Scheduling and coordination of the aggregated WPP inertial (fast frequency) response resource within a high variable renewables power system

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With governments all over the world acknowledging the effects of the climate change, investments are being made for the development of renewable generation technologies. Wind energy generation being one of the most promising alternatives besides solar has drawn attention of many countries in Europe and in the other geographies but integrating these sources into the electric grid will result in its own set of problems. Conventional power generation has been known to provide inherent inertial response to system disturbances, but the inertial response capacity of the system decreases with increased penetration of renewable energy sources. With high deployment of the renewables once would expect them to provide additional utilities as well. To this end our aim is to develop novel robust power system operational rules for wind power plants to provide minimum frequency support services and inertial response, assess the availability and forecastable volume of inertial frequency support from wind power plants and alternative providers, e.g., flywheels, batteries along with frequency stability study of the power system from their aggregated response.

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