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Press release

TRANSMISSION SYSTEM OPERATORS PUBLISH FIRST DRAFT OF GRID DEVELOPMENT PLAN 2030, VERSION 2019

- **Four-week consultation process for Grid Development Plan (GDP) to start**
- **Plan ensures incorporating 65 per cent of renewables, taking into account provisions of German Climate Action Plan 2050**
- **Market and grid innovations minimise need for additional grid expansion**
- **All measures of Federal Requirements Plan confirmed**

Today, the transmission system operators (TSOs) 50Hertz, Amprion, TenneT and TransnetBW, submitted the first draft of the Grid Development Plan (GDP) 2030, Version 2019 and published it on www.netzentwicklungsplan.de. This marks the starting point of a public four-week consultation process, during which every citizen can submit their comments on the GDP until 4 March 2019, online, by e-mail or in writing. The comments will be taken into account for the second draft of the GDP, which will then be submitted to the Federal Network Agency (Bundesnetzagentur, BNetzA) for evaluation.

The results concerning the phase-out of electricity generation from coal as presented on 26 January 2019 by the Commission on Growth, Structural Change and Employment (Wachstum, Strukturwandel und Beschäftigung, WSB) set up by the German Federal Government could not yet be taken into account in detail for the first draft. However, the approved scenario framework is already based on a significant reduction of the coal-fired power plant fleet. The proposals by the WSB commission for installed coal-fired power plant capacity (17 GW) for 2030 match almost exactly the capacity set out in scenario C 2030 (17.1 GW). The TSOs will analyse the results reached by the commission and issue an evaluation

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concerning the impact on the identified requirements for grid development, in particular for scenario B 2035.

All scenarios of the GDP for the target year 2030 fulfil the 65 per cent target for renewables in gross electricity consumption laid down in the coalition agreement of the Federal Government. In addition, the CO_2 targets for the different sectors for 2030 from the Climate Action Plan 2050 of the German Federal Government have also been met. The stipulations on minimum capacities at the cross-border interconnectors for ensuring smooth cross-border electricity trading, resulting from European processes for developing the transmission grids and the European Single Energy Market, have also been included in the calculations.

Five scenarios

The scenario framework as approved by BNetzA on 15 June 2018 was the starting point for drawing up the GDP 2030 (2019). The scenario framework comprises a total of five scenarios: a short-term scenario B 2025, three scenarios with the target year 2030 (A, B and C) and the long-term scenario B 2035.

The scenarios A 2030, B 2030 and C 2030 differ regarding the extent of use of innovative technologies, storage technologies and flexibility options that have been significantly expanded compared to the GDP 2030 (2017). B 2035 provides a long-term outlook in order to assess how sustainable the grid measures that have been identified for 2030 are. The new scenario B 2025 is used to prove the effectiveness of “ad-hoc” measures. These are aimed mainly at avoiding costly grid interventions such as redispatch and feed-in management once the last nuclear power plants are offline and before the legally stipulated grid expansion projects laid out in the Federal Requirements Plan are fully implemented.

All scenarios still show a growing gap in electricity generation within Germany. While generation in northern and eastern Germany is more than twice as high as local demand, there is not sufficient electricity produced in the south and the west of Germany to cover consumption

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there. Between a quarter and half of the annual electricity demand in these Federal States must be covered by imports from within Germany or other countries. Renewable energies continue to grow and become ever more important: wind (onshore and offshore) is the energy source with the biggest share in the energy mix in all scenarios.

Tools for minimising the need for grid expansion

The Grid design in GDP 2030 (2019) is based on economic, cost-minimising market modelling. For these models, conditions are assumed that will not necessarily come to pass in real operations, for example an ideal market, assumed hourly mean values and consistent peak capping for onshore wind and photovoltaics in all of Germany. In sum, they lead to a clear reduction of the transmission task. Therefore, the GDP 2030 (2019) does not reflect an expansion of the transmission grid “for the last generated kilowatt hour”.

