	Segment A Edic-New Scotland	5/4/16	N/A	N/A	AC	Oneida-Albany NY	E, F	Edic - New Scotland 345kV	NM-NG	5	11/30/16	None		2021/12	2021/12
543	National Grid	Segment B Knickerbocker-PV	5/4/16	N/A	N/A	AC	Albany-Dutchess, NY	F, G	Greenbush - PV 345kV	NM-NG/NYSEG/CHGE/ConEd	5	11/30/16	None		2021/12	2021/12
545	Sky High Solar, LLC	Sky High Solar	5/10/16	20	20	S	Onondaga, NY	C	115kV	NM-NG	5	7/31/17	FES		2018/12	2018/12
545A	NextEra Energy Transmission New York, Inc.	Empire State Line Alt	5/17/16	N/A	N/A	AC	Niagara-Erie, NY	A	Dysinger - Stolle 345kV	NYP&A/NYSEG	6	10/31/17	SIS		2020/06	2020/06
546	Atlantic Wind, LLC	Roaring Brook Wind	5/19/16	78	78	W	Lewis, NY	E	Chases Lake Substation	NM-NG	5	7/31/17	FES		2019/11	2019/12
547	North America Transmission, LLC	Dysinger-Stolle	5/25/16	N/A	N/A	AC	Niagara-Erie, NY	A	Dysinger - Stolle 345kV	NYP&A/NYSEG/CHGE/ConEd	6	10/31/17	SIS		2020/06	2020/06
555	North America Transmission, LLC	Segment A Base	7/6/16	N/A	N/A	AC	Oneida-Albany NY	E, F	Edic - New Scotland 345kV	NM-NG/NYSEG/CHGE/ConEd	5	1/31/17	None		2020/01	2020/01
556	North America Transmission, LLC	Segment A Double Circuit	7/6/16	N/A	N/A	AC	Oneida-Albany NY	E, F	Edic - New Scotland 345kV	NM-NG/NYSEG/CHGE/ConEd	5	1/31/17	None		2020/06	2020/06
557	North America Transmission, LLC	Segment A Enhanced	7/6/16	N/A	N/A	AC	Oneida-Albany NY	E, F	Edic - New Scotland 345kV	NM-NG/NYSEG/CHGE/ConEd	5	1/31/17	None		2020/01	2020/01
558	North America Transmission, LLC	Segment A 765	7/6/16	N/A	N/A	AC	Oneida-Albany NY	E, F	Edic - New Scotland 345kV	NM-NG/NYSEG/CHGE/ConEd	5	12/31/16	None		2020/01	2020/01
559	North America Transmission, LLC	Segment B Base	7/6/16	N/A	N/A	AC	Oneida-Albany NY	E, F	Knickerbocker - PV 345kV	NM-NG/NYSEG/CHGE/ConEd	5	1/31/17	None		2019/09	2019/09
560	Atlantic Wind, LLC	Deer River Wind	7/8/16	100	100	W	Lewis, NY	E	Black River-Lighthouse Hill 115kV	NM-NG	4	10/31/17	FES		2019/11	2019/12
561	Astoria Generating Co. LP	Astoria Generating Unit 4	7/18/16	385	385	ST-D	New York, NY	J	Astoria West Substation 138 kV	ConEd	5	11/30/17	None		2018/05	2018/05
563	Double Lock Solar, LLC	Double Lock Solar	7/25/16	20	20	S	Herkimer, NY	E	Marshville 115kV	NM-NG	4	4/30/17	None		2018/12	2018/12
564	Rock District Solar, LLC	Rock District Solar	7/25/16	20	20	S	Schoharie, NY	F	Sharon - Cobleskill 69kV	NM-NG	4	4/30/17	None		2018/12	2018/12
565	Tayandenga Solar, LLCe	Tayandenga Solar	7/25/16	20	20	S	Herkimer, NY	E	St. Johnsville - Inghams 115kV	NM-NG	4	4/30/17	None		2018/12	2018/12
566	New York Power Authority	MA 1 & 2 Rebuild	8/4/16	N/A	N/A	AC	St. Lawrence-Lewis, NY	D, E	Moses & Adirondack 230kV	NYP&A	5	10/31/16	None		2022/12	2022/12
567	Tribes Hill Solar, LLC	Tribes Hill Solar	8/10/16	20	20	S	Mongomery, NY	F	Church St. 69kV	NM-NG	4	4/30/17	None		2018/12	2018/12
568	Turkey Hollow Solar, LLC	Turkey Hollow Solar	8/16/16	20	20	S	Delaware, NY	F	Grand Gorge - Axtell Road 115kV	NYSEG	7	11/30/17	SIS		2018/12	2018/12
570	Hecate Energy, LLC	Albany County	8/17/16	20	20	S	Albany, NY	F	Long Lane - Lafarge 115kV	NM-NG	5	10/31/17	None		2019/06	2019/06

## Attachment V: Interconnection Queue

Queue Pos.	Owner/Developer	Project Name	Date of IR	SP (MW)	WP (MW)	Type/ Fuel	Location County/State	Z	Interconnection Point	Utility	S	Last Update	Availability of Studies	FS Complete/ SGIA Tender	Proposed In-Service	Proposed COD
671	East Coast Power LLC	Linden Cogen Uprate	9/25/17	32.0	23.0	CT-NG	Linden, NJ-NY, NY	J	Linden Cogen 345kV	ConEd	4	11/30/17	None		2018/01	2018/01
672	LS Power Development, LLC	Helix Ravenswood I	10/6/17	30.2	30.2	NG	New York, NY	J	Rainey Substation 345kV	ConEd	2	10/31/17	None		2022/07	2023/01
673	LS Power Development, LLC	Helix Ravenswood II	10/6/17	72.4	72.4	NG	New York, NY	J	Rainey Substation 345kV	ConEd	2	10/31/17	None		2022/07	2023/01
674	Helix Ravenswood, LLC	Vernon Battery Storage I	10/24/17	10	10	ES	Queens, NY	J	Vernon Substation	ConEd	4	11/30/17	None		2020/05	2020/05
675	Helix Ravenswood, LLC	Vernon Battery Storage II	10/24/17	10	10	ES	Queens, NY	J	Vernon Substation	ConEd	4	11/30/17	None		2020/05	2020/05
677	Granada Solar, LLC	Grange Solar	10/25/17	20	20	S	Nanticoke, NY	C	Vincent Cors 34.5kV	NYSEG	1	11/30/17	None		2019/06	2019/06
678	LI Solar Generation, LLC	Calverton Solar Energy Center	10/26/17	22.9	22.9	S	Suffolk, NY	K	Edwards Substation 138kV	LIPA	1	11/30/17	None		2020/12	2020/12

Number of new projects during November	2
Number of new projects year to date	85
Number withdrawn during November	4
Number withdrawn year to date	38

- NOTES:
- The column labeled 'SP' refers to the maximum summer megawatt electrical output. The column labeled 'WP' refers to the maximum winter megawatt electrical output.
  - Type / Fuel. Key: ST=Steam Turbine, CT=Combustion Turbine, CC=Combined Cycle, CS= Steam Turbine & Combustion Turbine, H=Hydro, PS=Pumped Storage, W=Wind, NU=Nuclear, NG=Natural Gas, M=Methane, SW=Solid Waste, S=Solar, Wo=Wood, F=Flywheel ES=Energy Storage, O=Oil, C=Coal, D=Dual Fuel, AC=AC Transmission, DC=DC Transmission, L=Load, FC=Fuel Cell
  - The column labeled 'Z' refers to the zone
  - The column labeled 'S' refers to the status of the project in the NYISO's LFIP. 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=FS Pending, 8=Rejected Cost Allocation/Next FS Pending, 9=FS 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
  - Availability of Studies Key: None=Not Available, FES=Feasibility Study Available, SRIS=System Reliability Impact Study Available, FS=Facilities Study and/or ATRA Available
  - FS Complete/SGIA Tender refers to the Attachment X milestone used to apply the 4-year COD limitation.
  - Proposed in-service dates and Commerical Operation Dates (COD) are shown in format Year/Qualifier, where Qualifier may indicate the month, season, or quarter.

