

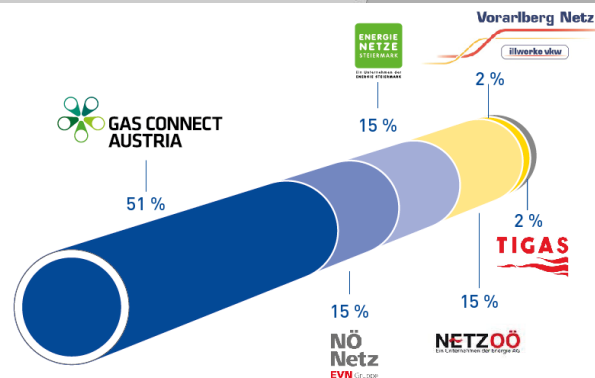
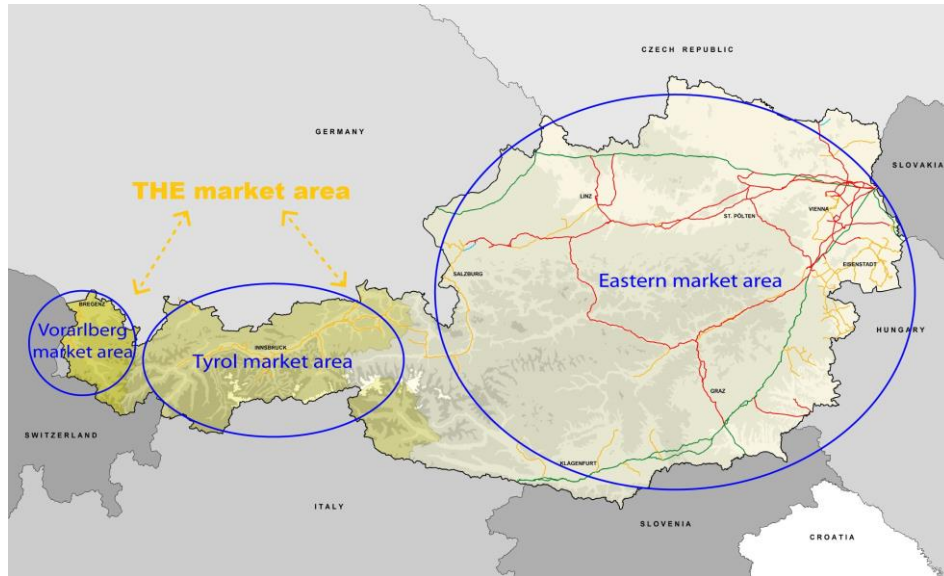


Austrian Gas Grid Management AG

H₂-Roadmap for Austria

European Hydrogen Conference
Vienna, 29 March 2023

Market and Distribution Area Manager for the Austrian Gas Market



► Gasflow control & System Responsibility

- We are responsible for the control of gasflows in Austria
- We make sure that the injected gas is safely delivered to the customers – 24/7, 365 days a year

► High-performance and reliable gas-infrastructure for the energy future

- We are planning and optimizing the Austrian gas grid for the future in cooperation with the grid operators.
- We are driving forward the integration of renewable gases into the energy system

