

## Press release

### TRANSMISSION SYSTEM OPERATORS PUBLISH FIRST DRAFT OF GRID DEVELOPMENT PLAN 2035, VERSION 2021

- **Four-week public consultation begins**
- **Plan takes account of German government and EU requirements on energy policy and climate policy**
- **Integration of offshore wind energy becoming increasingly significant**
- **Use of innovative technologies reduces demand for grid expansion**

The transmission system operators (TSOs) 50Hertz, Amprion, TenneT and TransnetBW have published the first draft of the Grid Development Plan (GDP) 2035, Version 2021, at [www.netzentwicklungsplan.de](http://www.netzentwicklungsplan.de). This signals the start of a four-week public consultation process, during which comments can be submitted online, by e-mail or in writing until 28 February 2021. The comments will be incorporated into the second draft of the GDP, which will subsequently be subsequently submitted to the Bundesnetzagentur (BNetzA) for review.

As in the previous GDPs, it is apparent that the advancing energy transition is leading to greater demand for electricity transmission within Germany. The growing proportion of power generated from renewable energy is thus the key driver of grid development. Ever greater quantities of electricity from renewable sources, both onshore and offshore, need to be integrated into the electrical system on a reliable basis and aligned with rising demand for electricity and increasingly flexible demand response. The draft takes account of an energy system without nuclear power and largely without coal-fired generation, therefore adhering to both German and European requirements under energy and climate policy.

The GDP 2035 (2021) looks ahead in detail to 2035 for the first time, in three scenarios, with an outlook towards 2040, and shows the need for grid development to ensure that Germany continues to have a reliable and efficient supply of electricity. In terms of the proportion of gross electricity consumption, renewable energy will account for between 70 and 74% in 2035 and 76% in 2040. These assumptions are based on an installed renewable energy capacity of between 233 and 261 GW in 2035 and 268 GW in 2040.

The GDP 2035 (2021) shows that wind energy is the renewable energy source for the energy transition, with power generation in the North Sea and the Baltic in particular playing a considerably greater part. Wind energy has the largest share of the energy mix in all scenarios

of this GDP, although there is expected to be a sharp rise in installed capacity and hence generation in photovoltaics, too.

### **GDP 2035 (2021) investment volume**

The estimated investment volume for the proposed onshore measures is put at between 72 and 76.5 billion euros. This total includes investment in what is referred to as the “starting grid”. These include measures for which a planning approval procedure has already been or will soon be opened, have already received approval or are under construction. The investments will be distributed across the years.

### **Need for expansion of the extra-high voltage grid**

In order to meet the energy and climate policy requirements there is a particular need for grid development measures but also expansion measures. The majority of the projects are already included in the Federal Requirement Plan 2021. The starting grid includes 3,640 km of new AC lines and 2,580 km of new DC lines. In the additional grid the measures comprise between 3,560 and 3,685 km of AC lines, mainly grid upgrades, and between 1,855 and 2,385 km of DC lines in 2035, the majority of them offshore grid connections. In Scenarios A and B for 2035, around 800 km of AC and DC measures are required over and above the Federal Requirement Plan 2021, while in Scenario C for 2035 the figure is around 1,450 km.

### **Need for expansion to connect offshore wind energy**

The GDP and Site Development Plan together form the basis on which the offshore grid for the North Sea and the Baltic will be developed. On the foundation of the scenario framework approved by BNetzA and the sites designated in the Site Development Plan 2020, investments of between 33 and 38.5 billion euros will be made for the offshore grid of the GDP 2035 (2021) for the integration of 28 to 32 GW of offshore wind energy. The share of addition grid in the offshore grid is between 3,210 and 3,860 km in 2035.

### **Tools curbing the need to expand the onshore grid**

A combination of various measures ensures that dimensioning of the grid is in line with demand and reduced to the extent that is actually necessary. These include assumptions regarding average weather conditions, peak capping for power generation from onshore wind power and PV systems and smoothing of electricity demand using flexible electricity applications such as electromobility and heat pumps.

In determining the need for grid optimisation, grid upgrading and grid expansion, the GDP takes explicit account of technologies such as weather-dependent operation of overhead power lines, the use of high-temperatures low-sag conductors and elements for active control of power flow. The potential for future innovative technologies such as

advanced system operation concepts and grid boosters have also been included.

## **The scenarios**

BNetzA approved and published the scenario framework for the GDP 2035 (2021) on 26 June 2020. The scenario framework makes assumptions regarding the energy landscape in 2035 and 2040: three scenarios look ahead to 2035, and one scenario envisages development through to 2040. All scenarios are set out on the basis of the objective that power generation in Germany will be almost carbon-neutral in 2050.

Electricity consumption levels are assumed to rise in all scenarios. This is partly due to increasing levels of electrification in both the heating sector and transport sector, and to growing use of power-to-X technologies. Electricity-based decarbonisation measures in the industry sector and increasing demand for IT computing power as a result of digitalisation will also contribute to the rise.

Further information can be found at [www.netzentwicklungsplan.de](http://www.netzentwicklungsplan.de)