DPS/State - SIR Interconnection Queue (for Projects not subject to the NYISO process):

<http://www3.dps.ny.gov/W/PSCWeb.nsf/All/286D2C179E9A5A8385257FBF003F1F7E?OpenDocument>

## Attachment VI: Interconnection Queue

1	Scoping Meeting Pending	Interconnection Request has been received, but scoping meeting has not yet occurred
2	FES Pending	Awaiting execution of Feasibility Study Agreement
3	FES in Progress	Feasibility Study is in Progress
4	SRIS/SIS Pending	Awaiting execution of System Reliability Impact Study (SRIS) or System Impact Study (SIS) Agreement and/or OC approval of SRIS or SIS scope <sup>38</sup>
5	SRIS/SIS in Progress	
6	SRIS/SIS Approved	SRIS/SIS Approved by NYISO Operating Committee
7	FS Pending	Awaiting execution of Facilities Study Agreement
8	Rejected Cost Allocation/ Next FS Pending	Project was in prior Class Year, but rejected cost allocation—Awaiting execution of Facilities Study Agreement for next Class Year or the start of the next Class Year
9	FS in Progress	Class Year Facilities Study or Small Generator Facilities Study is in Progress
10	Accepted Cost Allocation/ IA in Progress	Interconnection Agreement is being negotiated
11	IA Completed	Interconnection Agreement is executed and/or filed with FERC
12	Under Construction	Project is under construction
13	In Service for Test	
14	In Service Commercial	

<sup>38</sup> System Reliability Impact Study (SRIS) applies to a Large Facility Interconnection Request. System Impact Study (SIS) applies to a Small Generator Interconnection Request or a non-merchant transmission study request.