► Transparency

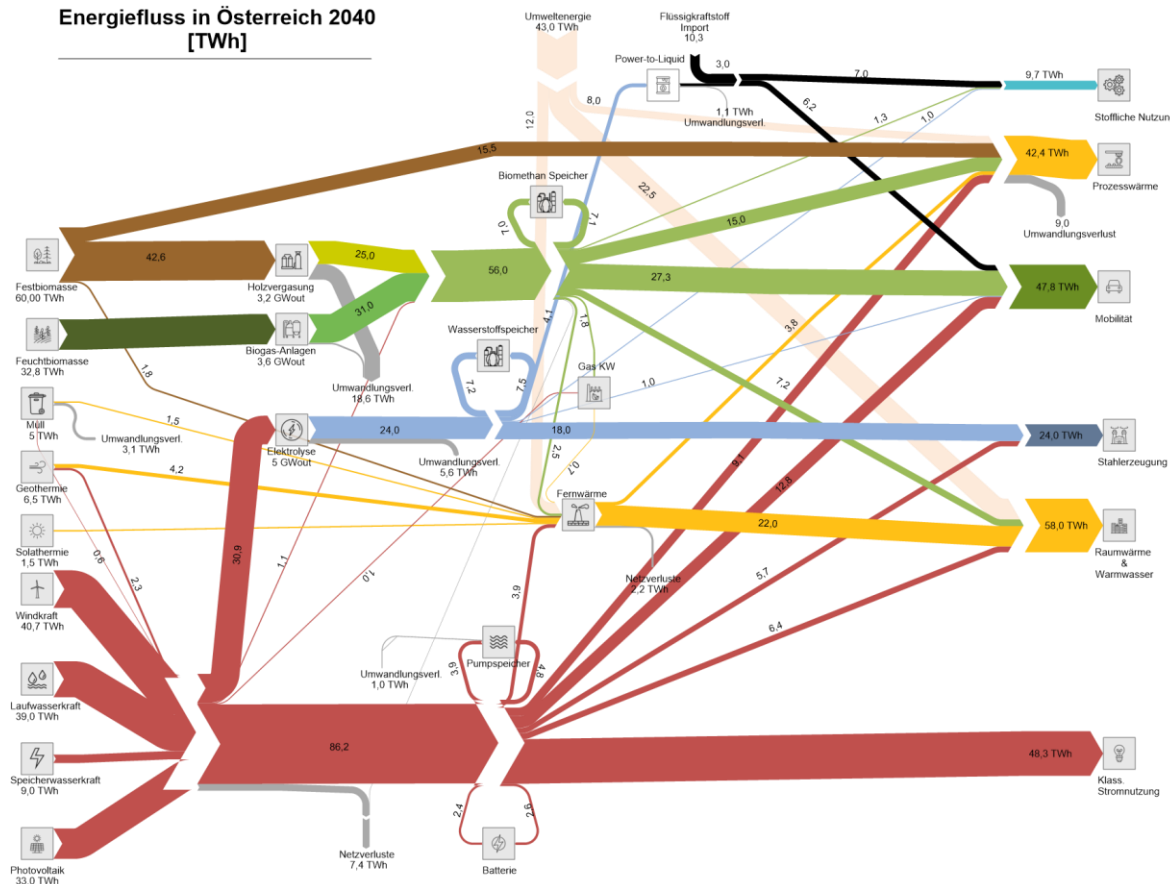
- The [AGGM-Platform](#) provides actual and historic data on gas flows, storage levels, the availability of transport capacities and much more.

► Enabler

- We contribute to shaping the gas market model and the systems for the gas market and are responsible for network access and capacity management

ONE¹⁰⁰: Austria's sustainable energy system – 100% decarbonized

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www.aggm.at/en/energy-transition/one100