With the objective to reduce additional requirements for grid development to a minimum, the calculations in GDP 2030 (2019) also take advanced technologies in grid planning and power systems management into account. These include monitoring of overhead lines, the installation of high-temperature overhead conductors as well as elements for actively controlling the power flow – and thus optimally utilising the existing grid. Also implicitly included are innovations that are not yet available, which may reduce the requirement for grid expansion in the future.

Compared to the previous GDP 2030 (2017), these assumed market and grid developments result in a significantly greater proportion of renewables being able to be integrated into the system with a reduced expansion of the grid. The proposed grid allows for the integration of 65 per cent renewables while at the same time complying with the targets set out in the Climate Action Plan 2050.

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Requirement for modification and expansion of the ultra-high-voltage grid
All projects aimed at strengthening and expanding the ultra-high-voltage grid included in the Federal Requirements Plan and the measures confirmed in December 2017 by BNetzA are required in the scenarios B 2030 and B 2035.

Expanding renewables to 65%, while at the same time significantly reducing electricity generation from coal, requires two powerful DC connections in addition to the measures already outlined in the Federal Requirements Plan. With a capacity of four gigawatts (GW) they transport electricity from Schleswig-Holstein, via Lower Saxony and North Rhine-Westphalia to Baden-Württemberg, and have a total length of around 1,160 km (DC21/DC23 and DC 25). In addition, a total of approximately 2,900 km in grid improvements and approximately 450 km of newly installed powerlines (AC and DC) are required in scenario B 2030 that have not yet been included in the Federal Requirements Plan

Investment costs GDP 2030 (2019)
The estimated investment costs for the proposed onshore measures – including approximately 11.5 billion euros for the starting grid and costs for ad-hoc measures – are in the region of 52 billion euros in scenario B 2030. These costs will arise over several years.

The increase in costs compared to the GDP 2030 (2017) is due to the standard costs being adjusted to reflect market developments. Here, in addition to adjusting the costs of the assets, the costs for acquiring land and for planning and approval processes were taken into account for the first time in the specific cost estimations. The changed make-up of measures also leads to cost increases. In particular the expansion of the DC grid in scenario B 2030 (2019), with an extra 1,160 kilometres compared to B 2030 (2017), had a significant impact on the costs. However, full cabling of the additional DC interconnectors has been assumed in order to achieve higher acceptance.

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Requirement for expansion to connect offshore wind power
In previous years, the Offshore Grid Development Plan (O-GDP) was drawn up together with the GDP. This has been changed by the legislator and the O-GDP is now included in the Offshore Area Development Plan (Flächenentwicklungsplan, FEP) drawn up by the Federal Maritime and Hydrographic Agency (Bundesamt für Seeschifffahrt und Hydrographie, BSH). The infrastructure required to connect offshore wind turbines in the years 2030 and 2035 was included in GDP 2030 (2019).

The targets concerning the expansion of offshore wind power have been increased to 17 GW (scenarios B 2030 and C 2030), 20 GW (scenario A 2030) and 23.2 GW (scenario B 2035) in the approved scenario framework compared to the target of 15 GW by 2030 laid down in the Renewables Act and set out in the GDP draft.

For the additional offshore grid this results in a length of 1.924 km in scenario B 2030 with a transmission capacity of approximately 6.4 GW and a length of 3,439 km for the outlook in scenario B 2035, with a transmission capacity of approximately 12.1 GW.

The estimated investment volume for the German offshore grid is approximately 18 billion euros for the scenarios B 2030 and C 2030, 24 billion euros for scenario A 2030 and approximately 27 billion euros for scenario B 2035. Investments of approximately 8 billion euros for expanding the start offshore grid have been included in these costs.

The results from an additional sensitivity calculation show that an increase in feed-in by 1 GW from offshore wind energy from areas in the Baltic Sea that are easy to develop, can be accommodated by grid infrastructure that has already been planned. This results in additional flexibility for the political expansion target for offshore wind energy in 2030 with a bandwidth of 17 to 20 GW.

More information at www.netzentwicklungsplan.de

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