

# 2018 – 2020 RS-1 Budget Forecast

---

Arthur Maniaci

Supervisor, Load Forecasting & Energy Efficiency

**Budget & Priorities Working Group**

September 11, 2017

Rensselaer, NY



DRAFT – FOR DISCUSSION PURPOSES ONLY

©COPYRIGHT NYISO 2017. ALL RIGHTS RESERVED

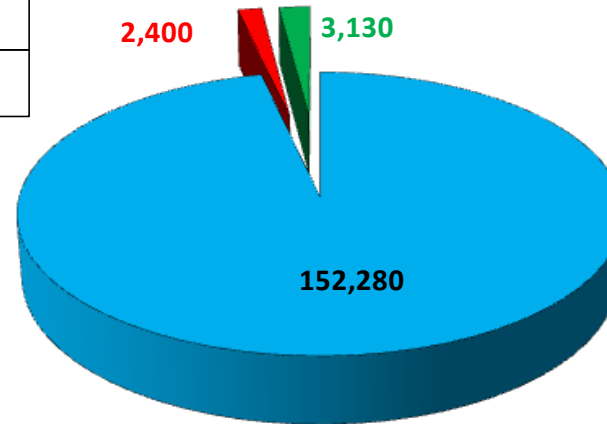
# RS-1 Forecast Methodology

- **Net Energy** – Based on zonal econometric models, net of transmission losses, with adjustments.
  - **Energy Models:** Examined Moody’s Analytics forecasts & reviewed current energy usage patterns. Budget forecast is based on 2017 Gold Book with a downward adjustment of 130 GWh per month based on year-to-date tracking of the current forecast versus weather-adjusted send-out.
  - **Energy Efficiency & Solar PV Impact:** The budget forecast includes the same energy efficiency impacts and Solar PV as the Gold Book forecast.
- **Exports**
  - Annual levels determined by judgment & statistical analysis of recent history. Through June 2017, actual is behind budget.
- **Wheels**
  - Annual levels determined by judgment & statistical analysis of recent history. Through June 2017, actual is ahead of budget.

# Three Components of Forecast

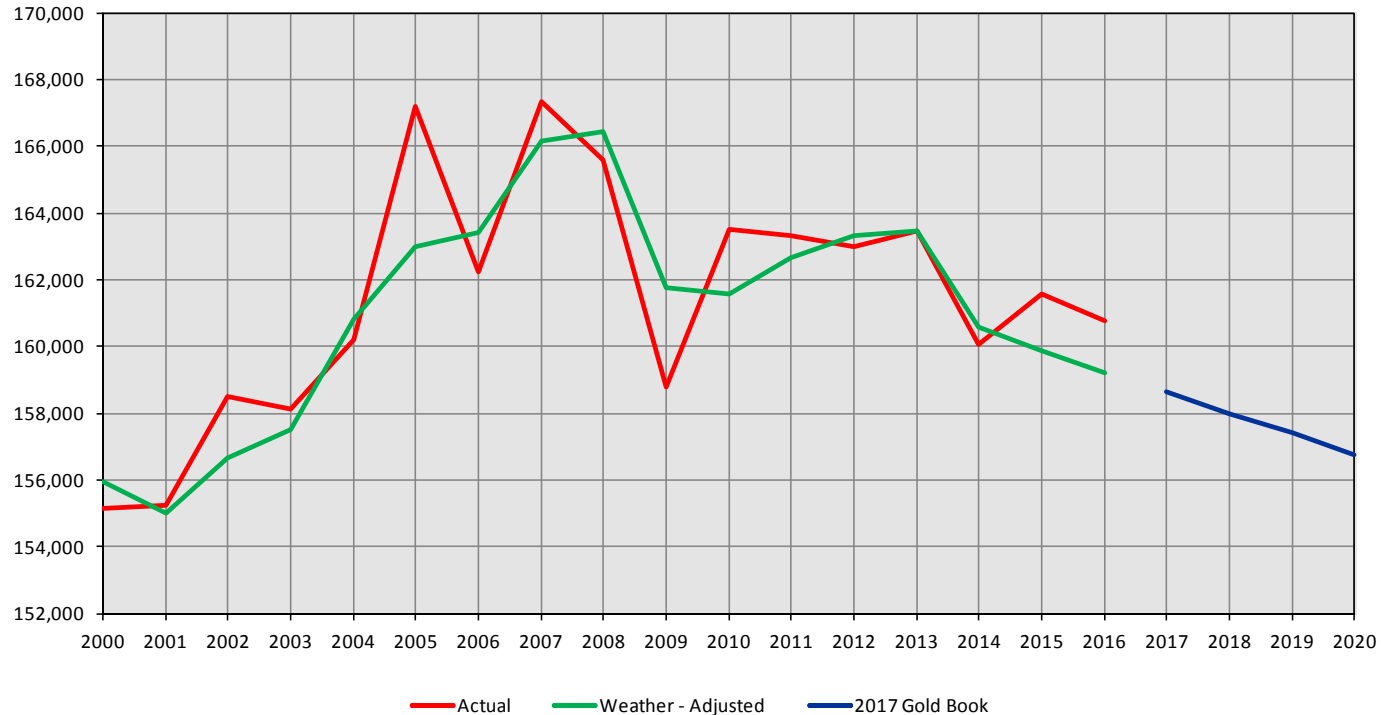
## 2018 RS-1 Forecast (GWh)

