Offshore Wind Profile Development – Summary

Christina Duong

Senior Capacity Market Operations Specialist

ICAP/MIWG/PRLWG Meeting

February 07, 2023

Background

- **Early 2021, the NYISO updated the initial Unforced Capacity percentage (“UCAP%”) for wind resources during the first year of operation in Section 4.5 of the ICAP Manual.**
  - The initial UCAP% for Land-based Wind was updated using the 5-year average (2014-2019) of UCAP % with actual historical production data for all existing wind resources
  - For offshore wind, stakeholders agreed to wait for the updated NREL data to be released early 2021
- **In April 2021, NREL released an updated 20-year wind dataset (2000-2020). However, the new release only included the meteorology data, without power profiles**
  - Users are also expected to develop power conversion assumptions to produce simulated power profiles
- **Therefore, the NYISO engaged the consultant, DNV, to develop 20-year simulated historical offshore wind power profiles**

New York ISO

Project Background and Status

- The project was kicked off in July
- DNV completed analysis to translate meteorological data, inputs detailed in slide 7, into power profiles
  - Proper loss considerations are expected to be captured
- DNV presented a high-level description of the model and underlying methodologies to stakeholders during the September 07, 2022 ICAP/MIWG/PRLWG Meeting
- The following DNV slides provide additional details and summary of the validation performed on the results

New York ISO

WHEN TRUST MATTERS

Offshore Wind (OFW) Profile Modeling for the NYISO

Wind Modeling Methodology

Chris Hayes, Senior Meteorologist, DNV
February 2023

DNV

About

DNV is an independent consultant and has been involved with the onshore and offshore wind sector globally for the past 30 years. We work across the full project life cycle and have, in diverse capacities, played a role or provided technical services to more than 97% of the worlds offshore wind projects.

Relevant Expertise

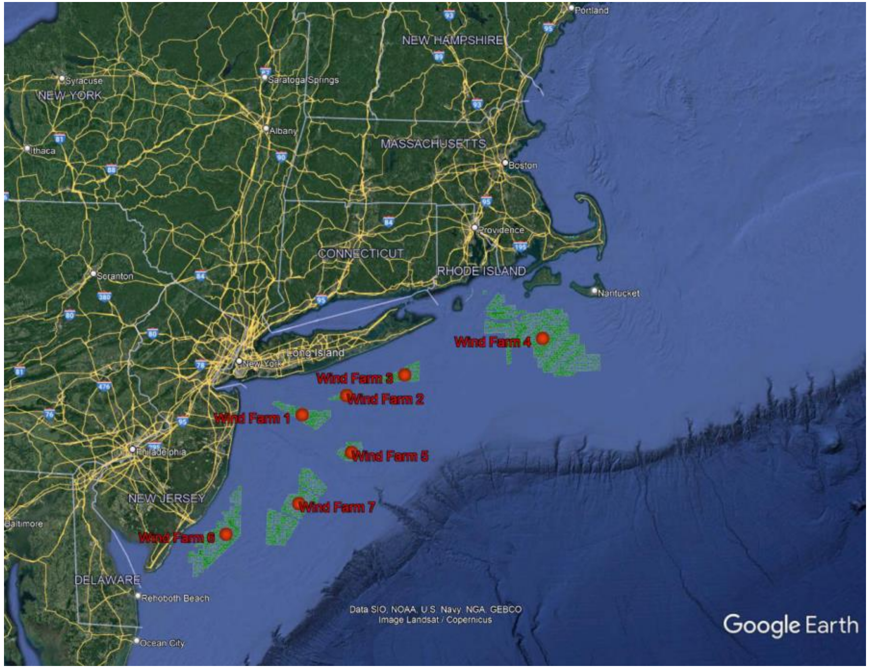
Across the Northeastern U.S. DNV has conducted mesoscale modeling studies covering all offshore BOEM lease areas near New York and has recently completed extensive mesoscale wind, solar and load modeling for the ISO-NE offshore wind integration planning advisory committee.

DNV has conducted more than 50 GW of offshore owner's engineer and due diligence services, more than 30 GW of offshore energy yield studies and more than 170 GW of onshore energy yield assessments in the U.S. Our energy assessment reports are trusted and relied upon for most of the project-financed projects in the U.S.

DNV manages and maintains data from the NY Bight floating lidar assessment campaign for the New York State Energy Research and Development Authority (NYSERDA)

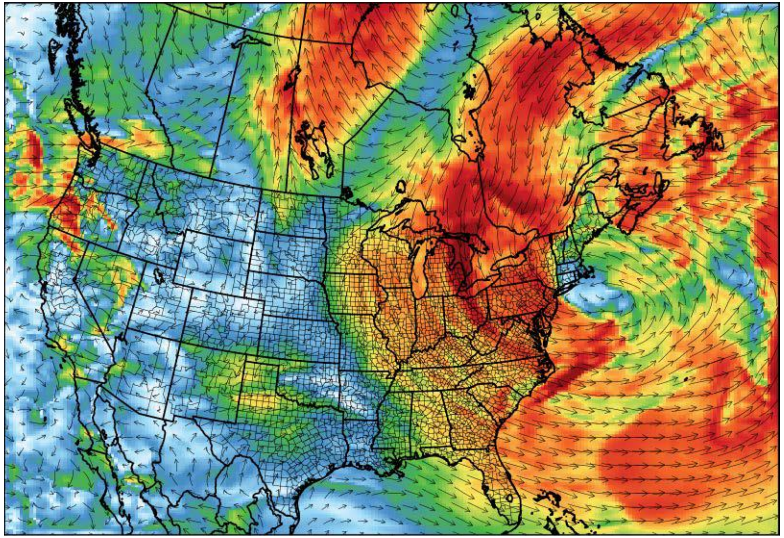
Project Description

- NYISO has requested DNV produce at least 3 hourly OSW power profiles covering the period 2000 through 2021 for the chosen sub-areas.
  - ➢ New York City Harbor
  - ➢ Long Island Shore
  - ➢ Long Island East End
- DNV has chosen to model the generation at 7 nearby potential development areas, including 5 BOEM lease areas and 2 planning areas.
  - ➢ Will be aggregated to the 3 chosen sub-areas
  - ➢ 1 nautical-mile turbine spacing
  - ➢ Generic Offshore Turbine
  - ➢ Assumed complete buildout for each development area (34 GW)
- Mesoscale weather modeling
  - ➢ Covers entire offshore area
- Power modeling
  - ➢ DNV WindFarmer



Weather Model

- DNV Wind Mapping System
  - The Weather Research and Forecasting (WRF) model, a state-of-the-art community mesoscale model that has been thoroughly documented in the open-peer reviewed literature.
  - A well-validated, published ensemble downscaling technique based upon the "analog method" *.
  - 2 km (horizontal) resolution - hourly
  - Calibrated with floating LiDAR measurements
- Inputs
  - NASA's Modern Era Retrospective-analysis for Research and Applications Version 2 (MERRA-2)
  - Global 500 m resolution land use, surface aerodynamic roughness and terrain elevation data, based upon the latest validated land cover and digital terrain elevation database.
  - Daily global 25 km analyses of lake and sea-surface temperatures.
  - 3-hourly global 25 km analyses of soil temperature and soil moisture, snow cover and snow depth.
  - Spectral nudging to preserve consistency between the large-scale state of WRF and the driving global reanalysis



*Delle Monache, L. F. A. Eckel, D. L. Rife, B. Nagarajan, and K. Searight, 2013: Probabilistic weather prediction with an analog ensemble. *Mon. Wea. Rev.*, 141, 3498-3516.