## Attachment VII: November 1999 – October 2017 Installed Capacity Auction Activity

	NYCA								NYC								LI								G-J Locality							
	Capacity Period* (Strip)		Monthly Auction **		Spot Market **		Minimum Required		Excess Sold		Capacity Period* (Strip)		Monthly Auction		Spot Market		Minimum Required		Excess Sold		Capacity Period* (Strip)		Monthly Auction		Spot Market		Minimum Required		Excess Sold			
Month	MW	Price	MW	Price	MW	Price	MW		MW	Price	MW	Price	MW	Price	MW		MW	Price	MW	Price	MW	Price	MW	Price	MW	Price	MW	Price	MW	Price	MW	
Nov-99							35,563.1								8,305.6											4,555.3						
Dec-99							35,563.1								8,305.6											4,555.3						
Jan-00	Installed Capacity Market Existed but all purchases and sales were bilateral							35,563.1		Installed Capacity Market Existed but all purchases and sales were bilateral							8,305.6		Installed Capacity Market Existed but all purchases and sales were bilateral							4,555.3						
Feb-00								35,563.1									8,305.6									4,555.3						
Mar-00							35,563.1								8,305.6											4,555.3						
Apr-00							35,563.1								8,305.6											4,555.3						
May-00	1,976.0	\$1.50	434.2	\$1.30	32.7	\$0.50	35,636.0	1,976.0	5,408.8	\$8.75	59.4	\$12.50	0.0	-	8,272.0		0.0	-	0.0	-	0.0	-	0.0	-	4,638.0							
Jun-00	1,976.0	\$1.50	528.4	\$1.40	37.1	\$1.28	35,563.1	1,976.0	5,408.8	\$8.75	313.4	\$9.46	52.7	\$12.50	8,272.0		0.0	-	0.0	-	0.0	-	0.0	-	4,638.0							
Jul-00	1,976.0	\$1.50	344.2	\$1.80	140.8	\$1.98	35,563.1	1,976.0	5,408.8	\$8.75	342.7	\$9.40	100.0	\$12.50	8,272.0		0.0	-	0.0	-	0.0	-	0.0	-	4,638.0							
Aug-00	1,976.0	\$1.50	351.4	\$1.62	194.8	\$1.77	35,563.1	1,976.0	5,408.8	\$8.75	332.6	\$9.42	133.9	\$12.50	8,272.0		0.0	-	0.0	-	0.0	-	0.0	-	4,638.0							
Sep-00	1,976.0	\$1.50	648.9	\$1.32	81.3	\$1.16	35,563.1	1,976.0	5,408.8	\$8.75	344.5	\$9.40	149.5	\$12.50	8,272.0		0.0	-	0.0	-	0.0	-	0.0	-	4,638.0							
Oct-00	1,976.0	\$1.50	681.6	\$1.30	96.9	\$0.89	35,563.1	1,976.0	5,408.8	\$8.75	304.2	\$9.49	214.0	\$12.50	8,272.0		0.0	-	0.0	-	0.0	-	0.0	-	4,638.0							
Nov-00	4,010.6	\$1.04	1,813.6	\$1.00	157.7	\$0.80	35,563.1	4,010.6	4,861.4	\$8.75	735.0	\$8.74	170.3	\$8.75	8,272.0		0.0	-	0.0	-	0.0	-	0.0	-	4,638.0							
Dec-00	4,010.6	\$1.04	1,854.1	\$0.97	167.2	\$0.86	35,563.1	4,010.6	4,861.4	\$8.75	785.1	\$8.74	154.8	\$8.75	8,272.0		0.0	-	0.0	-	0.0	-	0.0	-	4,638.0							
Jan-01	4,010.6	\$1.04	1,847.6	\$0.97	170.5	\$0.85	35,563.1	4,010.6	4,861.4	\$8.75	899.5	\$8.74	154.8	\$8.75	8,272.0		0.0	-	0.0	-	0.0	-	0.0	-	4,638.0							
Feb-01	4,010.6	\$1.04	1,893.8	\$0.95	177.2	\$0.83	35,563.1	4,010.6	4,861.4	\$8.75	921.7	\$8.71	154.8	\$8.75	8,272.0		0.0	-	0.0	-	0.0	-	0.0	-	4,638.0							
Mar-01	4,010.6	\$1.04	2,032.8	\$0.95	208.1	\$0.79	35,563.1	4,010.6	4,861.4	\$8.75	936.5	\$8.74	156.0	\$8.75	8,272.0		0.0	-	0.0	-	0.0	-	0.0	-	4,638.0							
Apr-01	4,010.6	\$1.04	1,659.7	\$0.87	192.3	\$0.59	35,563.1	4,010.6	4,861.4	\$8.75	985.6	\$8.56	156.7	\$8.72	8,272.0		0.0	-	0.0	-	0.0	-	0.0	-	4,638.0							
May-01	2,738.6	\$1.90	852.3	\$2.25	1,022.2	\$9.58	36,132.0	2,738.6	5,316.6	\$8.75	248.7	\$8.75	235.1	\$12.50	8,375.0	(est.)	0.0	-	0.0	-	3.2	\$10.83	4,625.0									
Jun-01	2,738.6	\$1.90	397.6	\$2.68	1,521.0	\$9.41	36,132.0	2,738.6	5,316.6	\$8.75	228.4	\$10.92	299.0	\$12.18	8,375.0	(est.)	0.0	-	0.0	-	7.0	\$10.83	4,625.0									
Jul-01	2,738.6	\$1.90	1,776.6	\$4.31	1,534.9	\$9.44	36,132.0	2,738.6	5,316.6	\$8.75	407.8	\$9.77	292.5	\$8.83	8,375.0	(est.)	0.0	-	0.0	-	20.2	\$10.83	4,625.0									
