

## Kongres Container

# Regulations on Land Acquisition for Wind Power Plants at Communication Base Stations



## Overview

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Why is frequency regulation required for wind power plants (WPPs)?

The system inertia is gradually decreasing and frequency security issues are becoming more prominent with the increasing penetration of wind power. To ensure the safety and stability of power system, many countries have updated their grid codes to reinforce the frequency regulation requirements (FRRs) for wind power plants (WPPs).

Can wind energy plants be co-located with other energy systems?

In countries where land is limited, wind energy plants can be co-located with other energy systems (e.g. solar, geothermal, biomass conventional thermal, natural gas power plants) or active sites (e.g. oil and gas wellsite, coal mine, mineral mine).

What is a distributed wind power plant (WPP)?

Classification of WPPs based on the rated power  $P_n$  and connection point voltage  $U_c$ . Distributed wind power and large-scale wind power are two forms of wind power development. Distributed WPPs usually serve on-site energy demand or support operation of local electricity distribution networks.

Which procedure is obligatory for stations of the land mobile service?

30.13 § 13 The procedure specified in this Chapter is obligatory for stations of the land mobile service when using frequencies provided in these Regulations for distress and safety communications.

Should large-scale wind power bases be classified according to  $P_N$  and  $U_C$ ?

Large-scale wind power bases have greatly higher  $P_n$  and  $U_c$  than distributed WPPs, thus having a more significant impact on frequency stability. It is not appropriate if they apply to the same FRRs. Therefore, it is necessary to classify WPPs according to  $P_n$  and  $U_c$ , and this classification method is used in Denmark, the UK and Spain.

What are grid codes about wind power integration around the world?

This work compares grid codes about wind power integration around the world. The grid codes of Denmark, Ireland, the U.K., Germany, Spain, China, the U.S., Canada, and other countries are considered. The most important of these grid codes concern reactive power, frequency regulation, fault ride through, and power quality.

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