Delle Monache, L., T. Nipen, Y. Liu, G. Roux, and R. Stull, 2011: Kalman filter and analog schemes to postprocess numerical weather predictions. *Mon. Wea. Rev.*, 139, 3554–3570.

Nagarajan, B., L. Delle Monache, J. P. Hacker, D. L. Rife, K. Searight,, J. C. Knievel, and T. N. Nipen, 2015: An evaluation of analog-based post-processing methods across several variables and forecast models. Provisionally accepted for publication in *Wea. Forecasting*.

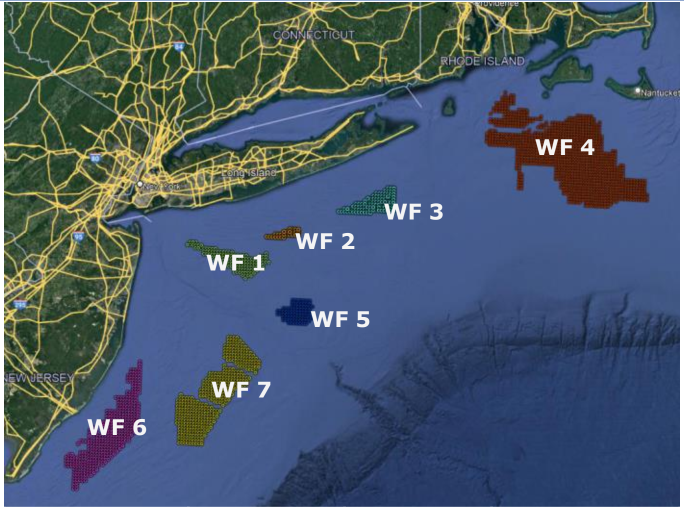
Rife, D., L. Delle Monache, J. Ma, and R. Whiting, 2014: Toward computationally efficient virtual time series with an analog ensemble. WindPower 2014 Conference, American Wind Energy Association, Las Vegas, NV.

Rife, D. L, E. Vanvyve, J. O. Pinto, A. J. Monaghan, C. A. Davis, and G. S. Poulos, 2013: Selecting representative days for more efficient dynamical climate downscaling: Application to wind energy. *J. Appl. Meteor. Clim.*, 42, 47-63.

DNV

Wind Power Modeling

- Wind Turbine
  - Generic 15 MW offshore turbine
  - 236 m rotor diameter
  - 150 m hub height
  - Representative of turbines in next 3 to 5 years
- Turbine Layouts
  - 7 “Wind Farms” representing potential development areas
  - 1 nautical-mile spacing
  - Gridded to fill out each BOEM lease area or planning area.
  - Aggregated to 3 sub-areas
- DNV WindFarmer
  - Simulates energy production based on the distribution of the wind speed and wind direction at the wind farm
  - Accounts for surface roughness, turbine rotor diameter and thrust curves, high wind speed hysteresis, air density, turbulence, turbine wake interactions.
  - Validated Wake Model

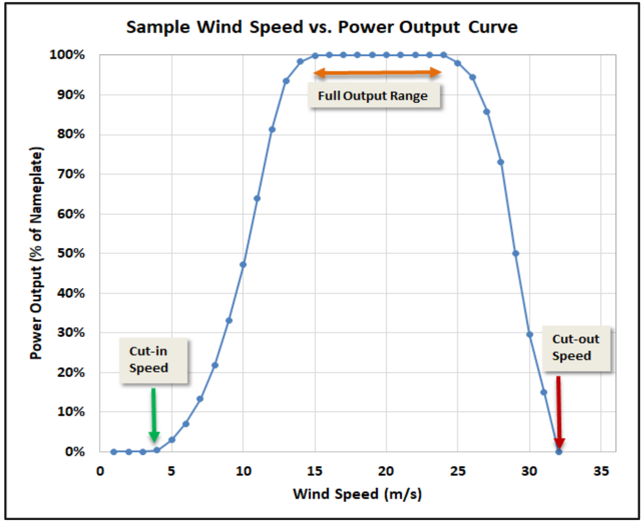


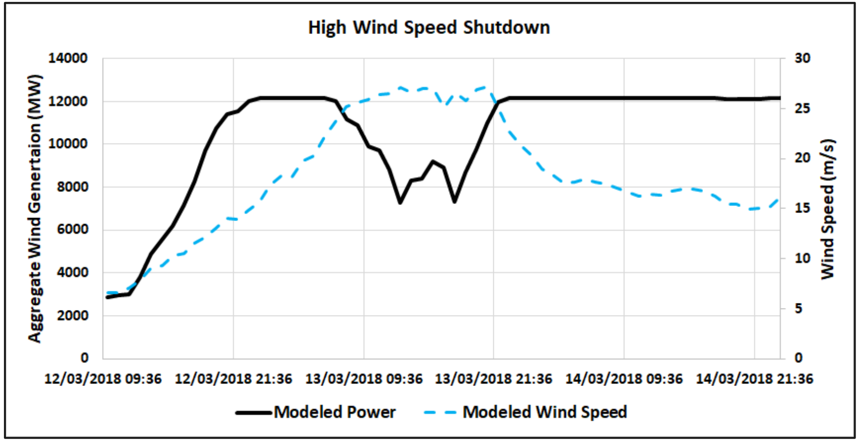
Wind Plant Name	Capacity (MW)	Turbine Count	Sub Area
Wind Farm 1	2,100	140	New York Harbor
Wind Farm 2	390	26	Long Island Shore
Wind Farm 3	1,530	102	Long Island Shore
Wind Farm 4	16,095	1,073	Long Island East End
Wind Farm 5	1,260	84	Long Island Shore
Wind Farm 6	6,075	405	New York Harbor
Wind Farm 7	6,615	441	New York Harbor