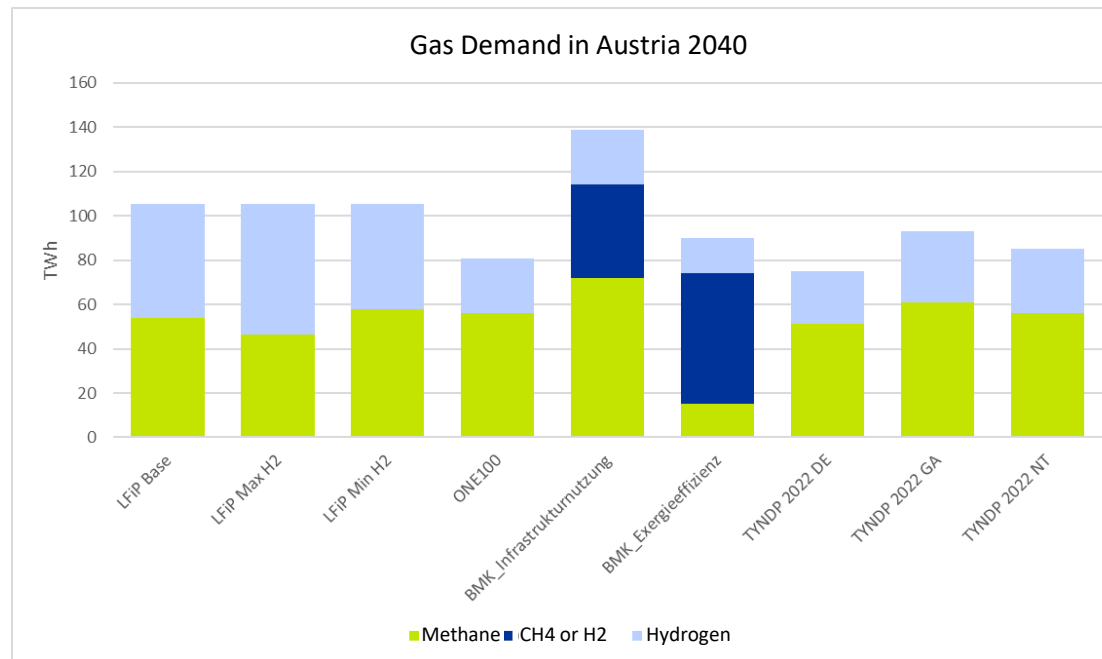
ONE¹⁰⁰ – the optimized outcome

- ▶ Fundamental increase of renewable power production, in particular generation from wind and photovoltaics
- ▶ massive expansion of the electricity grid
- ▶ renewable gas (methan and hydrogen) as essential part of the Austrian energy system
- ▶ Ramp up biomethane production from wet and solid biomass (wood gasification) is essential
- ▶ More than 6 GW regional electrolysis capacity is possible - electrolysis sites close to renewable electricity production
- ▶ a dedicated hydrogen network is needed for
 - ▶ imports
 - ▶ transit
 - ▶ the intake of locally produced hydrogen and
 - ▶ the efficient transport of hydrogen to the customer and storages

