

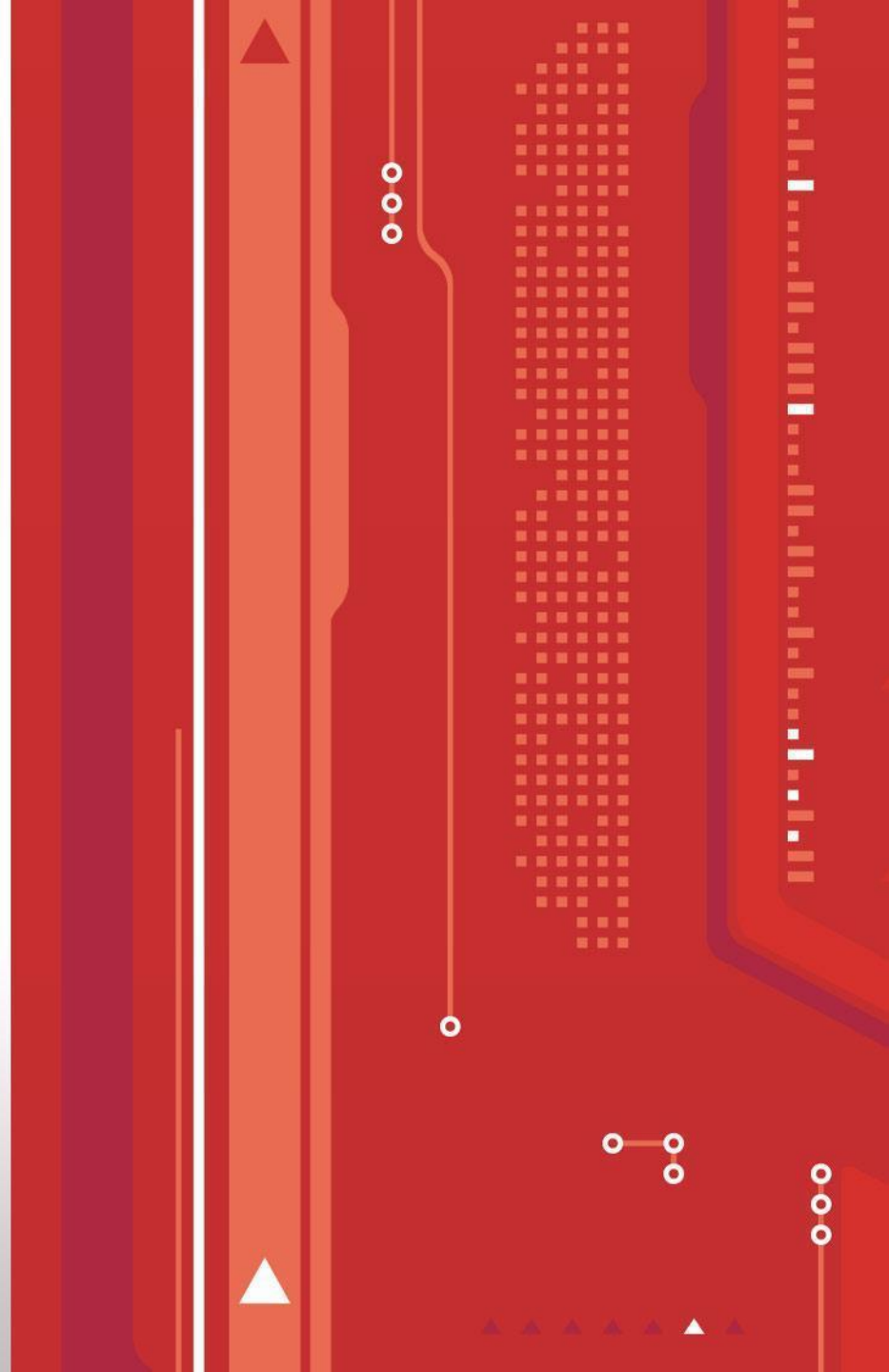
Information Session

Windfarm Submission Requirements

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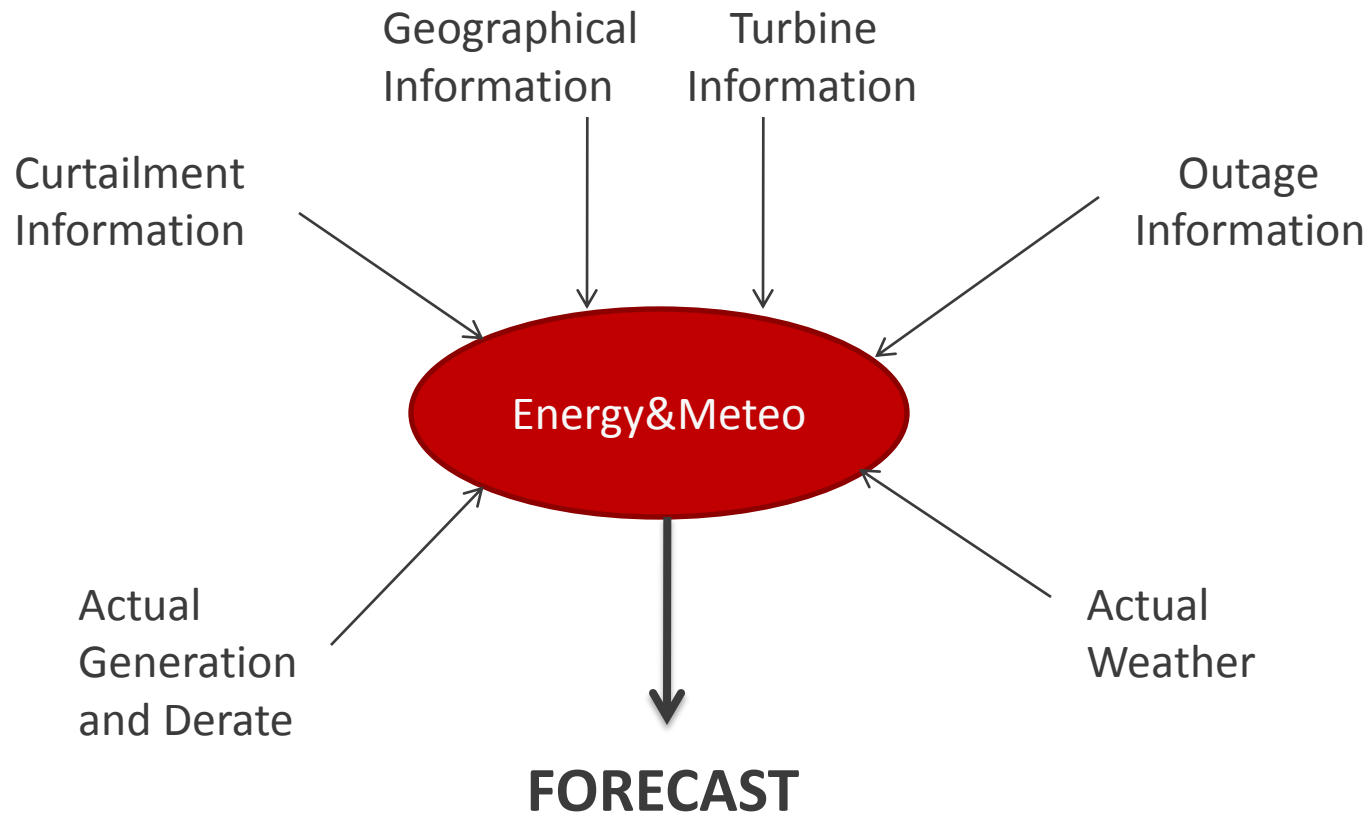


Wind Power Forecast

SPP will generate 3 forecasts:

1. STWF – Short-term forecast
 - A. Updated every 5-minutes
 - B. 4hrs forecast with 5-minute granularity
 - C. Uses a Physical model
2. MTWF – Mid-term forecast
 1. Updated hourly
 2. 48hr forecast with hourly granularity
 3. Uses a Statistical model
3. LTWF – Long-term forecast
 1. Updated every 4-6 hours
 2. 7day forecast with hourly granularity
 3. Uses a Statistical model

Forecast Process



Geographical Information

The following geographical information will be submitted by the registering entity for each resource. This information will be used to accurately use the correct weather regimes from different NWP models and to fine tune statistical models at the resource site

- Longitude and Latitude at center of Windfarm
- Longitude and Latitude of Met Tower
- Height of Met Tower (It is preferred that the measurement be taken close to turbine hub height)

Turbine Information

The following turbine information will be submitted by the registering entity for each resource. This information will be used to accurately apply the meteorological data and train the physical and statistical models for each resource. If more than one turbine manufacturer exist, use the turbine information from the most prominent manufacturer.

- Manufacturer
- Model
- Size
- Hub Height
- Rotor Diameter
- Cold Weather Package

Curtailment Information

SPP will send the curtailment information to Energy&Meteo. This information is necessary so that Energy&Meteo can ignore actual generation during the time of curtailment and to determine how much is due to actual weather conditions. SPP is working on a temporary solution to allow operator to submit curtailment information via a web interface for the current EIS market. For Integrated Marketplace this should be automated.

Outage Information

The following outage information will be submitted by the generator operator for each resource using the CROW interface. This information will be used to derate the power forecast.

- Planned wind farm outage (all turbines)
 - Any forced outage should be added to CROW immediately with the best approximation of the in-service date