DNV

Wind Turbine Power Curve Basics

Wind Speed (m/s)	Percent of Nameplate Power
0	0.00%
1	0.00%
2	0.00%
3	0.40%
4	3.00%
5	7.10%
6	13.30%
7	21.80%
8	33.10%
9	47.20%
10	63.90%
11	81.30%
12	93.60%
13	98.40%
14	100.00%
15	100.00%
16	100.00%
17	100.00%
18	100.00%
19	100.00%
20	100.00%
21	100.00%
22	100.00%
23	100.00%
24	98.00%
25	94.60%
26	85.80%
27	73.00%
28	50.00%
29	29.60%
30	15.00%
31	0.00%





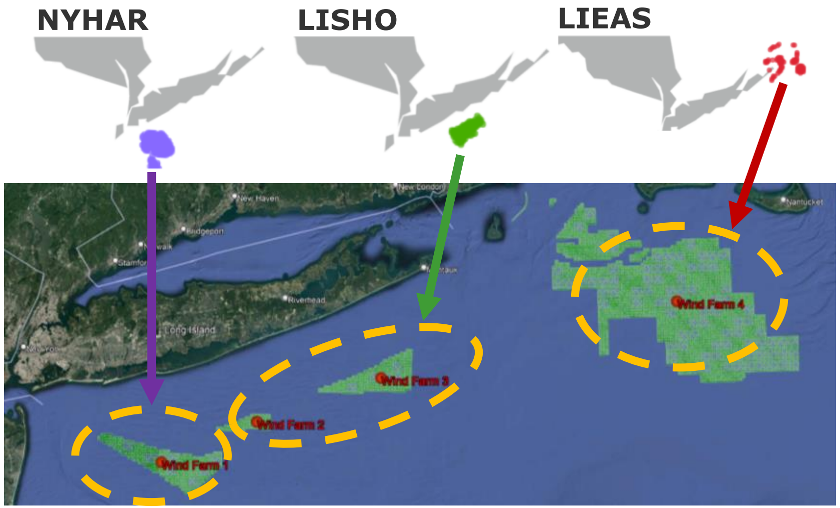
Loss Modeling

- Wake Losses
  - Wake loss is the effect on the energy production of the wind farm from the changes in wind speed caused by the impact of the turbines on each other.
  - Eddy viscosity combined with DNV Large Wind Farm Wake model.
  - Internal and External (nearby wind farm).
- Blockage
  - Loss to account for a resistance, or blockage, on the wind flow created by the turbines, deflecting some of the flow above and around the wind farm.
  - Primarily based on the turbine hub height, rotor diameter, and spacing.
- Availability
  - Stochastically modeled on time series basis.
  - Groups of turbines become unavailable for several consecutive timesteps (hours/days) until they come back online.
  - These downtime events are applied randomly throughout the time series
- Other Losses
  - Electrical efficiency
  - Line losses to POI
  - Turbine performance losses (degradation, hysteresis)
  - Environmental losses (icing, temperature shutdown)

Benchmarking and Validation

- Benchmarking to GE and ISO-NE Profiles
  - Average annual and seasonal Net Capacity Factor (NCF)
  - Diurnal and seasonal profile shapes
  - Frequency distribution of hourly power production
  - Frequency distribution of hourly ramp rates
  - Annual duration curves
  - Annual loss factors

- Weather data comparison to NYSERDA Floating LiDAR observations
  - Average wind resource
  - Accuracy of modeled data
  - Wind speed and direction frequency distributions
  - Wind speed ramp rate distribution



NY OFW profile locations

NY OFW	GE Area	ISO-NE
Wind Farm 1	NYHAR	-
Wind Farm 2 & 3	LISHO	-
Wind Farm 4	LIEAS	MA Lease Area

NCF and Energy Loss Comparisons

- Variations in DNV (NY OFW) NCF 5-year and 22-year estimates due to:
  - Changes in annual windiness
  - Variations in time series availability losses
- Potential differences between NY OFW and GE*
  - Wake losses
  - Electrical and availability losses
  - Average hub height wind speeds
- Differences between NY OFW and ISO-NE NCF
  - NY OFW includes turbine performance and additional production losses (~3% NCF)
  - NY OFW uses updated wake model and larger turbine rotor diameters (results in larger wake losses)
  - Different modeled hub heights
- Spatial variations in NY OFW NCF estimates:
  - Modeled and assumed losses (primarily wake)
  - Wind speed variations
- Large wake loss at LIEAS due to wind farm size
  - Results in lowest NCF compared to NYHAR and LISHO
  - Layouts not optimized to reduce wakes

** DNV was not provided with GE estimated wind resource, project size, hub height or wake and loss modeling methodology assumptions so a direct comparison with DNV estimates cannot be made.*

Table 3-1 Average NCF for DNV produced (NY OFW), ISO-NE and GE Offshore Wind profiles

Profile	New York Harbor	Long Island Shore	Long Island East
GE Average NCF	39.2%	40.2%	42.9%
NY OFW 5-year Average NCF[1]	47.0%	48.6%	44.7%
NY OFW 22-year Average NCF	47.7%	49.4%	45.5%
ISO-NE 5-year Average NCF[2]	N/A	N/A	47.4%
ISO-NE 21-year Average NCF[2]	N/A	N/A	48.2%

1. Matched to GE profile period
2. ISO-NE NCF inclusive of wake, electrical and availability losses.

Table 3-2 Comparison of DNV Wind Farm Energy Estimates

OSW Profile Summary	New York Harbor	Long Island Shore	Long Island East
Wind Farm	1	2 & 3	4
Turbine make and model	DNV Generic	DNV Generic	DNV Generic
Turbine hub height [m]	150	150	150
Turbine rated power [kW]	15 MW	15 MW	15 MW
Number of turbines	140	128	1073
Installed capacity [MW]	2,100	1,920	16,096
Wind Resource Summary			
Average turbine hub-height wind speed [m/s]	10.0	10.1	10.4
Energy Assessment Summary			
P50 Gross Energy (GWh/year)	**11,172.5**	**10,326.7**	**89,671.1**
P50 Gross Capacity Factor	**60.7%**	**61.4%**	**63.6%**
- Wake Effects Loss	87.7%	90.2%	81.1%
- Availability Loss	95.7%	95.5%	95.0%
- Electrical Loss	96.4%	96.5%	95.9%
- Turbine Performance Loss	97.5%	97.5%	97.5%
- Effect of asymmetric production	99.7%	99.8%	99.5%
Total Losses	78.7%	80.8%	71.6%
P50 Net Energy (GWh/year)	**8,787.4**	**8,210.5**	**64,179.3**
P50 Net Capacity Factor	**47.7%**	**49.4%**	**45.5%**

