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Press release

Scenario framework for Network Development Plan Electricity 2040/2045 (2027): New scenario framework reflects changing requirements for electricity system

- System operators develop joint scenario for electricity, gas and hydrogen for the first time
- Significantly higher estimates for large-scale battery storage and data centres were taken into account
- Public consultation now set to begin

The new draft scenario framework prepared by the four German transmission system operators (TSOs) 50Hertz, Amprion, TenneT Germany and TransnetBW addresses key changes in the future power system. The framework describes potential developments in the grid landscape and sheds light on the estimates underpinning further grid development planning at an early stage of the development process. The framework also forms the basis for the next Network Development Plan Electricity for 2040/2045 (2027).

At the heart of the framework are the three scenario pathways for the target years 2040 and 2045, each geared towards achieving the goal of net zero by 2045. To incorporate the wider European perspective into the framework, the plans of the Ten-Year Network Development Plan (TYNDP) were also taken into account. Insights into the latest developments in other European countries were once again drawn from the TYNDP's Central Scenario (National Trends+).

Compared to the previous scenario framework, several estimates have clearly changed. Most notably, significantly higher development and demand estimates for large-scale battery storage and data centres have been recorded, while electrolysis capacity increase estimates have been markedly lowered compared to 2025's Network Development Plan Electricity for 2037/2045. Depending on the scenario, Germany's gross electricity consumption is expected to increase to between 992 to 1,208 terawatt-hours (TWh) annually by 2045. In each of the scenarios, solar power remains the technology with the highest installed load. In terms of electricity generation, however, onshore wind power is in the lead, followed by offshore wind power.

Closer coordination between electricity, gas and hydrogen infrastructures

A key focus of the new scenario framework is the cross-sectoral coordination of electricity, gas and hydrogen infrastructures, as illustrated by a closer collaboration with gas and hydrogen TSOs in the framework drafting process. For the first time, the electricity transmission system operators have jointly developed a common scenario together with gas and hydrogen TSOs. The move reflects the growing importance being awarded to the coordinated planning across electricity, gas and hydrogen infrastructures.

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Furthermore, the scenario framework also incorporates findings from two surveys: the second joint market survey conducted with gas and hydrogen TSOs as well as a survey carried out among electricity TSOs and distribution system operators (DSOs). The surveys provide valuable insights into future demand expectations of companies, municipalities and project developers for electricity, gas and hydrogen in areas such as industry, data centres, battery storage or electrolysers.

The closer cooperation with DSOs across separate planning regions has also enabled an enhanced integration of renewable energy expansion forecasts into grid planning.

In addition, the methodology adopted within the scenario framework has been further developed. For the first time, weather and climate forecasts based on climate models rather than historical weather data were used. This approach enables a more nuanced look at of future climatic conditions and their potential impact on electricity generation, consumption and grid load.

Participation in the consultation by the Bundesnetzagentur

The draft scenario framework will now be subject to a public consultation conducted by the German Federal Network Agency (Bundesnetzagentur, BNetzA). Based on the draft by the TSOs, the public consultation and its own assessment, the BNetzA will approve a scenario framework. This approved framework will then subsequently form the binding basis for the market and grid calculations adopted by the transmission system operators in the Network Development Plan Electricity for 2040/2045 (2027).

About the Network Development Plan Electricity

The Network Development Plan Electricity is the central planning instrument for the future-oriented expansion of Germany's extra-high voltage grid on the path toward a climate-neutral electricity supply. It is prepared every two years by the four transmission system operators 50Hertz, Amprion, TenneT Germany and TransnetBW in accordance with the requirements of the German Energy Industry Act (Energiewirtschaftsgesetz).

The Network Development Plan Electricity not only provides a concrete outlook on the electricity grid over the coming decades, but also serves as a continuously updated and well-founded source of information for key decisions in energy and economic policy.

Further information is available at: www.netzentwicklungsplan.de/en