

# Wind power market secondary system







#### **Overview**

Can wind power production participate in the regulating power market?

Wind power production can participate in the regulating power market. However, to make the regulating power market feasible for balancing wind production, the TSOs need to do as much of the balancing as possible using the regulating power market instead of the more expensive secondary reserve market.

Are wind turbines a balancing market?

Conclusion and recommendations Currently, wind turbines in the EU are mainly integrated in the electricity system through the wholesale markets, both intraday and day-ahead markets, but are not participating on the balancing markets.

Should wind turbines play a proactive role in balancing markets?

So far, wind power has been sold only on the wholesale market and has been known to increase the need for balancing. This article analyses whether wind turbines in the future should participate in the balancing markets and thereby play a proactive role.

Does wind power have a synergy effect?

The potential for a 20% wind power penetration in the US electricity system is analysed in Ref. The synergy effect of wind power and photovoltaics is analysed for New York state in Ref., and for the overall European energy system in Ref.

How is wind power traded?

As electricity is traded in advance of the actual delivery, the trading of wind power is directly dependent on the wind forecasts. Forecast models operate on different distinct time horizons, from the ultra-short scale (a number of seconds) to the long-term range (a week or more).



Does high penetration of wind power increase the cost of balancing?

Several studies have analysed these impacts and costs when operating power systems with high penetration of wind power , , , . The studies found that high penetration of wind power increases the demand for and the cost of balancing the electricity system.



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## Economic Assessment of the Participation of Wind Generation in ...

Abstract The aim of this paper is to analyze the profitability of wind technology as a potential participant in the frequency regulation, specifically in the secondary regulation market. The ...

### <u>Investigating Power System Primary and Secondary Reserve ...</u>

This paper investigates the issue by developing a multi-area frequency response integration tool with combined primary and secondary capabilities. The simulation is conducted in close ...



# Adding wind power to a wind-rich grid: Evaluating secondary ...

Specifically, locations with low correlation to existing wind farms, locations with high correlation to load, locations with high characteristic power time-shift from existing wind ...



# Investigating Power System Primary and Secondary Reserve ...

A better understanding of the interaction between primary and secondary frequency control on multi-area systems with and without



wind power plants providing both of these controls, and ...



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