DNV

Diurnal and Seasonal Comparisons

- 22-year NY OFW profiles cut to match same 2008 – 2012 period as GE profiles
- ISO-NE profiles only available for LIEAS area
- Primary difference is NCF magnitude
- Most shapes in relative agreement
- LIEAS
  - GE suggests earlier/quicker evening ramp
    - Wind resource dataset
    - Geographic location
    - Relationship of wind speed freq. distribution to power curve

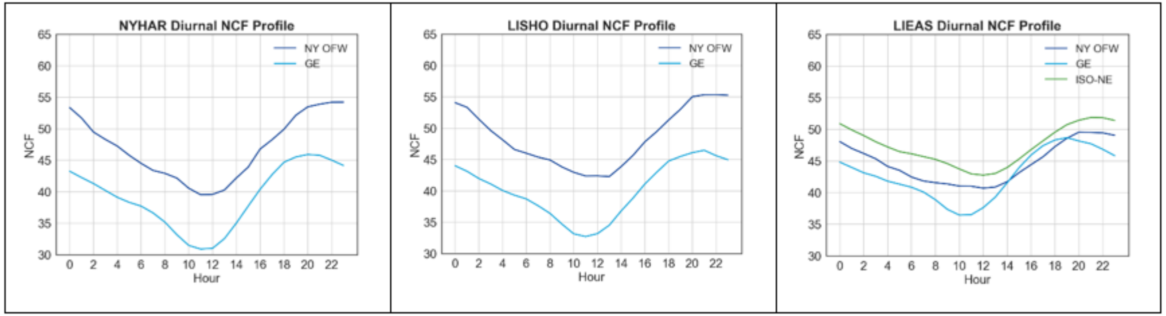


Figure 3-1 Average Diurnal Profile Shape for GE and DNV profiles

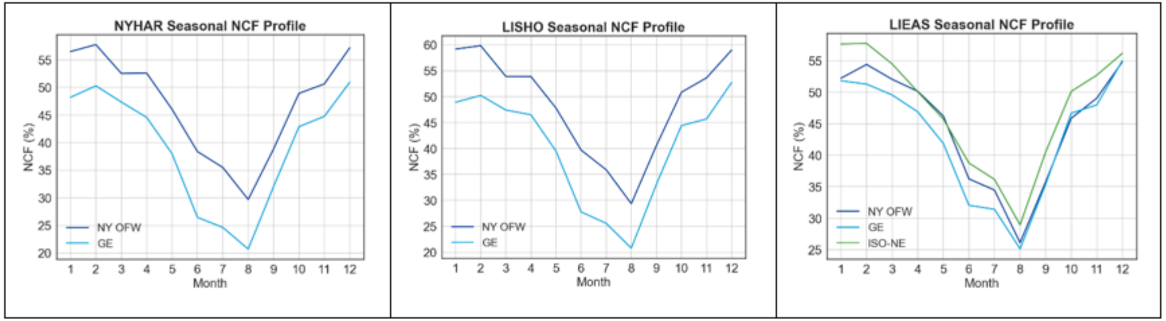


Figure 3-2 Average Monthly Profile Shape for GE and DNV profiles

Energy Frequency Distributions

- NY OFW, ISO-NE and GE distributions in relative agreement
- GE profiles have higher frequency of low/no generation records
- ISO-NE profiles have fewer instances of low generation
- Likely caused by:
  - Differences in underlying wind resource data
  - Turbine power curve shape and cut-in wind speed.

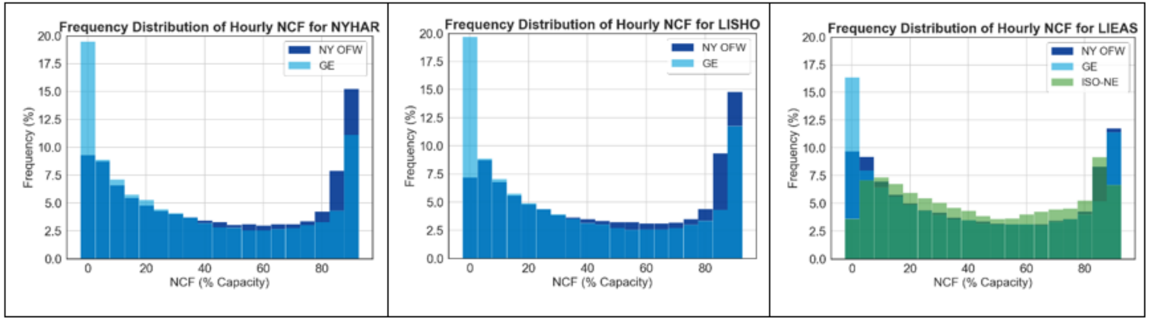


Figure 3-3 NY OFW, GE, and ISO-NE NCF frequency distributions

Hourly Ramp Rates

- NY OFW, GE and ISO-NE ramp rate distributions in relative agreement
- ISO-NE profiles exhibit fewer large ramps
  - Likely due to coarser model resolution
- Very large ramps observed in GE profiles
  - Rare
  - Possibly due to high wind cut out (older turbine model)

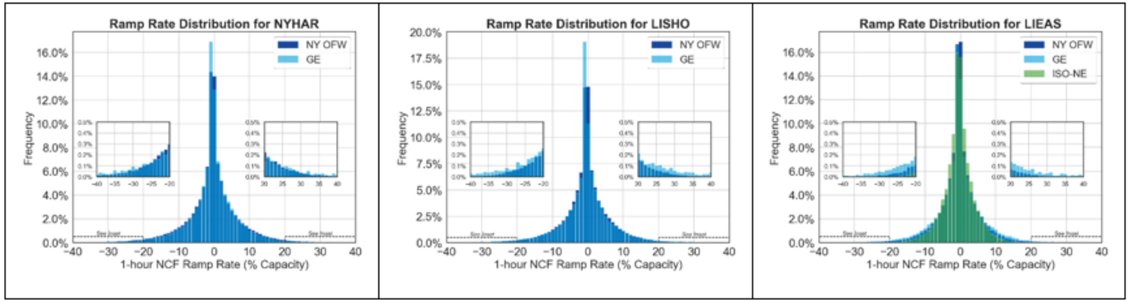


Figure 3-4 NY OFW, GE and ISO-NE NCF ramp rate distributions for New York Harbor, Long Island Shore and Long Island East

