

# Wind and Solar Data for use in the IRM Study and Sensitivity Case

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NYSRC Installed Capacity Subcommittee  
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# Agenda

- **Part 1 - Preparation of wind and solar data for the 2018 IRM study**
  - Overview of the data and resources – only resources with CRIS
  - Treatment of resources without five years of output data
  - Monthly results
- **Part 2 - Locating wind and solar resources for the IRM sensitivity case**
  - This portion of the presentation is for a sensitivity case only and will not affect the 2018 IRM
- **Next steps**

# Background

Date	Working Group	Discussion points and links to materials
03-29-16	NYSRC Installed Capacity Subcommittee (Mtg. #182)	Preparation of wind data for the 2017 IRM study. Presentation – <a href="http://nysrc.org/pdf/MeetingMaterial/ICSMeetingMaterial/ICS_Agenda%20182/Preparation%20of%20Wind%20Data.pdf">http://nysrc.org/pdf/MeetingMaterial/ICSMeetingMaterial/ICS_Agenda%20182/Preparation%20of%20Wind%20Data.pdf</a> Data - <a href="http://nysrc.org/pdf/MeetingMaterial/ICSMeetingMaterial/ICS_Agenda%20182/Copy%20of%20Monthly%20Average%20Wind%20Output%20V2.pdf">http://nysrc.org/pdf/MeetingMaterial/ICSMeetingMaterial/ICS_Agenda%20182/Copy%20of%20Monthly%20Average%20Wind%20Output%20V2.pdf</a>
03-10-17	NYSRC Executive Committee (Mtg. #215)	Wind and solar sensitivity analysis See minutes, ICS Chair Report (Section 4.1.iv) “Impact of a High Penetration of Renewable Resources on the IRM” – <a href="http://nysrc.org/pdf/MeetingMaterial/ECMeetingMaterial/EC%20Agenda%20216/ECMinutes215Draft.pdf">http://nysrc.org/pdf/MeetingMaterial/ECMeetingMaterial/EC%20Agenda%20216/ECMinutes215Draft.pdf</a>

# Part 1: Wind and solar data in the 2018 IRM study

# Preparation of wind data

# Data overview

- Five years of billing-quality meter data will be used (i.e., 1/1/2012 - 12/31/2016)
- Only wind facilities with CRIS were included in the dataset
  - Data were backfilled for facilities without five years of data (as described below)

# Data overview

Resource	Zone	Nameplate (MW)	CRIS (MW)
Altona Wind Power	D	97.5	97.5
Bliss Wind Power	A	100.5	100.5
Canandaigua Wind Power	C	125	125
Chateaugay Wind Power	D	106.5	106.5
Clinton Wind Power	D	100.5	100.5
Ellenburg Wind Power	D	81	81
Hardscrabble Wind	E	74	74
High Sheldon Wind Farm	C	118.1	112.5
Howard Wind	C	59.5	57.4
Jericho Rise Wind Farm	D	77.7	77.7
Maple Ridge Wind 1	E	231	231
Maple Ridge Wind 2	E	90.8	90.7
Marble River Wind	D	215.5	215.2
Munnsville Wind Power	E	34.5	34.5
Orangeville Wind Farm	C	93.9	94.4
Madison Wind Power	E	11.55	11.5
Wethersfield Wind Power	C	126	126

- Nameplate and CRIS ratings are from the 2017 Gold Book
- Monthly average output is posted with these materials
- Highlighted facilities were not in service for the full five years

# Modeling facilities without five years of data

- Hourly output for facilities that commenced operation after January 2012 was scaled on a zonal basis using a ratio of nameplate MW to zone total nameplate MW multiplied by zone total output MW

Zone	A	A	A	A	A
Name Plate	50	100	100	100	100
Resource	New Resource	Existing #1	Existing #2	Existing #2	Existing #4
Output	25	75	50	50	25

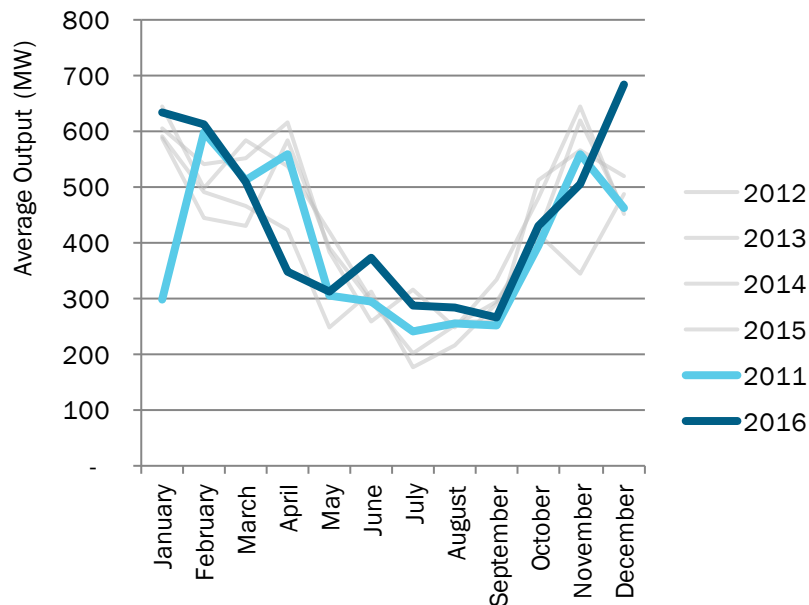
$$\text{Name plate ratio} = \frac{\text{New resource name plate}}{\sum \text{Existing name plate}} = \frac{50}{400} = 12.5\%$$

$$\begin{aligned} \text{New resource output} &= \sum \text{Zone output} * \text{name plate ratio} = 200 * 12.5\% \\ &= 25\text{MW} \end{aligned}$$



