New York ISO
Independent System Operator

# Offshore Wind Profile Development

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# 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 has engaged the consultant DNV to develop the 20-year simulated historical offshore wind power profiles**

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# Project Scope

- **DNV will leverage weather and meteorological data from the Weather Research and Forecasting (WRF) model, and develop assumptions to convert wind performance data into hourly power output**
  - The DNV 2-km resolution simulation will be driven by NASA's latest MERRA-2 reanalysis product
  - The model configuration is specific to the New York area, and has the flexibility to be extended to other resource types or weather scenarios in a consistent manner
- **In addition, the following loss factors will also be considered when developing the hourly offshore wind power profiles**
  - Wake Losses (time dependent)
  - Availability (maintenance and forced outage)
  - Connection Losses
  - Other loss factors if applicable
- **When project is completed, simulated historical hourly output profiles for offshore wind from 2000 through 2021 will be developed for Zone J and K**
  - Bureau of Ocean Energy Management (BOEM) lease areas that are close to the New York shoreline are considered to be relevant locations for the purpose of this project
  - Profiles at the sub-zonal level will be developed if resource performance differs at the sub-zonal level
- **These hourly profiles can also be updated periodically as requested by the NYISO**

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# Project Timeline

- The offshore wind profile development project was kicked off in July
- The NYISO plans to come back to the ICAPWG to report on progress and to present key assumptions and high-level methodologies in late Q3 this year
- Final presentation of the offshore wind power profiles is expected early Q4 this year
  - The NYISO intends to make the hourly offshore wind power profiles publicly available once the project is completed
  - Updates to the offshore wind initial UCAP% in the ICAP Manual Section 4.5 will be coordinated with the Capacity Accreditation project

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# Appendix



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## 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)

## Recent projects

- **ISO-NE**: Onshore and offshore wind + solar profile development and stochastic analysis
  https://www.iso-ne.com/static-assets/documents/2021/03/a9_dnv_gl_report_analysis_of_stochastic_dataset_for_iso_ne_rev1.pdf
  https://www.iso-ne.com/static-assets/documents/2021/03/a9_stochastic_time_series_modeling_for_isone_rev_2.pdf
  https://www.iso-ne.com/static-assets/documents/2020/02/a7b_wind_power_time_series_dnvgl.pdf

- **Major West Coast Utility**: Hourly and sub-hourly wind and solar time series modeling and renewable profile development.

- **WFIP-3:** DNV is currently involved in the DOE sponsored Wind Forecast Improvement Project 3, focused on the offshore development areas on the east coast.

# Questions?

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# 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

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