Table 3-10 Selected 1-hour NCF ramp rate quantiles

	NYHAR		LISHO		LIEAS		
Quantile	**GE (%)**	**NY OFW (%)**	**GE (%)**	**NY OFW (%)**	**GE (%)**	**NY OFW (%)**	**ISO-NE (%)**
0	-92.9	-64.6	-93.5	-54.5	-86.3	-43.4	-28.4
0.1	-8.1	-8.5	-8.2	-7.7	-7.4	-6.0	-4.9
0.2	-3.7	-4.0	-3.9	-3.7	-3.6	-3.0	-2.6
0.3	-1.6	-1.7	-1.6	-1.7	-1.6	-1.3	-1.4
0.4	-0.3	-0.5	-0.3	-0.4	-0.4	-0.4	-0.5
0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.6	0.6	0.7	0.5	0.5	0.5	0.4	0.6
0.7	1.9	2.0	1.8	1.9	1.7	1.4	1.5
0.8	4.1	4.3	4.0	3.9	3.6	3.1	2.8
0.9	7.9	8.4	8.1	7.7	7.3	6.1	4.9
1	82.4	59.4	86.6	47.2	75.1	45.4	25.1

Hourly Ramp Rates

- Profiles scaled to 1,000 MW wind farm and presented on log scale
- GE profiles exhibit broader range of ramp rates
  - ➢ possibly due to turbine cut-out/cut-in

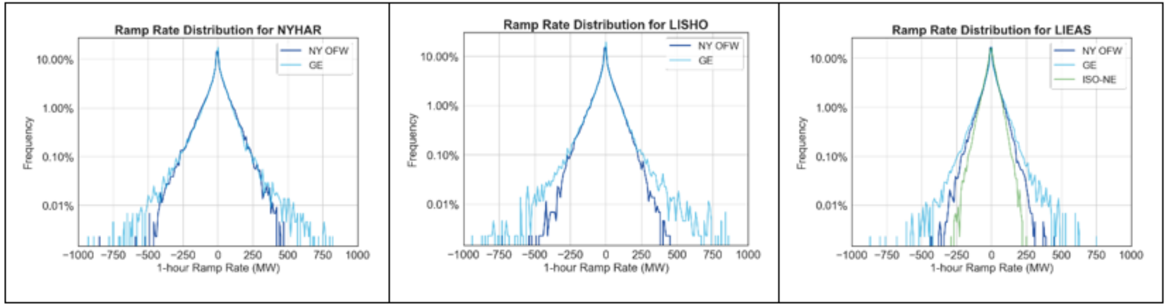


Figure 3-5 NY OFW, GE and ISO-NE ramp rate distributions for a 1,000 MW capacity project in New York Harbor, Long Island Shore and Long Island East

Table 3-11 Selected 1-hour ramp rate quantiles in MW

	NYHAR		LISHO		LIEAS		
Quantile	**GE (MW)**	**NY OFW (MW)**	**GE (MW)**	**NY OFW (MW)**	**GE (MW)**	**NY OFW (MW)**	**ISO-NE (MW)**
0	-928.7	-645.5	-935.4	-544.6	-862.7	-434.1	-283.9
0.1	-80.7	-85.0	-82.0	-76.9	-73.8	-60.4	-49.2
0.2	-36.9	-40.3	-39.0	-37.0	-35.6	-29.5	-26.4
0.3	-15.5	-17.2	-16.4	-16.5	-16.3	-13.2	-13.6
0.4	-3.0	-4.8	-3.1	-4.2	-4.1	-3.5	-4.8
0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.2
0.6	6.1	6.7	4.7	5.4	5.2	4.4	5.5
0.7	19.3	20.2	17.9	18.5	17.0	14.4	14.6
0.8	40.8	42.9	39.6	39.4	36.3	30.8	27.6
0.9	78.5	84.1	81.2	76.7	73.1	60.8	49.2
1	824.4	593.8	866.1	472.4	750.6	454.1	250.9

Annual Duration Curves

- NY OFW profiles more energetic through the period of record when compared to the GE profiles

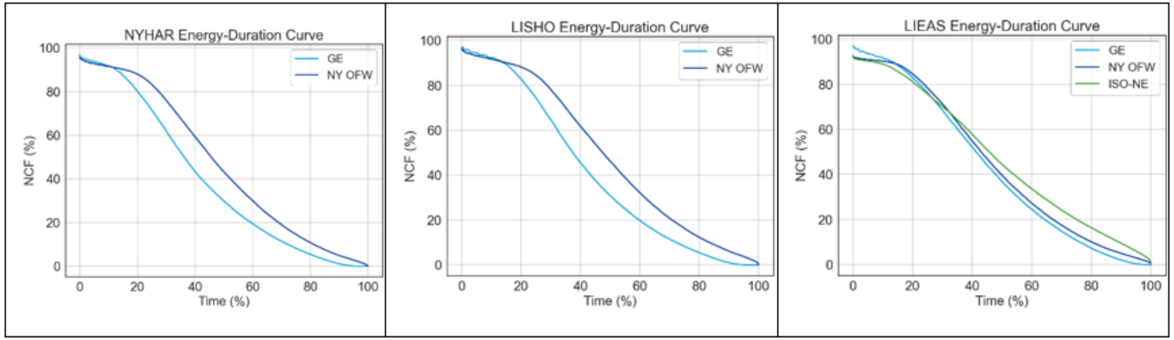


Figure 3-6 Energy Duration Curves as Percentage of Time

Comparison of Weather Data to Observations

- Comparisons of modeled wind speed data to NYSERDA floating LiDAR
  - Average wind resource
  - Accuracy of modeled data
  - Wind speed and direction frequency distributions
  - Wind speed ramp rate distribution

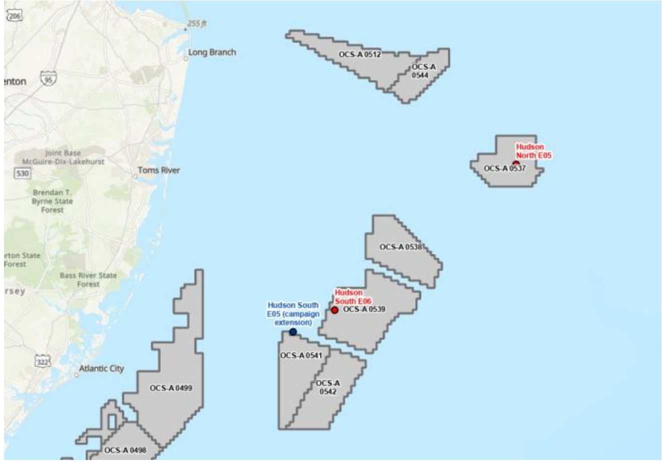


Table 3-13 NYSERDA Float LiDAR Information

Buoy Reference	Measurement period
E05	August 2019 to September 2021 (2.1 years)
E06	September 2019 to February 2022 (2.4 years)
E05 (Extended campaign)	January 2022 to January 2023

Wind Resource Comparison

- 10-minute LiDAR observations cleaned and re-averaged to hourly
- Measured and calibrated modeled data matched to be concurrent
- 14,000 hourly records considered valid
  - Sept 2019 – Jan 2022
- Good agreement