- Planned turbine outages
 - If the number of turbines taken down derates the windfarm by 10% or 25 MW, which ever is smaller, the new windfarm MW capability amount will have to be entered in CROW
 - Same applies for forced turbine outages

Actual Generation and Derate

The following actual generation information will be submitted by the generator operator for each resource via ICCP. The registering entity will be responsible for providing the ICCP object ID. Actual generation is already a requirement. Real-time turbine availability is now being requested. This information will be used for the STWF.

Availability should be represented as the %capacity available after a derate due to turbines being down for maintenance. If a turbine loses communication for a period greater than 10 minutes then it should be accounted for in the calculation. The ICCP value should be updated at least once per minute.

Actual Weather Data

The following actual weather information will be submitted by the generator operator for each resource via ICCP. The registering entity will be responsible for provided the ICCP object ID's. The physical models are heavily based on weather data and are the drivers for the statistical models. Weather data will be used to train the NWP models and fine-tune the weather regimes. The weather data should represent rolling 10-minute averages and the ICCP value should be updated at least once per minute using metric units.

- Wind Direction
- Wind Speed
- Temperature
- Pressure
- Relative Humidity

Improved Wind Power Forecast

A more accurate wind power forecast provides greater reliability assessment of the grid by providing improved visibility of wind generation in the coming hours. An improved wind power forecast coupled with an accurate Load forecast can yield a proper wind ramp event forecast. The primary focus of a the wind power forecast today is to improve Reliability of the grid. The same focus will apply to the Integrated Marketplace but since the wind power forecast will be integrated, it will yield other benefits:

- Reduced headroom online capacity due to better uncertainty risk
- Reduced Regulation requirements for both Up & Down products hourly
- Less volatile pricing through better Short-term output projections
- Less ramp rate violations
- Less transmission constraint violations