■ Net Energy -	152,280 GWh
■ Exports -	2,400 GWh
■ Wheels -	3,130 GWh
<b>TOTAL - 157,810 GWh</b>	

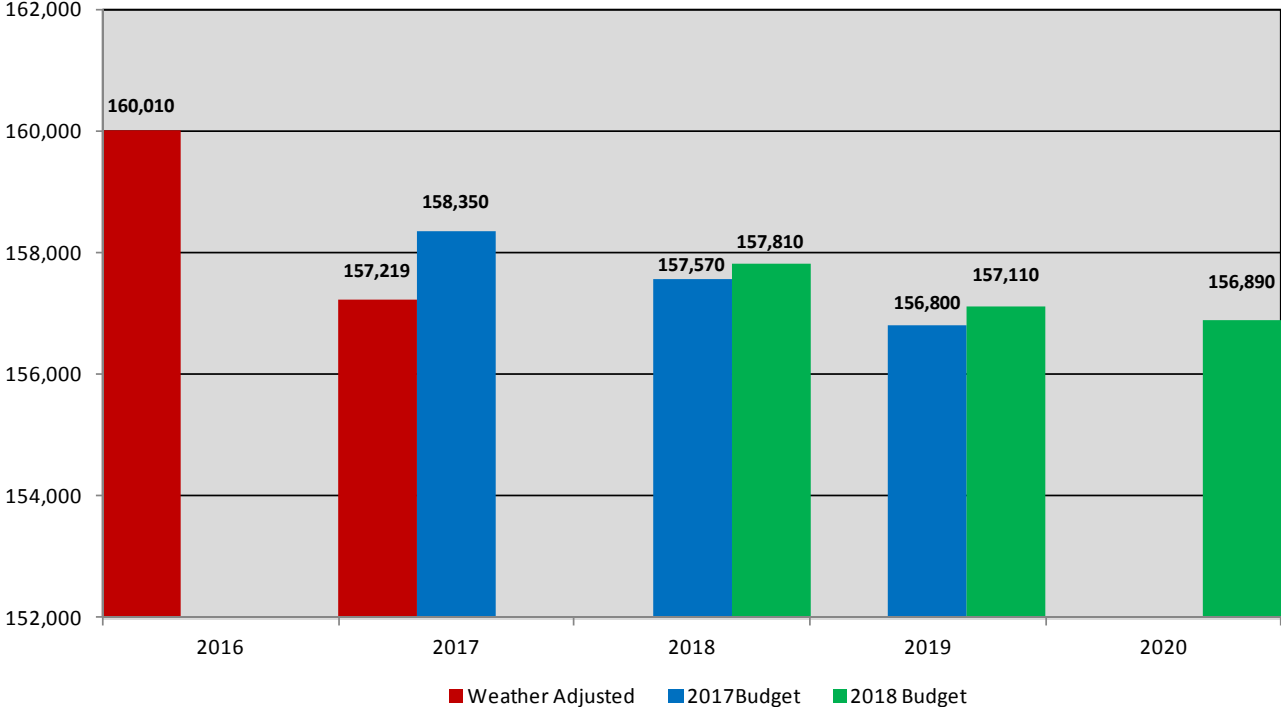


# Energy Sendout - GWh

Actual, Weather-Adjusted, and Forecast

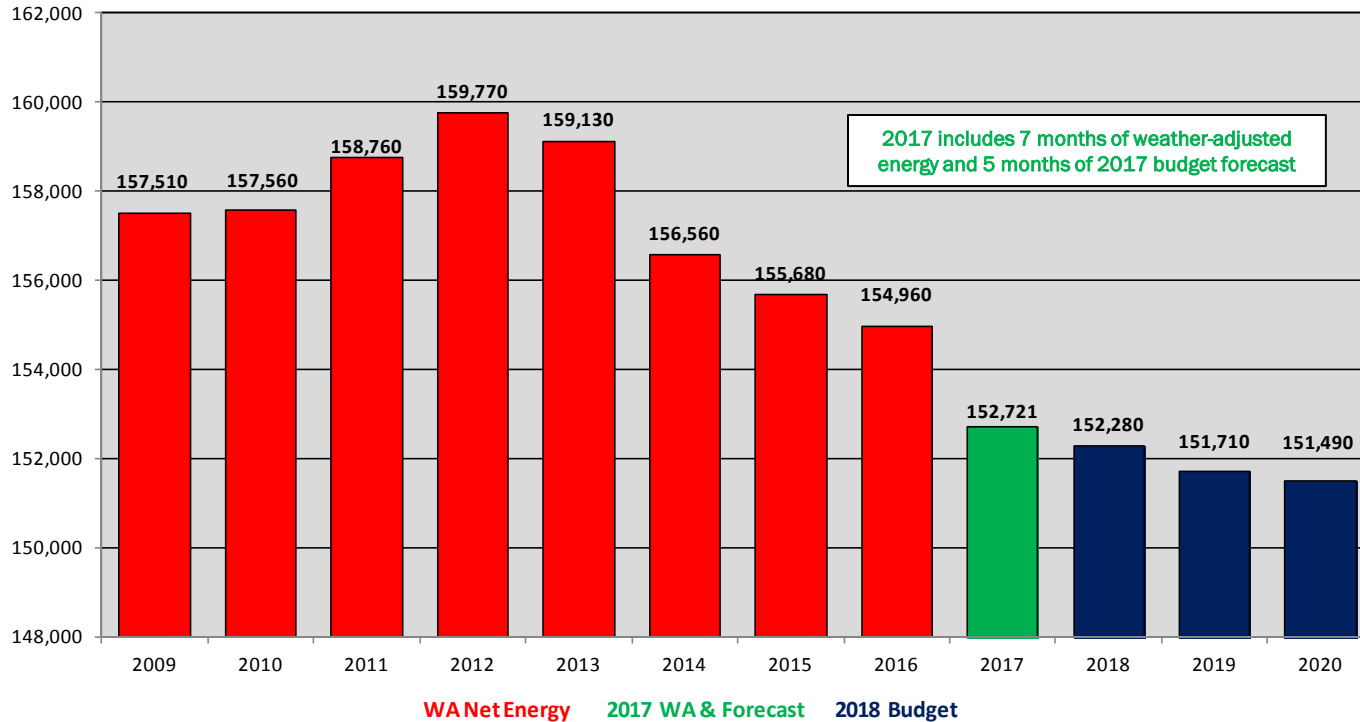


# RS-1 Budget Forecast - GWh

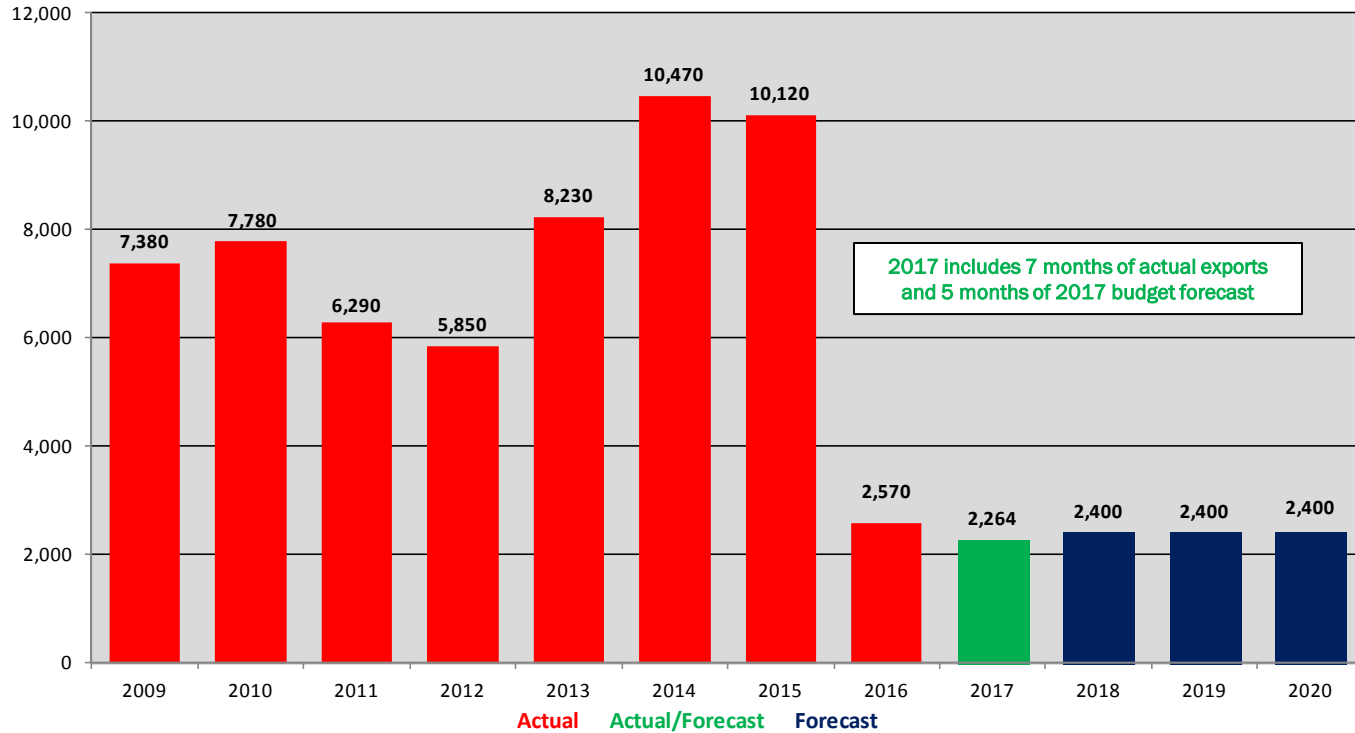


DRAFT – FOR DISCUSSION PURPOSES ONLY

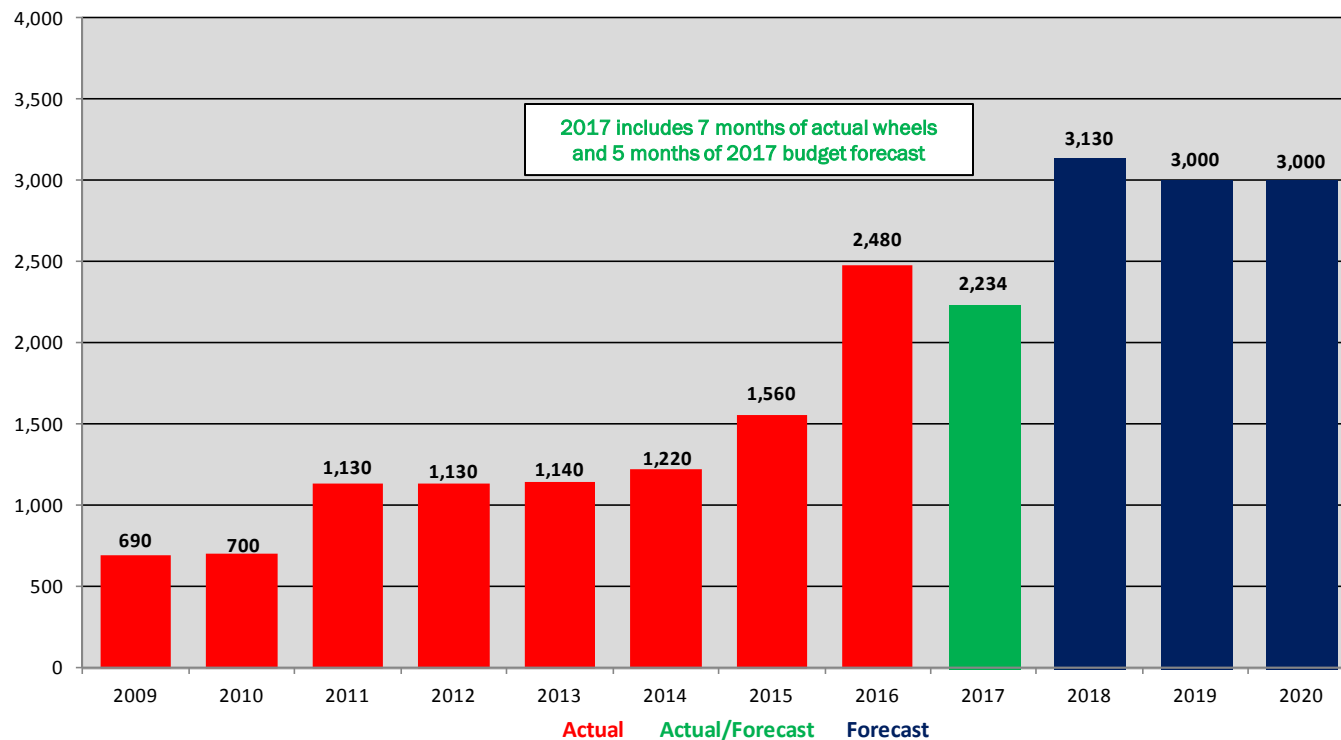