Table 3-14 Observed vs Modeled Wind Speeds NYSERDA floating LiDAR

	E05		E06	
	Average Observed WS [m/s]	Average DNV Calibrated WS [m/s]	Average Observed WS [m/s]	Average DNV Calibrated WS [m/s]
Mean	10.1	10.1	10.1	10.0
Standard Deviation	5.0	4.5	5.0	4.5
Minimum	0.6	1.6	0.6	1.7
25th percentile	6.3	6.5	6.2	6.5
Median	9.6	9.5	9.6	9.5
75th percentile	13.4	13.0	13.4	13.0
Maximum	30.7	28.1	33.2	28.3
Valid Period	2.0 years		1.6 years	

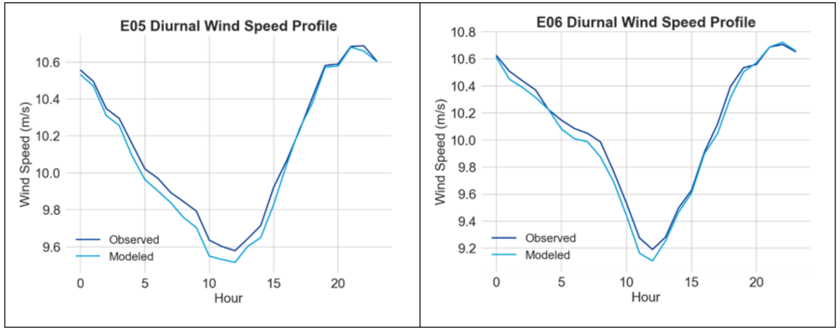


Figure 3-8 Diurnal wind speed profile for E05 and E06

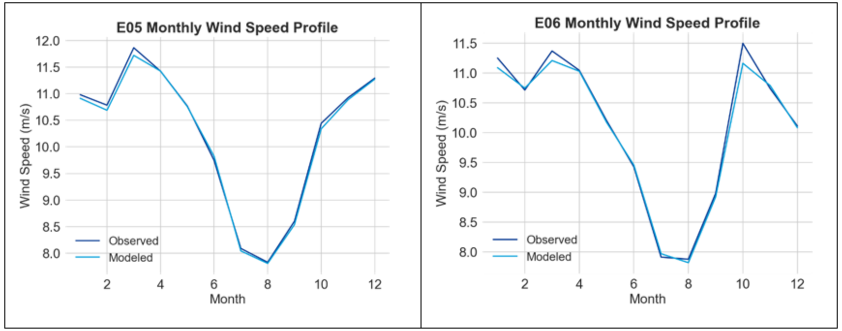


Figure 3-9 Monthly wind speed profile for E05 and E06

Accuracy

- On average, modeled wind speeds are within 0.05 m/s of the observations
- Can be some large variations at times
  - Modeling error (timing, magnitude)
  - Lidar "point" measurement different than 2-km resolution modeled data.

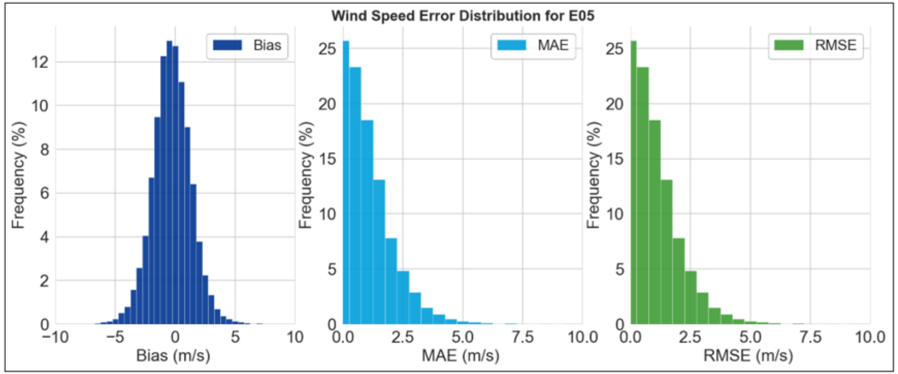


Figure 3-10 Wind Speed Error Distributions for E05

Table 3-15 Modeled Wind Speed Average Error

	E05			E06		
	Bias (m/s)	MAE (m/s)	RMSE (m/s)	Bias (m/s)	MAE (m/s)	RMSE (m/s)
Mean	-0.04	1.26	1.64	-0.05	1.29	1.71

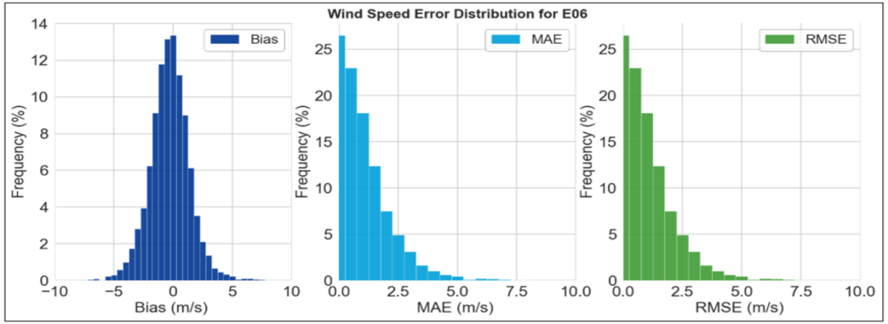


Figure 3-11 Wind Speed Error Distributions for E06

DNV

Wind speed and direction frequency distributions

- In general, good agreement on WS and WD distributions
- Slight under prediction of low wind speed frequency in modeled data (< 3 m/s)
  - Below turbine cut-in

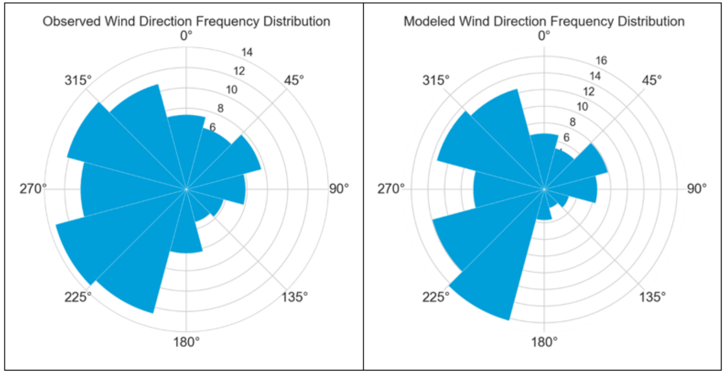


Figure 3-14 Wind Direction Frequency Distribution for Measured and Modeled data at E05

