

Key points for the procedural further development of hydrogen network planning

The rapid development of efficient hydrogen infrastructure is a prerequisite for a rapid ramp-up of the hydrogen economy. Alongside renewable electricity generation, hydrogen is the most important pillar of the energy transition and will make a significant contribution to achieving climate protection goals, diversifying the energy supply and ensuring security of supply and a resilient transformation.

The National Hydrogen Council welcomes the fact that a first important step is being taken towards the creation of an initial H₂ network infrastructure with the new regulations for a hydrogen core network (H₂ core network) within the framework of the amendment of the Energy Industry Act (Energiewirtschaftsgesetz – EnWG) this year. The establishment of an H₂ core grid will create central connections of generation and import points, storage facilities and large consumption regions, which are essential in the short term. The H₂ core network includes key infrastructures that are expected to be operational by 2032. This creates planning security for all those involved along the entire value chain in building a hydrogen economy.

The next step is a regulation of the transition to comprehensive and integrated grid development planning for hydrogen and methane, which must already start by 2025 and address the further development of the H₂ network beyond the core network. As part of the overall system development strategy, it is an important component for the transformation of the entire energy system. In addition to the further development of the H₂ core network, the distribution grid level, which brings the hydrogen to the customer in the regions and cities while quickly opening up for a broader reach, must also be taken into account. This is the only way to enable many industrial and commercial customers, especially from the SME sector, as well as operators of CHP plants, to be supplied with hydrogen and to decarbonise, which is planned in the timelines for the sectors and for which deadlines are specified. The further development of the hydrogen network must be oriented towards the expected future demand from the above-mentioned consumption segments and current developments on the production and import side. In the medium term, these demand expectations must also be verified with the developments from the municipal heating plans, which the NWR believes should be significantly accelerated and designed in close cooperation with the energy suppliers.

SIDE NOTE: HOW GRID DEVELOPMENT IN NATURAL GAS WORKS TODAY

Grid development plans are used for development at the transmission grid level. The Energy Industry Act requires transmission system operators to prepare such a grid development plan every two years and to submit it to the Federal Network Agency. It needs to contain all measures for the expansion of the transmission grid that are necessary for a secure and efficient supply in the next ten years. The basis for the preparation of a grid development plan is the definition of the scenario framework, which contains the expected developments on the supply and demand side. Grid development planning is carried out on the basis of the scenario framework. Both steps include extensive dialogue with the public. The transmission system operators have the basis for the expansion of the grid with the confirmation of the Federal Network Agency for grid development planning.

Grid planning of the distribution grids – just like at the transmission network level – is geared towards ensuring a secure and demand-oriented supply to customers on a permanent basis. For this purpose, the distribution system operator records the sales development of the customers in the existing grid as well as additional capacity requirements due to new customer connections or biogas feed-in operators. The distribution system operator uses this basis to plan a grid that meets demand and derives measures for optimising, reinforcing and expanding the grid infrastructure. In order to take into account the demand-oriented connection of the distribution network level to the transmission grid level via network interconnection points in the grid development planning, the distribution system operator prepares a long-term forecast for its supply area. These 10-year forecasts are taken into account in the scenario framework of the grid development planning.

A future integrated grid development planning for hydrogen and methane is to be designed along the lines of the current grid development planning process. Within the framework of the long-term forecast prepared by the distribution system operators, demands in the distribution grid for both methane and hydrogen are to be taken into account in the scenario framework. The hydrogen requirements in the distribution grid of industrial and commercial customers, H₂ CHP plants, H₂ power plants feeding into the electricity distribution grids and regional electrolysers will play a central role in the preparation of the long-term forecast, as will transformation plans of the distribution system operators and the hydrogen grid expansion areas designated in the future within the framework of municipal heating planning. In addition, the plants planned in the German Renewable Energy Sources Act for the generation of electricity from green hydrogen and the innovative concepts with hydrogen-based electricity storage must be taken into account.

POLITICAL DEMANDS

The National Hydrogen Council welcomes the fact that the process for integrated grid development planning for hydrogen and methane from 2025 onwards for the period up to 2035 has already been initiated and is to be anchored with a further amendment to the Energy Industry Act. The National Hydrogen Council calls for hydrogen to be added to the regulations in section 15(a) of the Energy Industry Act on grid development planning. Also, the obligation to cooperate and thus the cooperation agreement within the framework of grid development of transmission and distribution system operators must be extended to hydrogen.

According to the procedure of the previous grid development plans, long-term forecasts for natural gas and hydrogen can be included in the planning for the 2025–2035 grid development plan. In this planning, hydrogen requirements of industrial and commercial customers, H₂ CHP plants, H₂ power plants feeding into the electricity distribution grids, regional electrolysers, storage facilities and H₂-fuelling station hubs should be taken into account, as well as transformation plans of the distribution system operators and the hydrogen grid expansion areas designated in the future within the framework of the municipal heat planning. In the long-term forecast, it is important to ensure that the expected hydrogen ramp-up corresponds with corresponding declines in natural gas and the overall picture of the system development strategy.

The NWR demands a clear commitment from the German government that the future development of the network will take into account the infrastructure plans of the distribution system operators for hydrogen transport to the aforementioned customer groups. The distribution system operators are currently developing decarbonisation solutions with the customers connected to their grid. What we need is a starting point for the construction of connecting lines by the distribution system operators to connect these customers to the grid. A legal basis should be created to enable investments in the transformation of the gas grids needed in the future as well as hydrogen grids, also at the distribution grid level, as well as the anticipatory handling of the gas infrastructure that is no longer needed. In this context, distribution grid planning should always be guided by the purpose stated in section 1 of German Energy Industry Act of a supply that is as secure, affordable in the long term, consumer-friendly, efficient, environmentally compatible and greenhouse gas-neutral as possible. The creation of pragmatic financing options for a distribution grid connection is already necessary in the short term in order to supply anchor customers connected to the distribution grid, which must be supplied with hydrogen relatively quickly, especially within the framework of the upcoming funding measures (via the Carbon Contracts for Difference, for example).



THE GERMAN NATIONAL HYDROGEN COUNCIL

On 10 June 2020, the German Federal Government adopted the National Hydrogen Strategy and appointed the German National Hydrogen Council. The Council consists of 26 high-ranking experts in the fields of economy, science and civil society. These experts are not part of public administration. The members of the National Hydrogen Council are experts in the fields of production, research and innovation, industrial decarbonisation, transportation and buildings/heating, infrastructure, international partnerships as well as climate and sustainability. The National Hydrogen Council is chaired by former Parliamentary State Secretary Katherina Reiche.

The task of the National Hydrogen Council is to advise and support the State Secretary's Committee for Hydrogen with proposals and recommendations for action in the implementation and further development of Germany's National Hydrogen Strategy.

◆ **Contact:** info@leitstelle-nws.de, www.wasserstoffrat.de/en