Aug-01	2,738.6	\$1.90	1,788.4	\$4.56	1,601.3	\$9.35	36,132.0	2,738.6	5,316.6	\$8.75	440.1	\$8.38	350.1	\$9.46	8,375.0	(est.)	0.0	-	0.0	-	21.3	\$10.83	4,625.0									
Sep-01	2,738.6	\$1.90	1,701.2	\$4.16	1,498.0	\$9.21	36,132.0	2,738.6	5,316.6	\$8.75	434.9	\$8.42	316.0	\$8.34	8,375.0	(est.)	0.0	-	0.0	-	33.0	\$10.83	4,625.0									
Oct-01	2,738.6	\$1.90	1,787.1	\$4.03	1,473.4	\$9.14	36,132.0	2,738.6	5,316.6	\$8.75	430.1	\$7.99	343.4	\$8.72	8,375.0	(est.)	0.0	-	0.0	-	33.0	\$10.83	4,625.0									
Nov-01	1,760.4	\$2.00	878.0	\$0.10	5.8	\$ -	32,892.3	1,760.4	3,972.5	\$9.40	772.8	\$9.00	77.7	\$4.80	7,613.3	0.0	-	0.6	\$3.50	8.5	\$12.33	4,077.6										
Dec-01	1,760.4	\$2.00	687.2	\$0.49	6.5	\$ -	32,892.3	1,760.4	3,972.5	\$9.40	906.8	\$6.88	11.5	\$ -	7,613.3	0.0	-	1.3	\$3.50	37.4	\$12.33	4,077.6										
Jan-02	1,760.4	\$2.00	750.5	\$0.84	133.0	\$0.75	32,892.3	1,760.4	3,972.5	\$9.40	492.6	\$5.47	377.3	\$8.25	7,613.3	0.0	-	1.3	\$5.00	39.7	\$12.33	4,077.6										
Feb-02	1,760.4	\$2.00	836.2	\$0.70	25.5	\$ -	32,892.3	1,760.4	3,972.5	\$9.40	631.1	\$6.69	229.3	\$9.20	7,613.3	0.0	-	0.0	\$ -	40.6	\$11.50	4,077.6										
Mar-02	1,760.4	\$2.00	901.3	\$0.61	30.0	\$0.25	32,892.3	1,760.4	3,972.5	\$9.40	784.3	\$6.92	90.6	\$7.50	7,613.3	0.0	-	14.0	\$11.50	26.4	\$11.49	4,077.6										
Apr-02	1,760.4	\$2.00	677.9	\$0.69	5.6	\$0.02	32,892.3	1,760.4	3,972.5	\$9.40	932.9	\$7.12	11.6	\$9.40	7,613.3	0.0	-	41.4	\$11.48	0.0	-	4,077.6										
May-02	3,201.6	\$1.75	552.1	\$0.33	2.3	\$ -	32,479.5	3,201.6	4,355.2	\$9.20	684.1	\$9.38	30.5	\$9.39	7,621.6	0.0	-	0.0	-	0.0	-	4,177.8										
Jun-02	3,201.6	\$1.75	438.3	\$0.36	20.3	\$0.01	32,479.5	3,201.6	4,355.2	\$9.20	671.2	\$6.11	16.7	\$0.50	7,621.6	0.0	-	0.0	-	0.0	-	4,177.8										
Jul-02	3,201.6	\$1.75	721.9	\$0.97	11.1	\$0.01	32,479.5	3,201.6	4,355.2	\$9.20	684.7	\$5.34	0.3	\$0.01	7,621.6	0.0	-	0.0	-	0.0	-	4,177.8										
Aug-02	3,201.6	\$1.75	722.6	\$0.91	55.4	\$0.01	32,479.5	3,201.6	4,355.2	\$9.20	693.8	\$5.15	15.1	\$2.00	7,621.6	0.0	-	0.0	-	0.0	-	4,177.8										
Sep-02	3,201.6	\$1.75	714.0	\$0.25	71.2	\$0.01	32,479.5	3,201.6	4,355.2	\$9.20	688.4	\$4.83	24.5	\$0.01	7,621.6	0.0	-	0.0	-	0.0	-	4,177.8										
Oct-02	3,201.6	\$1.75	712.1	\$0.16	1.4	\$ -	32,479.5	3,201.6	4,355.2	\$9.20	699.0	\$4.72	19.2	\$1.95	7,621.6	0.0	-	0.0	-	0.0	-	4,177.8										
Nov-02	3,486.7	\$0.65	1,024.3	\$0.50	85.0	\$0.40	34,169.7	3,486.7	4,540.0	\$7.00	748.1	\$6.40	61.1	\$4.10	8,021.8	0.0	-	0.0	-	0.0	-	4,256.2										
Dec-02	3,486.7	\$0.65	1,219.3	\$0.28	51.4	\$0.10	34,169.7	3,486.7	4,540.0	\$7.00	762.7	\$4.09	29.9	\$2.80	8,021.8	0.0	-	0.0	-	0.0	-	4,256.2										
Jan-03	3,486.7	\$0.65	1,584.4	\$0.26	189.1	\$2.10	34,169.7	3,486.7	4,540.0	\$7.00	787.9	\$4.02	13.3	\$2.10	8,021.8	0.0	-	0.0	-	0.0	-	4,256.2										
Feb-03	3,486.7	\$0.65	1,623.1	\$0.34	85.6	\$0.50	34,169.7	3,486.7	4,540.0	\$7.00	808.6	\$3.51	1.5	\$3.00	8,021.8	0.0	-	0.0	-	0.0	-	4,256.2										
Mar-03	3,486.7	\$0.65	1,825.9	\$0.32	58.8	\$0.25	34,169.7	3,486.7	4,540.0	\$7.00	799.7	\$3.97	21.9	\$4.00	8,021.8	0.0	-	0.0	-	0.0	-	4,256.2										
Apr-03	3,486.7	\$0.65	1,571.5	\$0.15	4.2	\$0.01	34,169.7	3,486.7	4,540.0	\$7.00	829.7	\$3.39	9.1	\$3.60	8,021.8	0.0	-	0.0	-	0.0	-	4,256.2										
May-03	2,889.2	\$1.67	1,634.8	\$1.30	101.5	\$0.25	35,303.5	0.0	2,501.7	\$11.22	3,016.3	\$10.00	110.2	\$12.36	8,356.7	0.0	6.6	\$9.41	2.2	\$24.00	0.2	\$23.00	4,415.3	0.0								
Jun-03	2,889.2	\$1.67	1,866.0	\$1.06	2,148.7	\$2.34	35,303.5	2,073.2	2,501.7	\$11.22	683.0	\$13.78	2,375.5	\$11																		