# Net Energy - GWh



# Exports - GWh



# Wheels - GWh





# RS-1 Budget Summary - GWh

Actual & Forecast Energy - GWh						Pct Growth	
Year	Net Energy	Exports	Wheels	RS-1 Total	Forecast	Net Energy	RS-1 Tot
2011	159,454	6,291	1,125	166,870			
2012	159,170	5,848	1,125	166,143			
2013	159,132	8,229	1,136	168,497			
2014	156,035	10,470	1,220	167,725			
2015	157,307	10,121	1,559	168,987			
2016	156,826	2,572	2,481	161,879			
2017*	151,619	2,264	2,234	156,117	158,350	-3.32%	-2.18%
2018	152,280	2,400	3,130	157,810	157,810	0.44%	-0.34%
2019	151,710	2,400	3,000	157,110	157,110	-0.37%	-0.44%
2020	151,490	2,400	3,000	156,890	156,890	-0.15%	-0.14%

\* 2017 Includes 7 months actual & 5months projection

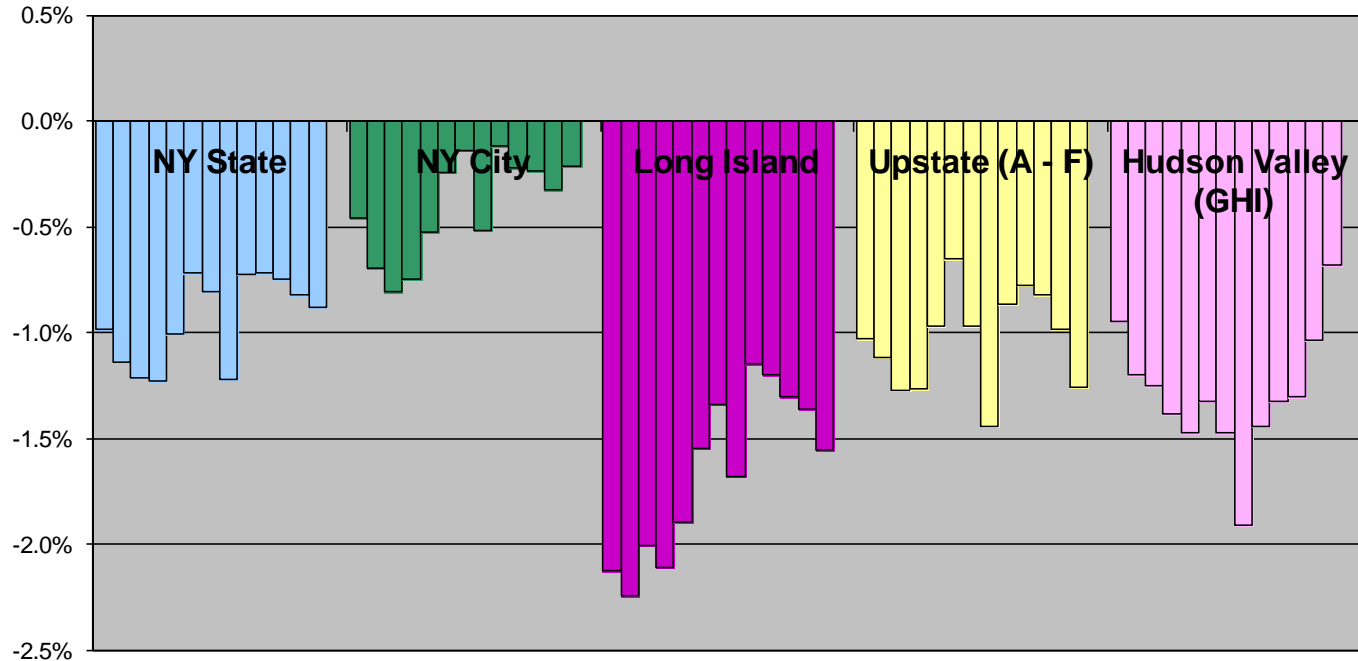
# RS-1 Budget by Month, Actual and Forecast - GWh