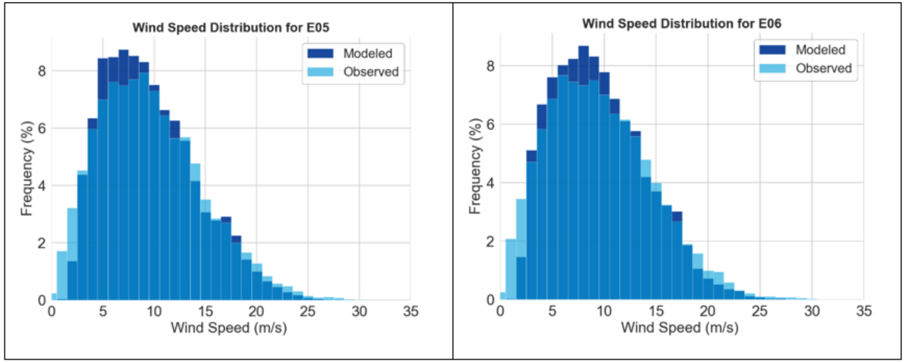


Figure 3-13 Wind Speed Frequency Distribution for Measured and Modeled data

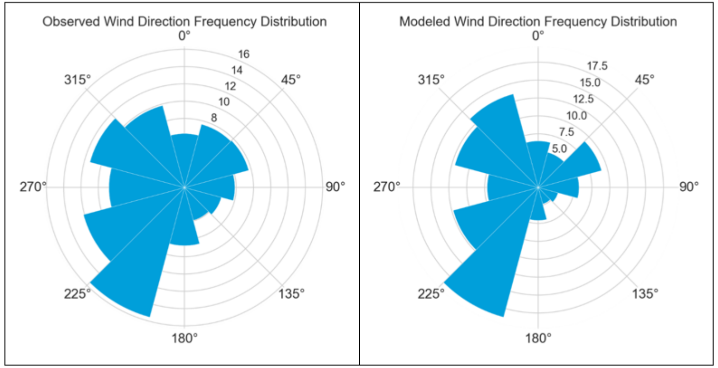


Figure 3-15 Wind Direction Frequency Distribution for Measured and Modeled data at E06

Ramp Rates

- Reasonable agreement
- Measured ramp extremes larger than modeled
  - Expected
  - 2 km grid cell -> smoother profile

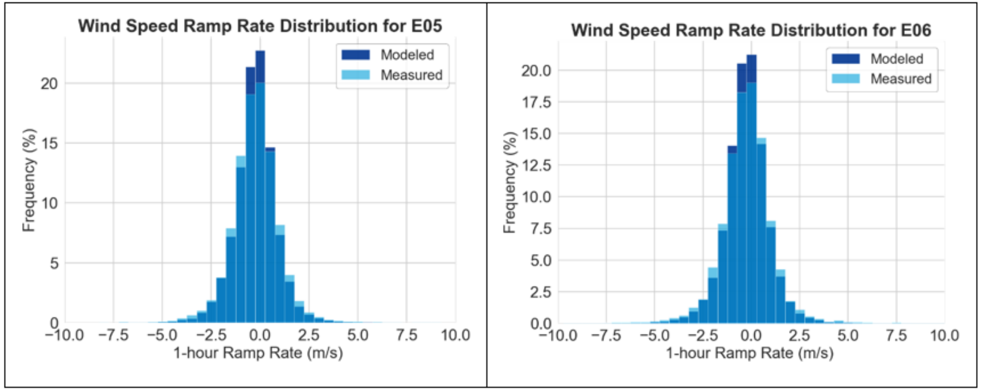


Figure 3-16 Measured and Modeled 1-hour Wind Speed Ramp Distribution

Table 3-18 Measured and Modeled 1-hour Wind Speed Ramp Rate Quantiles

	E05		E06	
Percent Rank	**Modeled (m/s)**	**Measured (m/s)**	**Modeled (m/s)**	**Measured (m/s)**
Minimum	-15.0	-19.5	-14.0	-16.0
10th	-1.3	-1.4	-1.3	-1.5
20th	-0.8	-0.9	-0.8	-0.9
30th	-0.4	-0.5	-0.5	-0.5
40th	-0.2	-0.2	-0.2	-0.2
50th	0.0	0.0	0.0	0.0
60th	0.2	0.3	0.2	0.3
70th	0.5	0.5	0.5	0.6
80th	0.8	0.8	0.8	0.9
90th	1.2	1.4	1.3	1.4
99th	2.9	3.3	3.1	3.9
Maximum	9.4	16.7	15.7	16.2

THANK YOU!

Initial UCAP%

ICAP Manual Revision History

Version 6.48 (Feb 2021)

Unforced Capacity Percentage - Wind			
	Zones A through J	Zone K (land-based)	Zone K (Off-shore)
Summer	10%	10%	38%
Winter	30%	30%	38%

Version 6.49 (May 2021)

Unforced Capacity Percentage – Land-Based Wind		
	6-Hour Peak Load Window	8-Hour Peak Load Window
Summer	16%	16%
Winter	34%	34%

Unforced Capacity Percentage – Off-shore Wind (Zone J and K)		
	6-Hour Peak Load Window	8-Hour Peak Load Window
Summer	TBD	TBD
Winter	TBD	TBD

New York ISO

Initial UCAP% for Offshore Wind

- For land-based wind resources, the initial UCAP% was calculated using the most recent 5-year actual output from all existing land-based wind resources during the Peak Load Window (“PLW”) from 2015 to 2019
  - However, there is no existing offshore wind on the NYISO system
- For offshore wind resources, the NYISO proposes to update the initial UCAP% using simulated wind profiles from DNV and aligning with the calculations for land-based wind resources with the most recent data period
  - The most recent 5-year period for the offshore wind initial UCAP% calculation would be Winter 2016-17 through Summer 2021
- The NYISO applied the same methodology for land-based wind and establish the initial UCAP% for 6-Hour and 8-Hour PLW for Zone J and K (shown on the next slides)

New York ISO

Peak Load Window

- The NYISO aggregated the data to the zonal level
- The NYISO then calculate the annual historical zonal Unforced Capacity percentages using the simulated off-shore wind historical production during the hours within the applicable Peak Load Windows, as well as the associated hourly weighting factors as specified in Section 3.4(c) in the ICAP Manual Attachment J and shown in the table** below:

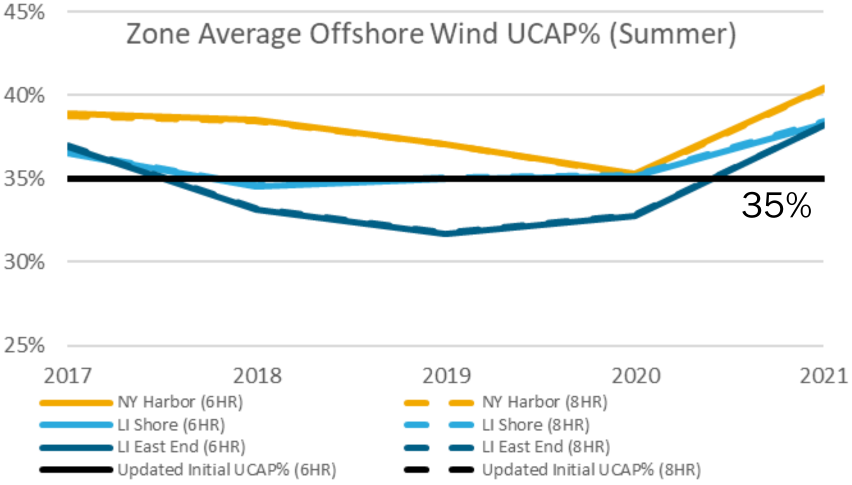
Hour Beginning	Summer Months: 6, 7, 8		Winter Months: 12, 1, 2	
	6-Hour PLW Weighting	8-Hour PLW Weighting	6-Hour PLW Weighting	8-Hour PLW Weighting
12		5.00%		
13	12.50%	10.00%		
14	18.75%	17.50%		5.00%
15	18.75%	17.50%		5.00%
16	18.75%	17.50%	18.75%	17.50%
17	18.75%	17.50%	18.75%	17.50%
18	12.50%	10.00%	18.75%	17.50%
19		5.00%	18.75%	17.50%
20			12.50%	10.00%
21			12.50%	10.00%

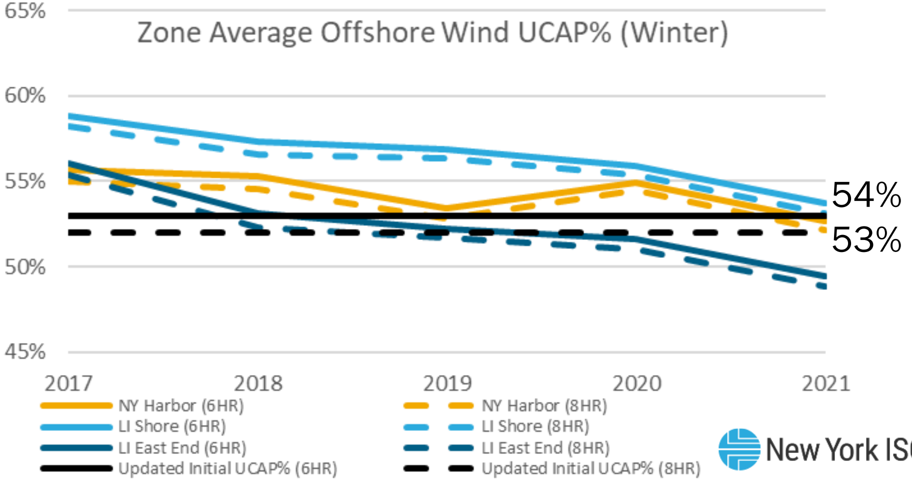
*** The weighting factors for all other hours during the year is set to zero.*

New York ISO

Offshore Initial UCAP% with DNV Profiles

- Hourly profiles of the 4 windfarms on Slide 11 were selected to represent New York City Harbor (Zone J), Long Island Shore (Zone K) and Long Island East End (Zone K) (collectively, “DNV Profiles”)
- Same methodology as onshore UCAP% is used as specified in the ICAP Manual:





New York ISO

Offshore Initial UCAP% with DNV Profiles

- Based on the average annual Unforced Capacity percentages between 2017 and 2021 of the DNV Profiles
- Same methodology as land-based initial UCAP% is used as specified in the ICAP Manual:

Unforced Capacity Percentage – Off-shore Wind (Zone J and K)		
	6-Hour Peak Load Window	8-Hour Peak Load Window
Summer	35%	35%
Winter	54%	53%

New York ISO

Proposed ICAP Manual Revisions

Proposed ICAP Manual Revisions (Section 4.5)

The Unforced Capacity percentages for off-shore wind resources set forth below are based on the average annual Unforced Capacity percentages between ~~2015 and 2019~~ Winter 2016-17 and Summer 2021, where the annual Unforced Capacity percentages are the weighted averages using the simulated off-shore wind historical production during the hours within the applicable Peak Load Windows, as well as the associated hourly weighting factors as specified in Section 3.4(c) in the *ICAP Manual Attachment J*. The simulated off-shore wind historical production is based on the off-shore wind profiles for ~~the mid-Atlantic region released by the National Renewable Energy Laboratory~~ proposed offshore wind development areas near New York state, available on the NYISO website.

New York ISO

Proposed ICAP Manual Revisions (Section 4.5)

Unforced Capacity Percentage – Land-Based Wind		
	6-Hour Peak Load Window	8-Hour Peak Load Window
Summer	16%	16%
Winter	34%	34%

Unforced Capacity Percentage – Off-shore Wind (Zone J and K)		
	6-Hour Peak Load Window	8-Hour Peak Load Window
Summer	~~TBD~~ 35%	~~TBD~~ 35%
Winter	~~TBD~~ 54%	~~TBD~~ 53%

~~*The specific Unforced Capacity Percentages are pending the National Renewable Energy Laboratory release of updated wind profiles, which is expected to be available early 2021.~~

ICAP Manual Excerpt (Section 4.5)

Starting with the Capability Period that begins May 1, 2024, initial Unforced Capacity values for new generating Resources will be based on the applicable Capacity Accreditation Factor for the generating Resource's Capacity Accreditation Resource Class and the 1-year NERC class average EFORd value for Resources of the same type. If no NERC class average exists, the NYISO will estimate a class average using EFORd values for at least three (3) Resources of the same type currently providing capacity in the NYISO market and have sufficient operational data; provided however, that for a new Limited Control Run-of River Hydro Resource or Intermittent Power Resource , the initial Unforced Capacity value will be based on the applicable Capacity Accreditation Factor for the Resource's Capacity Accreditation Resource Class and a derating factor of zero. The initial Unforced Capacity value, whether based on the 1-year NERC class average EFORd or the NYISO estimate, is used for all applicable months in the Resource's derating factor calculation.

New York ISO

Next Steps

- The NYISO has posted the hourly offshore wind power profiles as part of today's meeting materials
- The NYISO will present the proposed revisions to update the ICAP Manual at a BIC Meeting

New York ISO

Questions?

New York ISO

Our Mission & Vision

Mission

Ensure power system reliability and competitive markets for New York in a clean energy future

Vision

Working together with stakeholders to build the cleanest, most reliable electric system in the nation