## Attachment VII: November 1999 – October 2017 Installed Capacity Auction Activity

	NYCA							NYC							LI							G-J Locality										
	Capability Period* (Strip)		Monthly Auction **		Spot Market **		Minimum Required	Excess Sold	Capability Period* (Strip)		Monthly Auction		Spot Market		Minimum Required	Excess Sold	Capability Period* (Strip)		Monthly Auction		Spot Market		Minimum Required	Excess Sold	Capability Period* (Strip)		Monthly Auction		Spot Market		Minimum Required	Excess Sold
	MW	Price	MW	Price	MW	Price	MW	MW	MW	Price	MW	Price	MW	Price	MW	MW	MW	Price	MW	Price	MW	Price	MW	MW	MW	Price	MW	Price	MW	Price	MW	MW
May-04	2,441.0	\$1.68	2,489.7	\$1.65	6,189.1	\$1.31	35,584.5	3,328.0	1,245.3	\$11.15	2,022.4	\$11.16	2,898.3	\$11.42	8,444.6	214.9	11.2	\$8.00	1.6	\$8.00	97.5	\$9.83	4,761.5	81.2								
Jun-04	2,441.0	\$1.68	2,133.6	\$1.48	6,239.9	\$1.27	35,584.5	3,355.3	1,245.3	\$11.15	2,532.8	\$11.29	2,391.9	\$11.42	8,444.6	214.9	11.2	\$8.00	11.2	\$9.29	90.8	\$9.79	4,761.5	84.3								
Jul-04	2,441.0	\$1.68	1,756.7	\$1.29	6,410.6	\$1.04	35,584.5	3,518.8	1,245.3	\$11.15	2,705.7	\$11.29	2,261.3	\$11.42	8,444.6	214.9	11.2	\$8.00	15.9	\$8.67	193.4	\$8.42	4,761.5	192.9								
Aug-04	2,441.0	\$1.68	2,046.5	\$1.15	6,544.7	\$1.17	35,584.5	3,428.1	1,245.3	\$11.15	3,126.1	\$11.25	1,854.4	\$11.42	8,444.6	214.9	11.2	\$8.00	16.4	\$8.05	213.1	\$8.16	4,761.5	213.1								
Sep-04	2,441.0	\$1.68	2,258.8	\$1.16	6,456.2	\$1.07	35,584.5	3,499.6	1,245.3	\$11.15	3,272.4	\$11.25	1,798.6	\$11.42	8,444.6	214.9	11.2	\$8.00	16.2	\$8.06	214.2	\$8.15	4,761.5	214.2								
Oct-04	2,441.0	\$1.68	2,460.8	\$1.18	6,633.9	\$1.12	35,584.5	3,465.6	1,245.3	\$11.15	2,771.9	\$11.21	2,336.3	\$11.42	8,444.6	214.9	11.2	\$8.00	16.2	\$8.06	214.2	\$8.15	4,761.5	214.2								
Nov-04	3,050.7	\$0.60	2,344.4	\$0.70	6,730.6	\$0.70	35,515.9	3,759.3	2,249.4	\$6.68	1,253.8	\$6.96	3,137.5	\$7.12	8,469.5	705.9	13.9	\$4.00	10.9	\$4.00	358.2	\$6.34	4,736.0	357.7								
Dec-04	3,050.7	\$0.60	3,058.4	\$0.69	6,011.5	\$0.61	35,515.9	3,823.5	2,249.4	\$6.68	1,606.0	\$7.07	2,758.3	\$7.12	8,469.5	705.9	13.9	\$4.00	9.0	\$4.33	368.5	\$6.21	4,736.0	367.6								
Jan-05	3,050.7	\$0.60	2,945.8	\$0.59	5,928.6	\$0.27	35,515.9	4,064.8	2,249.4	\$6.68	2,433.6	\$7.03	1,919.3	\$7.12	8,469.5	705.9	13.9	\$4.00	9.0	\$3.81	372.1	\$6.16	4,736.0	371.4								
Feb-05	3,050.7	\$0.60	2,769.6	\$0.49	6,256.2	\$0.25	35,515.9	4,082.2	2,249.4	\$6.68	2,596.5	\$7.03	1,761.5	\$7.12	8,469.5	705.9	13.9	\$4.00	7.6	\$3.68	373.3	\$6.14	4,736.0	372.8								
Mar-05	3,050.7	\$0.60	2,890.9	\$0.45	6,025.4	\$0.41	35,515.9	3,966.2	2,249.4	\$6.68	2,671.8	\$7.03	1,784.0	\$7.12	8,469.5	705.9	13.9	\$4.00	7.0	\$3.54	371.9	\$6.16	4,736.0	371.9								
Apr-05	3,050.7	\$0.60	2,891.5	\$0.48	6,241.1	\$0.27	35,515.9	4,064.8	2,249.4	\$6.68	2,611.4	\$7.03	1,851.9	\$7.12	8,469.5	705.9	13.9	\$4.00	7.0	\$3.54	367.4	\$6.23	4,736.0	365.8								
May-05	2,624.6	\$0.75	1,630.0	\$0.75	6,975.7	\$2.00	35,799.2	3,110.8	2,547.2	\$11.68	1,035.2	\$11.86	2,547.1	\$12.03	8,526.8	284.0	10.6	\$8.00	2.7	\$8.00	85.5	\$12.15	4,904.9	85.4								
Jun-05	2,624.6	\$0.75	1,752.9	\$1.40	6,306.6	\$1.96	35,799.2	3,135.2	2,547.2	\$11.68	2,657.9	\$11.80	974.2	\$11.96	8,526.8	291.3	10.6	\$8.00	2.0	\$8.50	100.4	\$11.96	4,904.9	97.8								
Jul-05	2,624.6	\$0.75	4,077.8	\$1.29	5,073.3	\$1.00	35,799.2	3,703.4	2,547.2	\$11.68	2,742.6	\$11.82	992.5	\$11.95	8,526.8	292.5	10.6	\$8.00	4.3	\$9.00	195.3	\$10.48	4,904.9	195.0								
Aug-05	2,624.6	\$0.75	3,819.1	\$0.81	5,147.3	\$1.00	35,799.2	3,703.4	2,547.2	\$11.68	2,689.7	\$11.82	1,134.8	\$11.86	8,526.8	301.6	10.6	\$8.00	4.6	\$8.50	222.5	\$10.06	4,904.9	222.5								
Sep-05	2,624.6	\$0.75	3,412.5	\$0.81	5,303.5	\$1.45	35,799.2	3,436.7	2,547.2	\$11.68	2,842.0	\$11.82	1,086.6	\$11.70	8,526.8	318.2	10.6	\$8.00	4.6	\$8.61	233.0	\$9.90	4,904.9	233.0								
Oct-05	2,624.6	\$0.75	3,861.2	\$1.03	5,142.0	\$1.25	35,799.2	3,555.2	2,547.2	\$11.68	2,644.5	\$11.82	1,238.1	\$11.86	8,526.8	301.6	10.6	\$8.00	4.6	\$8.71	260.0	\$9.49	4,904.9	260.0								
Nov-05	2,987.1	\$0.62	2,676.1	\$0.67	6,661.9	\$0.85	35,761.5	3,789.0	1,846.4	\$5.11	943.9	\$6.39	3,865.4	\$6.55	8,569.2	854.3	15.0	\$0.68	10.0	\$5.00	330.5	\$8.37	4,962.4	330.5								
Dec-05	2,987.1	\$0.62	3,466.7	\$0.68	6,306.0	\$0.65	35,761.5	3,907.2	1,846.4	\$5.11	2,130.4	\$6.44	2,674.7	\$6.55	8,569.2	854.3	15.0	\$0.68	10.1	\$4.99	344.5	\$8.16	4,962.4	344.5								
Jan-06	2,987.1	\$0.62	3,966.1	\$0.63	5,625.3	\$2.01	35,761.5	3,102.5	1,846.4	\$5.11	2,558.2	\$6.21	2,116.6	\$6.55	8,569.2	854.3	15.0	\$0.68	10.0	\$5.00	288.1	\$9.00	4,962.4	288.1								
Feb-06	2,987.1	\$0.62	3,379.8	\$1.01	6,432.7	\$1.67	35,761.5	3,305.2	1,846.4	\$5.11	3,162.5	\$5.78	2,037.4	\$6.55	8,569.2	854.3	15.0	\$0.68	10.0	\$5.00	343.1	\$8.18	4,962.4	343.1								
Mar-06	2,987.1	\$0.62	5,214.9	\$0.58	5,234.1	\$0.57	35,761.5	3,954.5	1,846.4	\$5.11	2,704.7	\$5.78	2,031.7	\$6.55	8,569.2	854.3	15.0	\$0.68	10.0	\$5.00	350.8	\$8.07	4,962.4	350.8								
Apr-06	2,987.1	\$0.62	4,899.7	\$0.51	5,357.5	\$0.40	35,761.5	4,055.0	1,846.4	\$5.11	3,237.1	\$5.88	1,540.4	\$6.55	8,569.2	854.3	15.0	\$0.68	10.0	\$5.00	346.1	\$8.14	4,962.4	346.1								
May-06 *	3,014.5	\$1.44	2,196.7	\$1.64	6,936.8	\$3.25	37,154.2	2,526.4	2,186.7	\$12.35	1,422.7	\$12.43	2,209.8	\$12.71	8,798.1	255.9	4.0	\$6.50	9.0	\$6.50	166.8	\$11.15	5,110.3	165.0								
Jun-06	3,014.5	\$1.44	2,747.7	\$2.59	6,163.0	\$3.12	37,154.2	2,601.6	2,186.7	\$12.35	1,088.8	\$12.44	2,165.3	\$12.71	8,798.1	255.9	4.0	\$6.50	2.3	\$7.50	469.3	\$6.76	5,110.3	462.5								
Jul-06	3,014.5	\$1.44	2,914.1	\$2.94	5,901.1	\$3.33	37,154.2	2,481.4	2,186.7	\$12.35	1,021.0	\$12.50	1,909.6	\$12.71	8,798.1	255.9	4.0	\$6.50	3.0	\$7.00	483.0	\$6.52	5,110.3	478.8								
Aug-06	3,014.5	\$1.44	3,447.6	\$3.30	5,488.5	\$3.00	37,154.2	2,675.1	2,186.7	\$12.35	930.5	\$12.60	1,870.7	\$12.71	8,798.1	255.9	4.0	\$6.50	3.0	\$6.75	497.2	\$6.31	5,110.3	493.0								
Sep-06	3,014.5	\$1.44	4,041.3	\$3.00	5,087.8	\$2.80	37,154.2	2,295.3	2,186.7	\$12.35	847.6	\$12.63	1,953.5	\$12.71	8,798.1	255.9	4.0	\$6.50	4.6	\$6.50	503.4	\$6.19	5,110.3	500.8								
Oct-06	3,014.5	\$1.44	4,258.0	\$2.75	5,368.3	\$2.77	37,154.2	2,814.8	2,186.7	\$12.35	818.3	\$12.70	2,316.7	\$12.71	8,798.1	255.9	4.0	\$6.50	7.2	\$6.00	513.6	\$6.02	5,110.3	512.6								
Nov-06	3,167.7	\$2.50	3,170.9	\$1.75	7,454.7	\$1.50	37,319.2	3,577.8	3,298.4	\$5.67	1,023.5	\$5.80	2,057.8	\$5.84	8,831.5	974.8	1.5	\$3.50	9.6	\$3.75	672.0	\$3.66	5,072.2	669.4								
Dec-06	3,167.7	\$2.50	2,475.7	\$2.25	7,841.7	\$2.18	37,319.2	3,170.5	3,298.4	\$5.67	1,015.1	\$5.84	2,018.8	\$5.84	8,831.5	974.8	1.5	\$3.50	11.0	\$3.50	670.6	\$3.65	5,072.2	669.7								
Jan-07	3,167.7	\$2.50	2,756.5	\$2.45	7,780.6	\$2.71	37,319.2	2,853.4	3,298.4	\$5.67	1,064.4	\$5.84	1,973.8	\$5.84	8,831.5	974.8	1.5	\$3.50	13.0	\$3.50	673.0	\$3.60	5,072.2	672.9								
Feb-07	3,16																															