Month	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
1	14,460	14,020	14,680	15,800	15,330	13,710	13,380	13,540	13,590	13,540
2	12,730	12,670	13,470	14,140	14,660	12,750	11,720	12,280	12,340	12,710
3	13,430	12,710	13,750	14,540	14,670	12,400	13,050	12,700	12,750	12,700
4	12,240	12,110	12,450	12,190	12,190	11,690	11,280	11,510	11,570	11,520
5	13,020	13,310	12,970	12,510	12,960	12,410	12,000	12,050	12,110	12,060
6	14,590	14,360	14,220	14,180	13,750	13,730	13,570	13,750	13,610	13,550
7	17,540	17,350	17,710	15,690	16,120	16,580	15,470	15,670	15,520	15,460
8	15,850	16,630	15,190	14,800	16,140	17,100	15,400	15,350	15,200	15,140
9	13,850	13,550	13,280	13,650	14,730	13,840	13,130	13,180	13,040	12,990
10	13,070	12,590	12,740	12,710	12,960	12,110	12,130	12,290	12,150	12,100
11	12,440	12,850	13,130	13,210	12,680	11,990	11,870	12,130	12,000	11,950
12	13,630	13,990	14,900	14,300	12,810	13,560	13,120	13,360	13,230	13,170
<b>Annual</b>	<b>166,850</b>	<b>166,140</b>	<b>168,490</b>	<b>167,720</b>	<b>169,000</b>	<b>161,870</b>	<b>156,120</b>	<b>157,810</b>	<b>157,110</b>	<b>156,890</b>

# Weather Adjusted Energy Growth Rates, July 2016 to July 2017

## NYCA Sendout - 12-Month Moving Average Annual Growth Rate

Weather Adjusted Growth, Jul-2016 to Jul-2017



DRAFT - FOR DISCUSSION PURPOSES ONLY

©COPYRIGHT NYISO 2017. ALL RIGHTS RESERVED

# 2017 Budget Forecast Update

Actual Through June, 2017 Budget for Balance of Year

		2017 Actual & Forecast				
Month	Days	A/F	Net Energy	Exports	Wheels	Total GWh
1	31	Actual	13,000	157	226	13,383
2	28	Actual	11,388	127	205	11,720
3	31	Actual	12,625	194	229	13,048
4	30	Actual	10,919	149	211	11,279
5	31	Actual	11,518	261	223	12,002
6	30	Actual	13,237	185	143	13,565
7	31	Actual	15,032	191	247	15,470
8	31	Forecast	15,050	200	150	15,400
9	30	Forecast	12,780	200	150	13,130
10	31	Forecast	11,780	200	150	12,130
11	30	Forecast	11,520	200	150	11,870
12	31	Forecast	12,770	200	150	13,120
<b>Annual</b>			<b>151,619</b>	<b>2,264</b>	<b>2,234</b>	<b>156,117</b>

2017 BUDGET FORECAST				Over/Under	
Net Energy	Exports	Wheels	Total GWh	Monthly	Cumulative
13,330	220	125	13,675	-292	-292
12,060	220	125	12,405	-685	-977
12,450	220	125	12,795	253	-724
11,350	220	125	11,695	-416	-1,140
11,860	220	125	12,205	-203	-1,343
13,270	220	125	13,615	-50	-1,393
15,390	220	125	15,735	-265	-1,658
15,050	220	125	15,395	5	-1,653
12,930	220	125	13,275	-145	-1,798
11,930	220	125	12,275	-145	-1,943
11,670	220	125	12,015	-145	-2,088
12,920	220	125	13,265	-145	-2,233
<b>154,210</b>	<b>2,640</b>	<b>1,500</b>	<b>158,350</b>	<b>-2,233</b>	

