PRESS RELEASE

INITIATIVE ENERGIEN SPEICHERN

INES

Berlin, January 4th, 2023

INES publishes brief analysis of the hydrogen core network

On commission by the Initiative Energien Speichern e.V. (INES), Aurora Energy Research GmbH has prepared a brief analysis of the hydrogen core grid. The initial assessments suggest that a more detailed analysis is necessary in order to identify the selection of robust core grid parts and to carry out the overbuilding of the grid and import capacities in a targeted manner. In particular, different demand and supply scenarios should be considered when planning the hydrogen network and the resulting import capacities in order to achieve efficient development of the hydrogen networks.

As part of the National Hydrogen Strategy (NWS) and in accordance with Section 28r of the EnWG-E, the transmission system operators (TSOs) submitted a draft application to the Federal Network Agency (BNetzA) on November 15, 2023 for the development of an efficient hydrogen network infrastructure. The draft proposes the creation of a hydrogen network with a pipeline length of 9,721 km. The proposed hydrogen network would have a total of 13 cross-border interconnection points (GÜP), which would enable hydrogen imports and exports with a capacity of up to 59 GWh/h. It is designed for a hydrogen consumption volume of 279 TWh. The hydrogen network should be fully operational by 2032. Aurora Energy Research GmbH carried out a brief analysis of the draft proposal on behalf of INES.

For the medium-term perspective up to 2030, the Aurora Central[1] and Net Zero[2] scenarios show significantly lower hydrogen consumption volumes than assumed for hydrogen network planning, at 73 and 123 TWh respectively. The demand estimates of the Federal Ministry for Economic Affairs and Climate Protection (BMWK) in the update of the National Hydrogen Strategy (NWS) for 2030 are also lower. The NWS assumes a demand of between 95 and 130 TWh in 2030.

According to the Aurora brief analysis, import capacities of around 10 GWh/h are required at border crossing points in the medium term to fully cover hydrogen consumption from the central scenario, but these must be supplemented by necessary redundancies such as N-1 security. The proposed import capacities of 59 GWh/h therefore represent a significant overbuilding compared to the average and necessary capacities in the medium term.

According to the latest announcements, the aim is to significantly overbuild the actual grid requirements in order to prepare the necessary grid infrastructure for future hydrogen

[1] The central scenario is based on an economic analysis and exogenous assumptions regarding the development of the hydrogen market in Germany.

[2] In the net-zero scenario, the government's energy policy targets are met and climate neutrality is achieved in the energy sector.

requirements at an early stage. In the long-term perspective up to 2050, the Aurora Central and Net Zero scenarios show significantly higher hydrogen consumption volumes of 303 and 562 TWh respectively. However, further analysis shows that only 28 GWh/h of pipeline-based import capacities are required in the Central scenario. Even in the Net Zero scenario, the required cross-border capacities are only 52 GWh/h. Although the results were not obtained as part of hydraulic hydrogen network modeling, they illustrate that various scenarios could lead to a significantly lower demand for import capacities.

From the brief analysis, it can be concluded that the current hydrogen network planning follows a very uncertain planning perspective. The market ramp-up for green hydrogen is still in its infancy. Oversizing the network in the medium term could prevent infrastructural bottlenecks from hindering the market ramp-up. However, in view of the considerable uncertainties in planning, there is also a major risk of creating overcapacity not only in the medium term, but also in the long term.

As part of the brief analysis, the FNB's assumption of the FNB's hydrogen network planning that demand has a strong structure was adopted. Whether the flexibility required for this can actually be offered via imports is also associated with great uncertainty. In view of the large geological potential for hydrogen storage in Germany, it can be assumed that flexibility will be provided to a greater extent domestically. A more detailed analysis should therefore investigate a greater provision of capacity through storage in Germany in order to reduce the import capacities of the cross-border interconnection points and thus the grid investment costs.

Frederik Beelitz, Principal at Aurora, summarizes the brief analysis as follows: "*Aurora's rough review as part of the brief analysis shows that a more detailed analysis is necessary to identify the selection of robust core network components and to make the overbuilding of the network and import capacities more targeted. The demand volumes and, in particular, the demand profile during the year should be specified.*"

Sebastian Heinermann, Managing Director of INES, comments on the publication of the Aurora short analysis as follows: "*In view of the enormous quantities of hydrogen consumed, the hydrogen core network appears to be more of a hydrogen target network, and the truth is that we cannot yet see exactly what the target is. The Aurora short analysis shows us how great the uncertainties in network planning currently still are and how great the risk is that overcapacities will now be developed that may never be utilized. We therefore recommend identifying those parts of the hydrogen network for which there is relevance across several scenarios. For these parts of the network, dimensioning for longer-term requirements seems sensible.*"

ABOUT US:

INES is the association of gas and hydrogen storage system operators in Germany. INES' members represent over 90 per cent of German gas storage capacities and account for about 25 per cent of gas storage capacities in the European Union. INES' member companies also push the development of underground hydrogen storage in numerous projects and thereby form pioneers in this important technology field for the energy transition.

The members of INES are astora GmbH, bayernugs GmbH, Enovos Storage GmbH, Erdgasspeicher Peissen GmbH, Etzel-Kavernenbetriebsgesellschaft mbH & Co. KG, EWE Gasspeicher GmbH, HanseWerk AG, OMV Gas Storage Germany GmbH, NAFTA Speicher GmbH & Co. KG, RWE Gas Storage West GmbH, STORAG ETZEL GmbH, Storengy Deutschland GmbH, Trianel Gasspeicher Epe GmbH & Co. KG, USG-Blexen GmbH, Uniper Energy Storage GmbH and VNG Gasspeicher GmbH.

PRESS CONTACT:

Sebastian Heinermann
Managing Director
Initiative Energien Speichern e.V.
Glockenturmstraße 18
14053 Berlin

Tel: +49 30 36418-086
Fax: +49 30 36418-255
info@energien-speichern.de
www.energien-speichern.de