# Attachment VII: November 1999 – October 2017 Installed Capacity Auction Activity

	NYCA								NYC								U								G-J Locality															
	Capability Period* (Strip)		Monthly Auction **		Spot Market **		Minimum Required		Excess Sold		Capability Period* (Strip)		Monthly Auction		Spot Market		Minimum Required		Excess Sold		Capability Period* (Strip)		Monthly Auction		Spot Market		Minimum Required		Excess Sold		Capability Period* (Strip)		Monthly Auction		Spot Market		Minimum Required		Excess Sold	
	Month	MW	Price	MW	Price	MW	Price	MW	Price	MW	Price	MW	Price	MW	Price	MW	Price	MW	Price	MW	Price	MW	Price	MW	Price	MW	Price	MW	Price	MW	Price	MW	Price	MW	Price	MW	Price			
Nov-08	2,810.1	\$1.77	2,596.0	\$1.60	9,114.6	\$1.00		36,492.6		3,877.5	1,260.8	\$2.79	1,378.2	\$2.28	3,974.3	\$1.52	9,003.4		1,447.1	0.3	\$1.77	1.8	\$1.60	772.8	\$1.00		4,566.1		772.6											
Dec-08	2,810.1	\$1.77	2,200.1	\$1.50	9,113.9	\$1.25		36,492.6		3,752.1	1,260.8	\$2.79	616.1	\$1.59	4,186.0	\$1.25	9,003.4		1,558.1	0.3	\$1.77	10.0	\$1.50	802.4	\$1.25		4,566.1		802.2											
Jan-09	2,810.1	\$1.77	2,987.3	\$1.50	8,448.2	\$3.19		36,492.6		2,779.0	1,260.8	\$2.79	846.5	\$1.51	4,151.0	\$3.19	9,003.4		1,579.9	0.3	\$1.77	147.9	\$1.50	847.0	\$3.19		4,566.1		833.9											
Feb-09	2,810.1	\$1.77	3,863.7	\$2.50	8,250.3	\$1.77		36,492.6		3,492.1	1,260.8	\$2.79	1,021.1	\$3.06	3,729.9	\$1.77	9,003.4		1,592.0	0.3	\$1.77	66.4	\$2.50	821.1	\$1.77		4,566.1		820.9											
Mar-09	2,810.1	\$1.77	3,674.6	\$1.10	8,190.4	\$0.50		36,492.6		4,128.2	1,260.8	\$2.79	849.6	\$1.49	3,622.8	\$0.50	9,003.4		1,592.0	0.3	\$1.77	97.0	\$1.10	849.1	\$0.50		4,566.1		816.9											
Apr-09	2,810.1	\$1.77	3,991.3	\$0.50	8,257.2	\$0.30		36,492.6		4,228.6	1,260.8	\$2.79	588.0	\$0.75	3,755.6	\$0.30	9,003.4		1,586.6	0.3	\$1.77	25.4	\$0.50	821.1	\$0.30		4,566.1		820.9											
May-09	2,371.1	\$3.01	2,500.2	\$3.01	8,492.0	\$2.61		36,362.4		3,216.7	436.7	\$6.75	757.9	\$7.00	4,976.3	\$8.72	8,853.3		707.3	53.3	\$3.01	69.5	\$3.01	414.8	\$4.71		4,748.5		410.4											
Jun-09	2,371.1	\$3.01	3,034.3	\$3.50	8,675.3	\$4.22		36,362.4		2,505.4	436.7	\$6.75	1,447.7	\$8.60	3,854.3	\$8.65	8,853.3		714.2	53.3	\$3.01	41.5	\$3.50	415.8	\$4.65		4,748.5		415.8											
Jul-09	2,371.1	\$3.01	3,915.6	\$4.11	7,495.4	\$4.42		36,362.4		2,420.6	436.7	\$6.75	1,623.8	\$8.71	2,930.4	\$8.47	8,853.3		732.7	53.3	\$3.01	70.6	\$4.11	404.9	\$4.77		4,748.5		404.8											
Aug-09	2,371.1	\$3.01	4,459.5	\$4.19	7,242.4	\$3.42		36,362.4		2,857.0	436.7	\$6.75	1,281.0	\$8.52	2,960.2	\$8.45	8,853.3		735.1	53.3	\$3.01	67.6	\$4.19	717.8	\$3.42		4,748.5		717.8											
Sep-09	2,371.1	\$3.01	4,413.9	\$3.49	7,393.3	\$2.76		36,362.4		3,147.7	436.7	\$6.75	795.5	\$8.40	3,403.2	\$7.65	8,853.3		816.4	53.3	\$3.01	68.2	\$3.49	742.9	\$2.76		4,748.5		738.9											
Oct-09	2,371.1	\$3.01	4,957.6	\$2.59	7,087.7	\$2.23		36,362.4		3,380.5	436.7	\$6.75	1,095.1	\$7.62	2,926.6	\$7.70	8,853.3		811.1	53.3	\$3.01	20.4	\$2.59	749.3	\$2.23		4,748.5		743.1											
Nov-09	3,201.1	\$1.75	3,044.6	\$1.55	9,111.4	\$0.50		35,785.3		4,081.4	825.2	\$4.65	2,274.7	\$1.94	3,124.0	\$1.23	8,551.6		1,422.3	35.0	\$1.75	31.0	\$1.55	843.5	\$0.50		4,685.0		843.3											
Dec-09	3,201.1	\$1.75	3,125.0	\$1.30	8,472.6	\$0.75		35,785.3		3,976.7	825.2	\$4.65	498.5	\$1.68	3,607.0	\$0.76	8,551.6		1,467.4	35.0	\$1.75	113.1	\$1.30	875.3	\$0.75		4,685.0		842.3											
Jan-10	3,201.1	\$1.75	3,765.0	\$1.64	8,871.7	\$1.85		35,785.3		3,505.4	825.2	\$4.65	485.5	\$1.78	4,257.0	\$1.85	8,551.6		1,497.1	35.0	\$1.75	82.0	\$1.64	843.4	\$1.85		4,685.0		843.3											
Feb-10	3,201.1	\$1.75	3,948.2	\$2.56	8,406.4	\$3.49		35,785.3		2,810.0	825.2	\$4.65	506.1	\$6.40	4,240.3	\$7.98	8,551.6		782.0	35.0	\$1.75	82.3	\$2.56	843.3	\$3.49		4,685.0		843.3											
Mar-10	3,201.1	\$1.75	4,425.9	\$1.59	8,211.1	\$0.85		35,785.3		3,933.4	825.2	\$4.65	1,152.4	\$7.49	3,472.0	\$7.72	8,551.6		807.3	35.0	\$1.75	17.5	\$1.59	843.3	\$0.85		4,685.0		843.3											
Apr-10	3,201.1	\$1.75	4,420.5	\$0.74	8,399.0	\$0.64		35,785.3		4,021.8	825.2	\$4.65	945.5	\$7.50	3,468.4	\$7.16	8,551.6		860.1	35.0	\$1.75	79.5	\$0.74	855.4	\$0.64		4,685.0		843.3											
May-10	2,868.1	\$2.47	4,462.0	\$2.70	7,827.0	\$3.52		35,045.3		2,860.2	1,096.8	\$12.90	335.7	\$13.33	4,004.2	\$13.53	8,336.0		372.0	26.2	\$2.47	16.8	\$2.70	354.8	\$5.81		4,901.0		354.0											
Jun-10	2,868.1	\$2.47	4,521.8	\$2.75	8,863.7	\$2.12		35,045.3		3,396.5	1,096.8	\$12.90	1,451.5	\$13.40	2,571.5	\$13.13	8,336.0		403.6	26.2	\$2.47	54.7	\$2.75	829.0	\$2.12		5,021.0		829.0											
Jul-10	2,868.1	\$2.47	4,335.2	\$2.00	8,617.7	\$1.91		35,045.3		3,475.3	1,096.8	\$12.90	836.2	\$13.00	2,797.1	\$13.05	8,336.0		412.1	26.2	\$2.47	85.7	\$2.00	816.9	\$1.91		5,021.0		816.9											
Aug-10	2,868.1	\$2.47	3,982.7	\$1.80	8,123.1	\$1.68		35,045.3		3,563.7	1,096.8	\$12.90	650.2	\$12.98	3,025.4	\$12.97	8,336.0		418.7	26.2	\$2.47	22.1	\$1.80	851.2	\$1.68		5,021.0		851.2											
Sep-10	2,868.1	\$2.47	4,376.5	\$1.00	7,993.5	\$0.63		35,045.3		3,964.3	1,096.8	\$12.90	992.0	\$12.85	2,799.0	\$12.50	8,336.0		457.8	26.2	\$2.47	8.4	\$1.00	865.9	\$0.63		5,021.0		865.9											
Oct-10	2,868.1	\$2.47	4,178.9	\$0.45	8,165.3	\$0.48		35,045.3		4,022.9	1,096.8	\$12.90	882.1	\$12.45	2,838.5	\$12.72	8,336.0		439.2	26.2	\$2.47	25.7	\$0.45	851.8	\$0.56		5,021.0		851.8											
Nov-10	2,820.1	\$0.39	4,179.3	\$0.27	9,383.4	\$0.01		35,832.5		4,295.9	1,109.8	\$4.60	829.9	\$4.75	4,571.0	\$4.29	8,737.5		1,179.5	1.2	\$0.39	6.1	\$0.27	913.4	\$0.01		5,073.8		913.3											
Dec-10	2,820.1	\$0.39	4,173.1	\$0.10	8,433.9	\$0.50		35,832.5		4,100.2	1,109.8	\$4.60	1,620.7	\$4.28	3,389.7	\$3.66	8,737.5		1,237.6	1.2	\$0.39	17.7	\$0.10	915.8	\$0.50		5,073.8		913.3											
Jan-11	2,820.1	\$0.39	3,272.7	\$0.65	9,786.2	\$0.50		35,832.5		4,100.2	1,109.8	\$4.60	1,154.6	\$3.66	3,135.3	\$3.99	8,737.5		1,207.6	1.2	\$0.39	47.1	\$0.65	913.3	\$0.50		5,073.8		913.3											
Feb-11	2,820.1	\$0.39	3,848.7	\$0.45	8,839.8	\$0.65		35,832.5		4,040.0	1,109.8	\$4.60	736.7	\$4.25	3,516.2	\$3.57	8,737.5		1,245.8	1.2	\$0.39	76.7	\$0.45	913.3	\$0.65		5,073.8		913.3											
Mar-11	2,820.1	\$0.39	4,111.8	\$0.15	8,199.3	\$0.30		35,832.5		4,180.1	1,109.8	\$4.60	801.5	\$4.00	4,231.1	\$3.57	8,737.5		1,246.0	1.2	\$0.39	75.9	\$0.15	926.6	\$0.30		5,073.8		913.3											
Apr-11	2,820.1	\$0.39	4,450.5	\$0.20	8,448.2	\$0.15		35,832.5		4,240.0	1,109.8	\$4.60	800.7	\$3.82	3,509.6	\$3.32	8,737.5		1,269.1	1.2	\$0.39	85.7	\$0.20	918.4	\$0.15		5,073.8		913.3											
May-11	3,515.9	\$0.55	3,416.9	\$0.60	7,530.4	\$0.65		34,684.4		3,911.1	726.5	\$13.54	1,663.8	\$13.20	3,354.4	\$11.97	8,832.0		462.4	1.2	\$0.55	60.4	\$0.60	895.3	\$0.65		5,051.7		895.3											
Jun-11	3,515.9	\$0.55	3,475.2	\$0.60	7,382.8	\$0.55		34,684.4		3,948.7	726.5	\$13.54	1,661.7	\$12.00	2,896.2	\$11.76	8,832.0		482.3	1.2	\$0.55	60.8	\$0.60	904.5	\$0.55		5,051.7		904.5					</						

