

Designation	Typical horizon	Example methods	Example applications
Immediate	Milliseconds to seconds	<ul style="list-style-type: none"> – Persistence – Wind field measurements using nacelle lidars [1] and/or upwind turbine SCADA [2] 	<ul style="list-style-type: none"> – Wind turbine control [1] – Grid regulation [3] (e.g. frequency, voltage support)
Very short-term (minute scale)	1-minute to 1-hour	<ul style="list-style-type: none"> – Persistence [4] – Statistical time series models [5] – Markov (regime switching) models [6] – Machine learning and artificial neural networks (ANN) [7,8] 	<ul style="list-style-type: none"> – Wind farm control – Ancillary services (e.g. reserve power) [2,9] – Intrahour energy market trading [10] – Storage management (e.g. battery storage control)
Short-term	1 to 72 hours	<ul style="list-style-type: none"> – Statistical time series models [11,12] – Numerical weather prediction (e.g. WRF) [13] – Analogue ensemble prediction [13,14] – Kalman filter [11,15] 	<ul style="list-style-type: none"> – Intraday and day-ahead energy market trading [10] – Ancillary services – Storage management (e.g. battery, hydrogen and pumped storage control) [16] – Economic dispatch and generator planning – Operator portfolio management
Long-term	72 hours to 10 days or more	<ul style="list-style-type: none"> – Same as short term – Climatology 	<ul style="list-style-type: none"> – Reserve requirement decisions – Unit commitment decisions – Maintenance scheduling