# Rolling on 2016 data, rolling off 2011 data

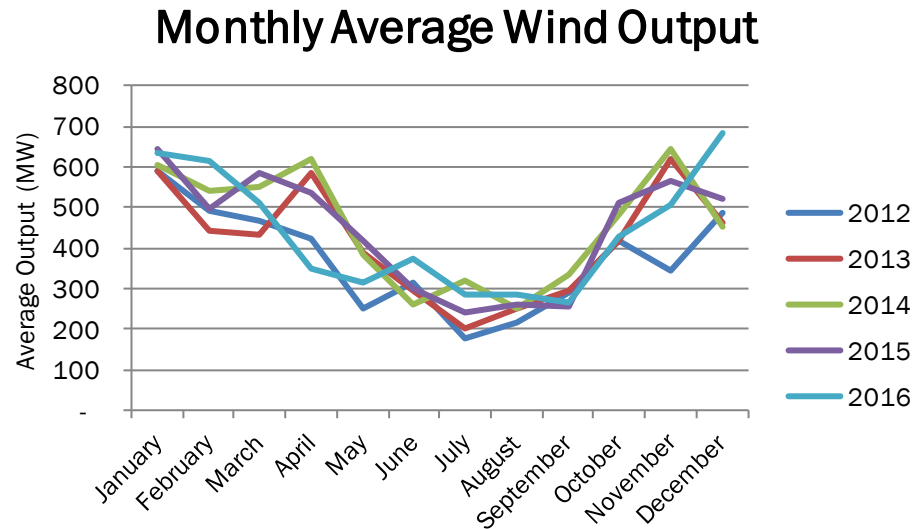
## Monthly Average Wind Output



- Both 2011 and 2016 data exhibited seasonal trends consistent with the NYISO's expectation

# Monthly average output data

- Supporting data are included with the posted material



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# Zonal output trends

**Correlation matrix**  
Shows the correlation of zonal wind output data (2012-2016)

ZONE	A	C	D	E	NYCA
A	1.00				
C	0.95	1.00			
D	0.52	0.55	1.00		
E	0.73	0.78	0.66	1.00	
NYCA	0.84	0.88	0.85	0.91	1.00

- Wind output is positively correlated across all load zones
  - A correlation coefficient of +1 indicates a perfect positive linear relationship between variables
  - A correlation coef. of -1 indicates a perfect negative linear relationship between variables

# Preparation of solar data

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# Data overview

- Five years of billing-quality meter data will be used (i.e., 1/1/2012 - 12/31/2016)
- Only solar facilities with CRIS were included in the dataset
  - Long Island Solar Farm, Zone K, 31.5MW (Nameplate and CRIS)

# Solar output data

- Data characteristics (e.g., capacity factor) were consistent with NYISO's expectations

# Part 2: The location of onshore wind and solar resources in the 2018 IRM sensitivity

# Location of onshore wind and solar

- **Based on NYSDPS' projection of wind and solar installations**
  - The primary source of projections for the quantity and location of qualified CES renewable generation is the NYSDPS Final Supplemental Environmental Impact Statement (“Final EIS”) in CASE 15-E-0302 using the “Blend Base Case.”
  - E.g., slide 32 from this MIWG presentation:  
[http://www.nyiso.com/public/webdocs/markets\\_operations/committees/bic\\_miwg/meeting\\_materials/2017-04-24/MIWG%20Public%20Policy%20Update%2020170424.pdf](http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_miwg/meeting_materials/2017-04-24/MIWG%20Public%20Policy%20Update%2020170424.pdf)
- **Resource quantities were scaled on a zonal basis to the 2,000 MW being evaluated in the 2018 IRM sensitivity case**
  - Resources were only distributed across zones that had substantial renewable build outs in the CES (i.e., zones with few MWs in the CES order will not receive MWs in the sensitivity)



# Proposed distribution of resources

## Utility scale solar

Zone	NYS DPS EIS	IRM Sensitivity	
	Nameplate (MW)	%	Nameplate (MW)
A	841	22%	437.1
C	391	10%	203.2
F	1812	47%	941.8
G	431	11%	224.0
K	373	10%	193.9
NYCA Total			2,000.0

## On-shore wind

Zone	NYS DPS EIS	IRM Sensitivity	
	Nameplate (MW)	%	Nameplate (MW)
A	981	26%	515.0
C	947	25%	497.1
D	851	22%	446.7
E	1031	27%	541.2
NYCA Total			2,000.0

# Questions?

We are here to help. Let us know if we can add anything.

# 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



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