# Attachment VII: November 1999 – October 2017 Installed Capacity Auction Activity

	NYCA								NYC								LI								G-J Locality									
	Capacity Period* (Strip)		Monthly Auction **		Spot Market **		Minimum Required	Excess Sold	Capacity Period* (Strip)		Monthly Auction		Spot Market		Minimum Required	Excess Sold	Capacity Period* (Strip)		Monthly Auction		Spot Market		Minimum Required	Excess Sold	Capacity Period* (Strip)		Monthly Auction		Spot Market		Minimum Required	Excess Sold		
	Month	MW	Price	MW	Price	MW	Price	MW		MW	Price	MW	Price	MW	Price	MW		MW	Price	MW	Price	MW	Price	MW		MW	Price	MW	Price	MW	Price	MW		
Nov-13	2,157.7	\$2.58	3,116.4	\$2.15	11,895.7	\$2.06	35,700.4	3,401.7	431.1	\$7.54	\$33.0	\$7.90	5,503.5	\$10.01	9,222.2	878.4	30.6	\$4.00	9.4	\$3.10	729.9	\$2.73	5,363.6	728.9										
Dec-13	2,157.7	\$2.58	3,040.5	\$2.95	10,260.2	\$3.10	35,700.4	2,953.8	431.1	\$7.54	946.7	\$9.90	4,515.1	\$9.68	9,222.2	904.0	30.6	\$4.00	67.7	\$2.95	709.2	\$3.10	5,363.6	702.4										
Jan-14	2,157.7	\$2.58	3,873.3	\$3.90	9,173.5	\$4.57	35,700.4	2,322.5	431.1	\$7.54	1,273.9	\$9.60	4,274.1	\$9.63	9,222.2	908.1	30.6	\$4.00	73.6	\$3.90	729.0	\$4.57	5,363.6	729.0										
Feb-14	2,157.7	\$2.58	3,832.5	\$4.30	8,922.0	\$4.29	35,700.4	2,440.5	431.1	\$7.54	1,524.0	\$9.52	3,783.4	\$9.56	9,222.2	913.5	30.6	\$4.00	82.3	\$4.30	722.4	\$4.29	5,363.6	722.1										
Mar-14	2,157.7	\$2.58	4,472.5	\$3.00	8,925.2	\$2.86	35,700.4	3,058.5	431.1	\$7.54	1,749.2	\$9.49	3,592.2	\$9.72	9,222.2	901.0	30.6	\$4.00	26.8	\$3.00	742.7	\$2.86	5,363.6	742.7										
Apr-14	2,157.7	\$2.58	4,563.7	\$1.90	10,046.8	\$1.74	35,700.4	3,535.5	431.1	\$7.54	1,668.5	\$9.61	3,489.5	\$9.75	9,222.2	898.8	30.6	\$4.00	12.1	\$2.59	745.1	\$2.55	5,363.6	744.8										
May-14	2,147.9	\$5.15	2,467.4	\$5.50	6,600.9	\$6.68	35,812.4	1,345.3	655.3	\$16.24	516.9	\$16.54	4,645.8	\$18.83	9,470.5	68.4	10.7	\$6.39	40.5	\$6.20	298.5	\$6.68	5,430.5	249.0	476.1	\$9.96	435.4	\$10.33	2,384.8	\$12.38	13,494.9	81.8		
Jun-14	2,147.9	\$5.15	2,995.1	\$6.60	6,458.0	\$6.21	35,812.4	1,549.9	655.3	\$16.24	1,239.6	\$18.72	3,383.6	\$18.84	9,470.5	67.8	10.7	\$6.39	51.4	\$6.68	290.0	\$6.44	5,430.5	247.4	476.1	\$9.96	996.6	\$12.24	1,775.2	\$12.35	13,494.9	86.0		
Jul-14	2,147.9	\$5.15	3,817.3	\$6.21	5,920.2	\$6.10	35,812.4	1,598.6	655.3	\$16.24	1,608.1	\$18.71	3,082.1	\$18.69	9,470.5	81.2	10.7	\$6.39	61.6	\$6.40	287.8	\$6.46	5,430.5	245.2	476.1	\$9.96	1,150.8	\$12.25	1,611.1	\$12.32	13,494.9	90.5		
Aug-14	2,147.9	\$5.15	3,830.9	\$5.95	6,594.8	\$5.80	35,812.4	1,734.3	655.3	\$16.24	1,816.1	\$18.47	2,887.8	\$18.56	9,470.5	92.5	10.7	\$6.39	63.6	\$6.40	281.9	\$6.47	5,430.5	244.3	476.1	\$9.96	1,148.7	\$12.25	1,643.1	\$12.25	13,494.9	101.3		
Sep-14	2,147.9	\$5.15	3,849.7	\$5.75	6,334.4	\$5.60	35,812.4	1,819.9	655.3	\$16.24	1,956.9	\$18.37	2,937.9	\$18.17	9,470.5	125.9	10.7	\$6.39	66.5	\$6.40	288.7	\$6.47	5,430.5	244.3	476.1	\$9.96	1,339.2	\$12.10	1,650.9	\$12.04	13,494.9	135.3		
Oct-14	2,147.9	\$5.15	4,460.5	\$5.49	7,060.7	\$5.39	35,812.4	1,915.8	655.3	\$16.24	1,955.7	\$18.19	3,051.0	\$17.94	9,470.5	146.3	10.7	\$6.39	102.0	\$6.40	275.0	\$6.51	5,430.5	239.4	476.1	\$9.96	1,319.7	\$11.89	1,813.8	\$11.64	13,494.9	197.1		
Nov-14	2,324.7	\$2.90	3,417.2	\$2.24	10,141.2	\$1.43	36,505.6	3,725.5	1,023.8	\$8.45	930.4	\$8.69	4,356.8	\$8.96	9,508.6	926.9	45.6	\$3.00	19.9	\$2.85	635.9	\$2.99	5,393.5	635.9	389.5	\$5.90	637.1	\$6.82	3,236.6	\$5.76	13,582.3	1,121.1		
Dec-14	2,324.7	\$2.90	3,575.8	\$2.56	8,544.1	\$3.50	36,505.6	2,773.5	1,023.8	\$8.45	1,292.6	\$8.89	3,800.2	\$8.87	9,508.6	934.4	45.6	\$3.00	19.9	\$2.95	636.2	\$3.50	5,393.5	636.2	389.5	\$5.90	802.8	\$5.45	3,275.9	\$4.76	13,582.3	1,281.0		