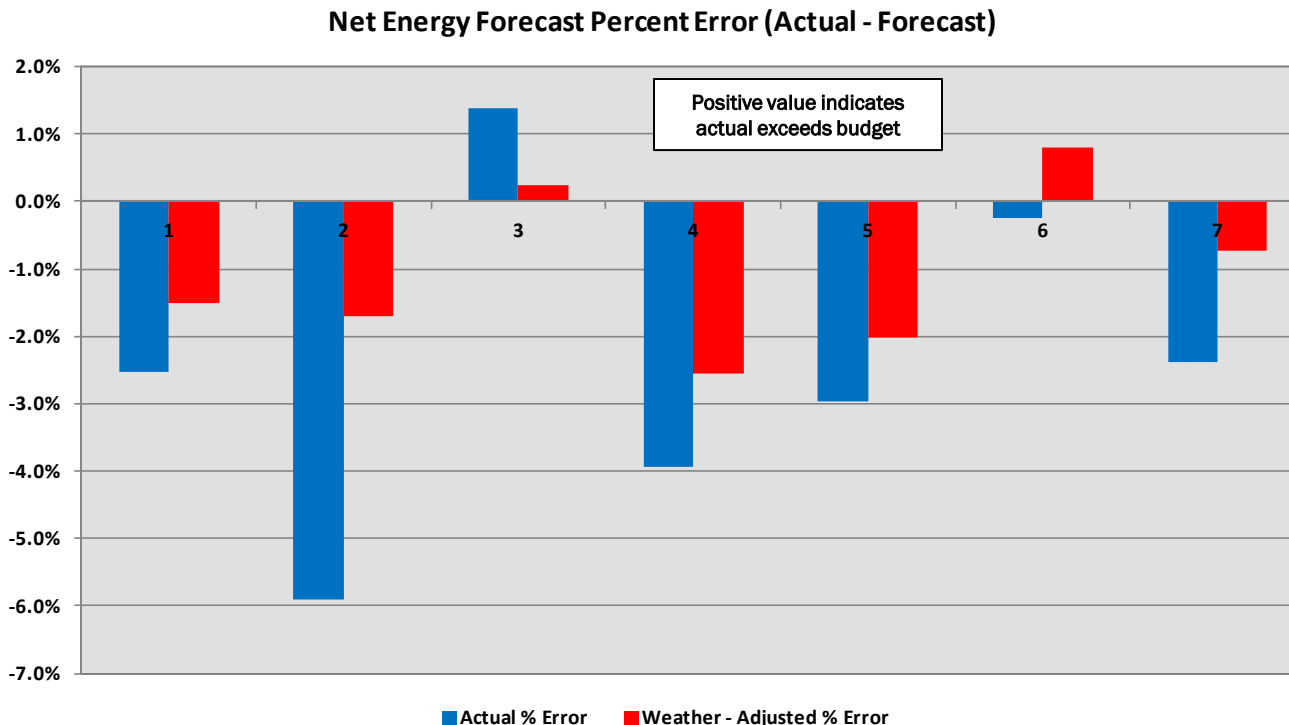
# 2017 Budget Forecast Update

## Weather-Adjusted Through June, 2017 Budget for Balance of Year

		2017 Weather - Adjusted & Forecast				
Month	Days	WA/F	Net Energy	Exports	Wheels	Total GWh
1	31	WA	13,133	157	226	13,516
2	28	WA	11,858	127	205	12,190
3	31	WA	12,481	194	229	12,904
4	30	WA	11,068	149	211	11,428
5	31	WA	11,626	261	223	12,110
6	30	WA	13,377	185	143	13,705
7	31	WA	15,278	191	247	15,716
8	31	Forecast	15,050	200	150	15,400
9	30	Forecast	12,780	200	150	13,130
10	31	Forecast	11,780	200	150	12,130
11	30	Forecast	11,520	200	150	11,870
12	31	Forecast	12,770	200	150	13,120
<b>Annual</b>			<b>152,721</b>	<b>2,264</b>	<b>2,234</b>	<b>157,219</b>

2017 BUDGET FORECAST				Over/Under	
Net Energy	Exports	Wheels	Total GWh	Monthly	Cumulative
13,330	220	125	13,675	-159	-159
12,060	220	125	12,405	-215	-374
12,450	220	125	12,795	109	-265
11,350	220	125	11,695	-267	-532
11,860	220	125	12,205	-95	-627
13,270	220	125	13,615	90	-537
15,390	220	125	15,735	-19	-556
15,050	220	125	15,395	5	-551
12,930	220	125	13,275	-145	-696
11,930	220	125	12,275	-145	-841
11,670	220	125	12,015	-145	-986
12,920	220	125	13,265	-145	-1,131
<b>154,210</b>	<b>2,640</b>	<b>1,500</b>	<b>158,350</b>	<b>-1,131</b>	

