



Press release

Berlin, 31.01.2017

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TRANSMISSION SYSTEM OPERATORS PUBLISH FIRST DRAFTS OF THE GRID DEVELOPMENT PLANS 2030

- **Four-week consultation period for the GDP and O-GDP starts**
- **Demand for expansion of the electricity transmission network continues to grow**
- **Grid expansion until 2030 – beyond the projects laid down in the Federal Requirements Plan – will primarily be required in existing routes and the three-phase AC network**

On January 31 2017, the four German transmission system operators (TSOs) 50Hertz, Amprion, TenneT and TransnetBW submitted the first drafts of the Grid Development Plan (GDP) 2030 (version 2017) and the Offshore Grid Development Plan (O-GDP) 2030 (version 2017) to the German Federal Network Agency and published them on their website www.netzentwicklungsplan.de. This marks the start of the four-week public consultation period during which the general public is invited to submit its comments about the GDP and the O-GDP, either online, by e-mail or in writing until February 28, 2017. These responses will be taken into consideration for the second drafts of the GDP and the O-GDP.

Four scenarios

The scenario framework, as approved by the Federal Network Agency (Bundesnetzagentur, BNetzA) on June 30 2016, is used as a starting point for both the GDP 2030 and the O-GDP 2030. The scenario framework contains a total of four different scenarios: three scenarios for the target year 2030 and one fairly long-term scenario for the target year 2035. The individual scenarios differ from one another by how quickly and how comprehensively the energy transformation to green energy is assumed to proceed, specifically with regards to the energy mix, energy consumption, the penetration of innovative technologies, energy storage technology, and options to improve flexibility.

A large difference in terms of power generation within Germany shows for both target years 2030 and 2035, with surplus generation in Northern Germany and a generation deficit in the south. In the southern German States, between a quarter and half of annual energy demand has to be covered by domestic and foreign imports. In contrast, energy generation in the northern and eastern Federal

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States exceeds the local demand by factor two. The importance of renewable energies continues to increase: in all scenarios, wind energy (on- and offshore) is the source with the largest share in the electricity mix. Key drivers behind the task of handling energy transmission within Germany are the continuing expansion of renewable energies as well as the strong and central integration of Germany in the European Single market.

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Optimised combination of direct and alternating current

The combined use of direct current (DC) and alternating current (AC) technology as proposed in the GDP 2030 enables the collective optimisation of the transmission network to match the development of supply tasks over time as well as changing future transmission requirements with regard to network stability, economic efficiency and spatial demands.

Using the starting grid as a basis, along with the measures from the Federal Requirements Plan (FRP) 2015, an analysis is carried out in each of the scenarios A 2030, B 2030 and C 2030 looking at the extent to which the transmission requirements exceeding these measures can be represented by additional development of the AC grid in combination with point measures controlling the power flow. The network analyses show that, with regard to the target year 2030, the combination chosen by the TSOs proves to be a generally feasible alternative to constructing additional DC connections. It also represents a reasonable option, both from an economic point of view and with regard to the 'NOVA principle' of prioritising network optimisation over development and expansion.

The network analysis shows that the current path for the target year 2030 will begin to reach its limits when looking towards 2035. Within the context of a sustainable and efficient overall concept, additional DC connections amounting to 6 GW in volume, combined with further enhancements of the AC grid, are required in scenario B 2035, going beyond the measures identified in scenario B 2030. This is the result of growing long distance transmission demands from north to south.

The sustainability of the solution applied by the TSOs will be re-examined in the next GDP, which is anticipated to also cover the target years 2030 and 2035. For this reason, the TSOs have marked some of the measures identified for the first time in the GDP 2030 in addition to those in the FRP 2015 as so-called 'measures not yet worthy of proposal', as their sustainability is not yet sufficiently discernible. Unlike the other projects and measures of the GDP 2030, these are not enhanced by in-depth descriptions in the appendices and are represented with a different colour in the scenarios' overview maps.

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Demand to modify and expand the extra-high voltage network

The volume of network development measures required along existing routes (replacing cables or circuit requirements, construction of a more efficient power line along existing routes) and including the starting grid, ranges from between 7,600 km and 8,500 km of line routes depending on the scenario. In all scenarios for the target year 2030, the required level of new power line route expansion is calculated at around 3,800 km; of which approximately 2,600 km are HVDC connection lines and 1,200 km are AC connection lines. This also includes the German share in the direct current connection lines between Germany and Belgium, Denmark, Norway and Sweden with an overland length of approximately 330 km. In each of these scenarios, the transmission capacity of the DC connections within Germany totals 8 GW.

Investment costs GDP 2030

The investment costs for the network measures are calculated in the GDP on the basis of standardised costs and are of a provisional nature. For the scenarios looking at the target year 2030, the total volume of investments ranges from 34 to 36 billion euro, assuming that the HVDC connection lines DC1 and DC3-5 are to be completely constructed using underground cabling. This includes around six billion euro for the starting grid.

Current governmental expansion targets determine expansion of the offshore grid

The current O-GDP 2030 is the fourth and final O-GDP the transmission system operators have presented for public consultation. In the future, it will be replaced by a new instrument (in German: Flächenentwicklungsplan – FEP).

The starting offshore grid forms the basis for network planning in the O-GDP. This grid indicates all offshore connection systems that are assumed as pre-existing at the time of preparing the O-GDP and whose necessity is not subject to further investigation. In the O-GDP 2030, the expansion measures of the offshore starting grid have a total length of approximately 850 km. The amount of investments required totals around four billion euro.

In each of the scenarios A 2030, B 2030 and C 2030, the length of offshore grid expansions is 2,277 km and 3,702 km in scenario B 2035. The total transmission capacity of these extensions to the offshore grid ranges from 7.4 GW for the target year 2030 to 11.4 GW for the target year 2035.

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Overall, including the costs for the offshore starting grid, the total volume of investment is estimated at 16 billion euro until 2030 and 22 billion euro until 2035.

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Further information can be found at www.netzentwicklungsplan.de

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