Jan-15	2,324.7	\$2.90	3,320.2	\$3.61	9,299.0	\$2.41	36,505.6	3,275.5	1,023.8	\$8.45	1,314.3	\$8.82	3,754.6	\$8.80	9,508.6	940.7	45.6	\$3.00	230.4	\$3.61	613.4	\$3.20	5,393.5	612.7	389.5	\$5.90	607.4	\$4.44	3,142.8	\$3.76	13,582.3	1,438.9		
Feb-15	2,324.7	\$2.90	3,641.3	\$2.60	8,452.9	\$3.36	36,505.6	2,837.4	1,023.8	\$8.45	1,477.9	\$8.74	3,572.7	\$8.94	9,508.6	928.3	45.6	\$3.00	42.7	\$3.15	644.0	\$3.36	5,393.5	643.2	389.5	\$5.90	556.4	\$3.76	2,919.2	\$4.21	13,582.3	1,367.7		
Mar-15	2,324.7	\$2.90	4,372.2	\$1.80	9,956.8	\$0.72	36,505.6	4,051.9	1,023.8	\$8.45	1,567.1	\$8.70	3,487.4	\$7.28	9,508.6	1,074.0	45.6	\$3.00	34.4	\$2.90	652.0	\$2.87	5,393.5	650.0	389.5	\$5.90	726.0	\$3.97	3,368.3	\$2.93	13,582.3	1,571.5		
Apr-15	2,324.7	\$2.90	4,489.9	\$0.45	8,546.3	\$0.75	36,505.6	4,036.2	1,023.8	\$8.45	1,820.6	\$7.25	3,313.7	\$7.30	9,508.6	1,072.1	45.6	\$3.00	35.1	\$2.77	644.7	\$2.92	5,393.5	644.7	389.5	\$5.90	710.1	\$2.89	3,308.7	\$2.82	13,582.3	1,588.1		
May-15	2,108.4	\$3.50	1,977.6	\$3.96	8,381.6	\$4.07	35,919.8	2,533.7	548.6	\$15.50	986.5	\$15.61	3,992.0	\$16.04	9,271.7	354.2	20.0	\$5.30	42.9	\$5.30	339.7	\$5.78	5,284.0	327.2	723.0	\$8.50	227.6	\$10.50	2,617.1	\$10.93	13,934.4	356.1		
Jun-15	2,108.4	\$3.50	2,981.6	\$4.21	7,997.7	\$4.88	35,919.8	2,178.1	548.6	\$15.50	1,648.1	\$15.66	3,369.2	\$15.41	9,271.7	405.8	20.0	\$5.30	56.7	\$5.74	328.1	\$5.77	5,284.0	328.1	723.0	\$8.50	442.0	\$10.74	2,351.8	\$10.56	13,934.4	413.6		
Jul-15	2,108.4	\$3.50	2,847.4	\$4.70	8,227.6	\$3.98	35,919.8	2,570.7	548.6	\$15.50	1,822.0	\$15.35	3,206.2	\$15.26	9,271.7	418.0	20.0	\$5.30	57.4	\$5.67	328.7	\$5.77	5,284.0	328.7	723.0	\$8.50	445.0	\$10.34	2,756.6	\$8.36	13,934.4	762.7		
Aug-15	2,108.4	\$3.50	3,036.0	\$3.91	8,611.2	\$3.58	35,919.8	2,744.9	548.6	\$15.50	1,781.3	\$15.40	3,321.0	\$15.32	9,271.7	413.5	20.0	\$5.30	57.4	\$5.67	327.8	\$5.77	5,284.0	327.8	723.0	\$8.50	1,061.0	\$8.34	2,078.7	\$8.32	13,934.4	769.1		
Sep-15	2,108.4	\$3.50	3,410.3	\$3.48	8,602.3	\$3.48	35,919.8	2,792.5	548.6	\$15.50	1,759.2	\$15.36	3,542.6	\$15.26	9,271.7	418.0	20.0	\$5.30	57.4	\$5.67	344.7	\$5.62	5,284.0	344.7	723.0	\$8.50	1,045.8	\$8.36	2,077.8	\$8.27	13,934.4	776.9		
Oct-15	2,108.4	\$3.50	3,392.1	\$3.09	8,218.0	\$2.96	35,919.8	3,017.9	548.6	\$15.50	1,794.5	\$15.32	3,509.4	\$15.01	9,271.7	438.6	20.0	\$5.30	60.4	\$5.60	345.7	\$5.61	5,284.0	345.7	723.0	\$8.50	1,100.3	\$8.39	2,100.9	\$8.13	13,934.4	799.5		
Nov-15	1,806.5	\$1.25	2,404.5	\$0.66	11,055.6	\$0.46	35,715.5	4,087.3	631.2	\$6.67	996.1	\$6.65	4,166.1	\$6.36	8,916.1	1,122.9	12.0	\$1.64	34.2	\$1.55	866.1	\$1.82	5,215.8	747.0	400.5	\$3.73	434.4	\$3.78	3,872.5	\$3.46	13,538.1	1,512.3		
Dec-15	1,806.5	\$1.25	2,994.1	\$1.25	10,170.9	\$1.28	35,715.5	3,731.2	631.2	\$6.67	958.0	\$6.40	4,203.8	\$6.29	8,916.1	1,128.0	12.0	\$1.64	63.6	\$1.80	764.9	\$1.85	5,215.8	743.9	400.5	\$3.73	578.5	\$3.47	3,678.2	\$3.48	13,538.1	1,509.3		
Jan-16	1,806.5	\$1.25	2,969.7	\$1.65	10,663.8	\$1.37	35,715.5	3,694.4	631.2	\$6.67	1,088.6	\$6.24	4,187.9	\$5.85	8,916.1	1,161.5	12.0	\$1.64	75.4	\$1.80	776.0	\$1.55	5,215.8	776.0	400.5	\$3.73	698.8	\$3.44	3,413.8	\$3.16	13,538.1	1,557.4		
Feb-16	1,806.5	\$1.25	2,968.2	\$1.34	10,383.8	\$1.46	35,715.5	3,655.7	631.2	\$6.67	1,122.1	\$6.10	4,100.1	\$5.84	8,916.1	1,162.3	12.0	\$1.64	74.9	\$1.50	777.4	\$1.53	5,215.8	777.4	400.5	\$3.73	794.6	\$3.20	3,322.5	\$3.15	13,538.1	1,558.4		
Mar-16	1,806.5	\$1.25	3,201.7	\$0.60	10,933.4	\$0.54	35,715.5	4,052.7	631.2	\$6.67	1,042.2	\$6.04	4,220.6	\$5.81	8,916.1	1,164.3	12.0	\$1.64	74.4	\$1.50	783.1	\$1.52	5,215.8	778.6	400.5	\$3.73	820.1	\$3.16	3,337.5	\$3.14	13,538.1	1,560.7		
Apr-16	1,806.5	\$1.25	3,154.5</																															