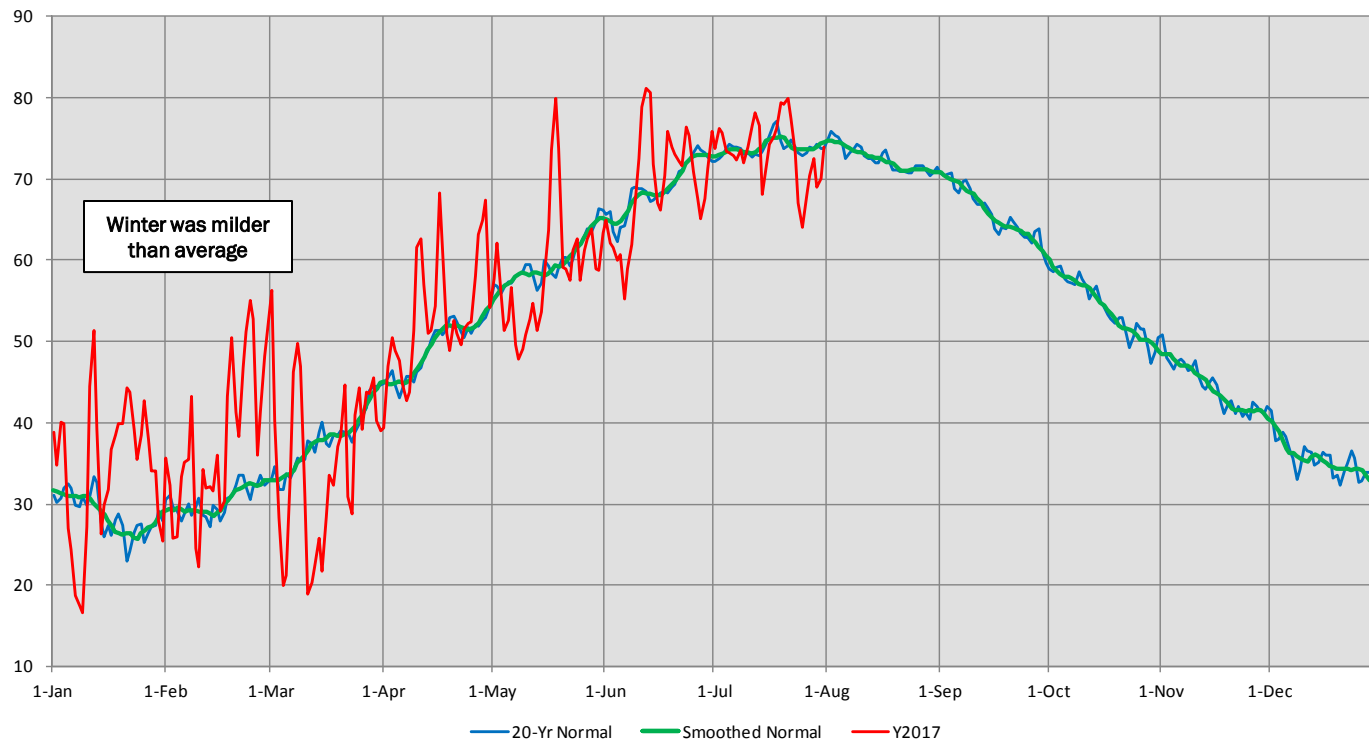
# 2017 Net Energy Budget Forecast Accuracy - Percent Over/Under



DRAFT - FOR DISCUSSION PURPOSES ONLY

©COPYRIGHT NYISO 2017. ALL RIGHTS RESERVED

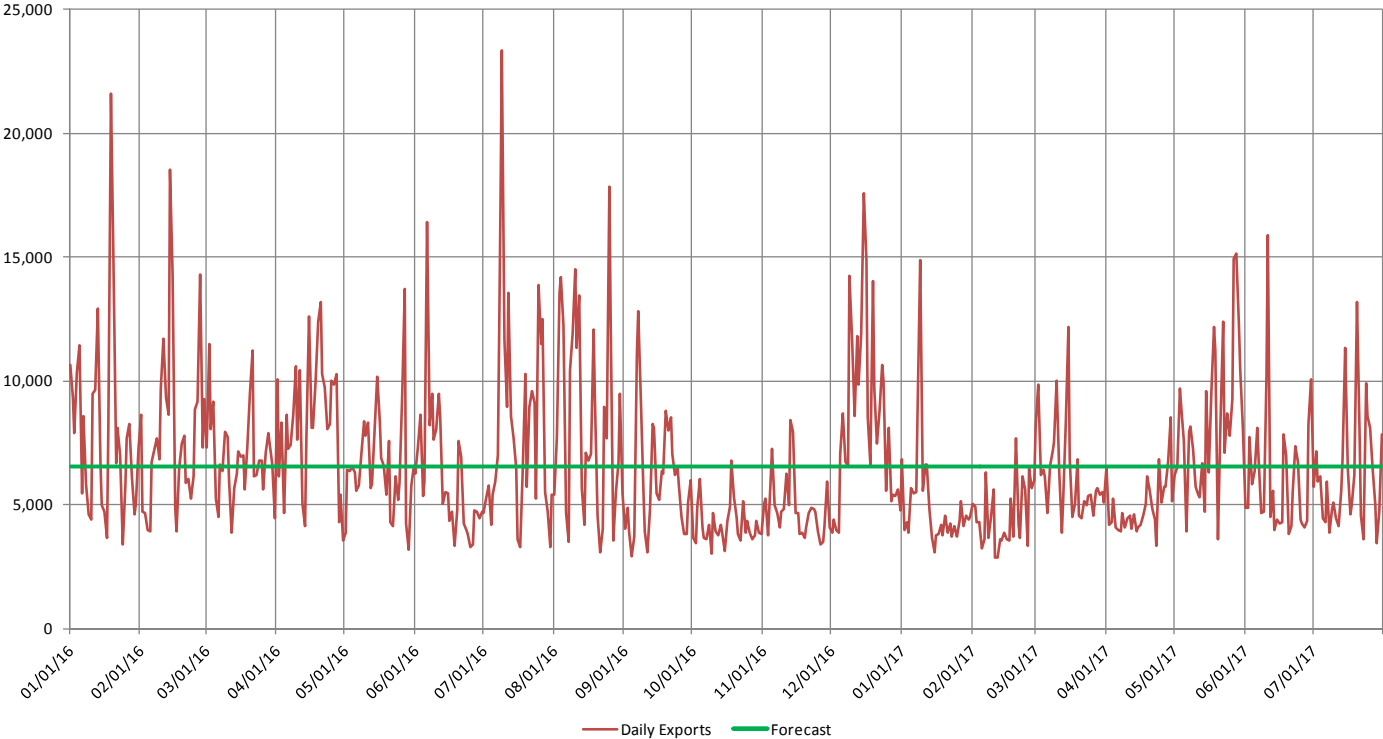
# NYCA Composite Daily Average Temperature, 2017 and Normal



DRAFT – FOR DISCUSSION PURPOSES ONLY

©COPYRIGHT NYISO 2017. ALL RIGHTS RESERVED

# Daily Exports (MWh), Historical and Forecast



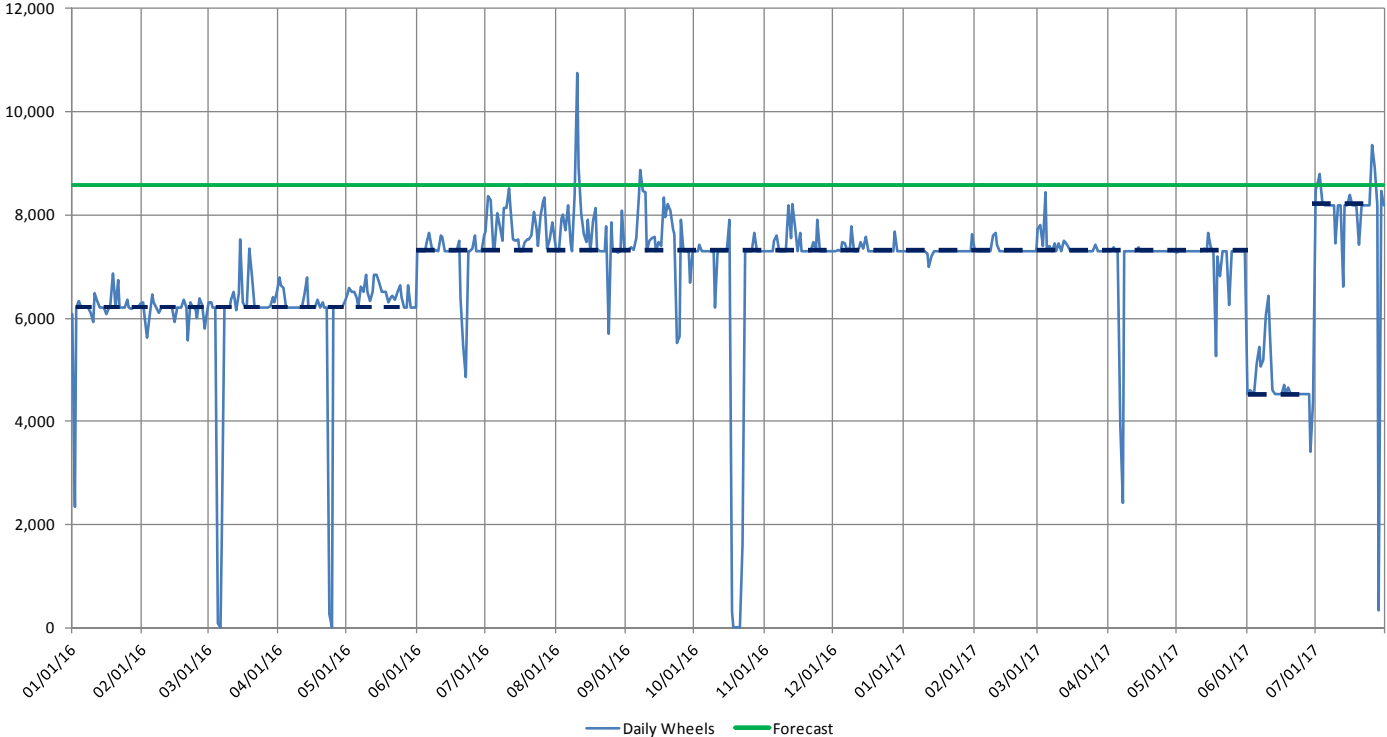
DRAFT – FOR DISCUSSION PURPOSES ONLY

©COPYRIGHT NYISO 2017. ALL RIGHTS RESERVED





# Daily Wheels (MWh), Historical and Forecast



DRAFT – FOR DISCUSSION PURPOSES ONLY

©COPYRIGHT NYISO 2017. ALL RIGHTS RESERVED

# The Mission of the New York Independent System Operator, in collaboration with its stakeholders, is to serve the public interest and provide benefits to consumers by:

- Maintaining and enhancing regional reliability
- Operating open, fair and competitive wholesale electricity markets
- Planning the power system for the future
- Providing factual information to policy makers, stakeholders and investors in the power system



[www.nyiso.com](http://www.nyiso.com)