H₂-Roadmap for Austria: Planning Framework – Gas Demand in Austria 2040

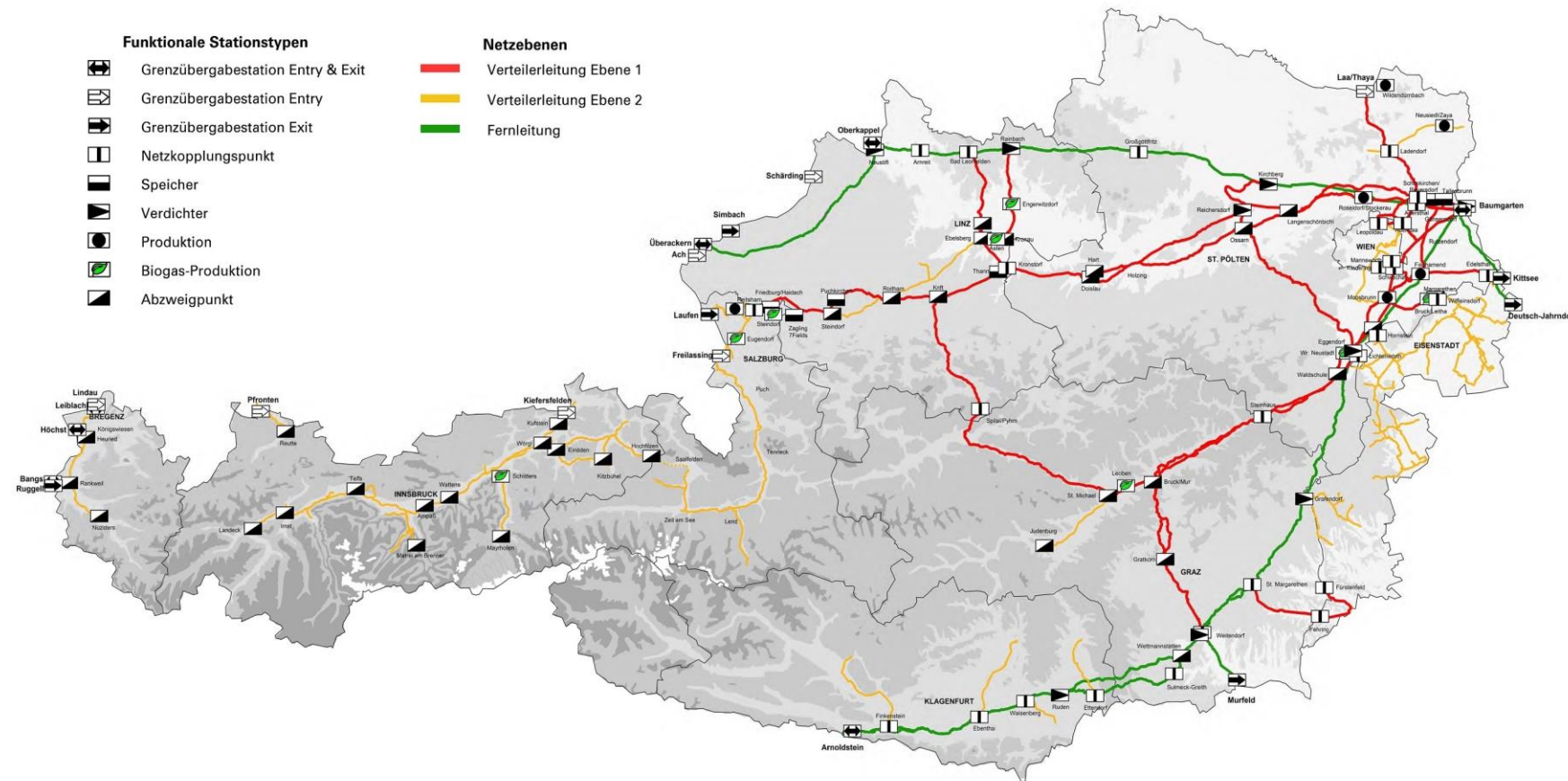
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- ▶ The study "Renewable Gas in Austria 2040" by the Austrian Energy Agency (AEA) - prepared on behalf of the Austrian Federal Ministry for Climate Action - concludes that in 2040 there will be an energy demand for gaseous energy sources of 89-138 TWh
- ▶ This study result of the AEA was confirmed in the study ["ONE100 Austria's sustainable energy system - 100% decarbonised"](#) mentioned before
- ▶ in 2022 we have carried out an industry demand survey in cooperation with network operators



H₂-Roadmap for Austria on the basis of the existing gas grid

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On the basis of

- ▶ the existing gas grid
- ▶ 3 demand scenarios and
- ▶ 3 supply scenarios

hydraulic simulations were carried out in five-year steps starting with 2025

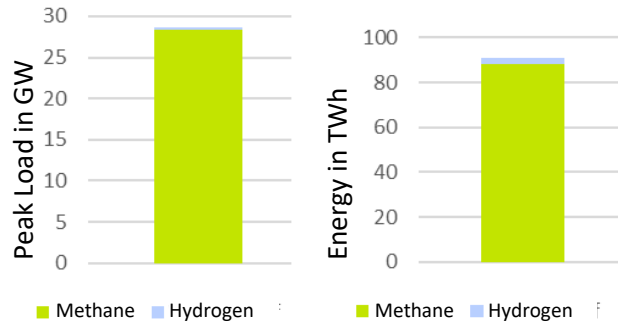
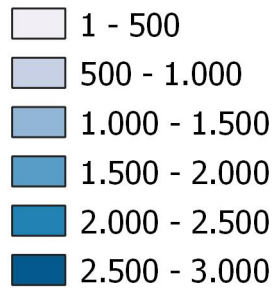
The target of this simulations was

- ▶ Create dedicated pipelinesystems which meet the future transport needs for methane and hydrogen

H₂-Roadmap for Austria: Hydrogen Peak-Demand 2025

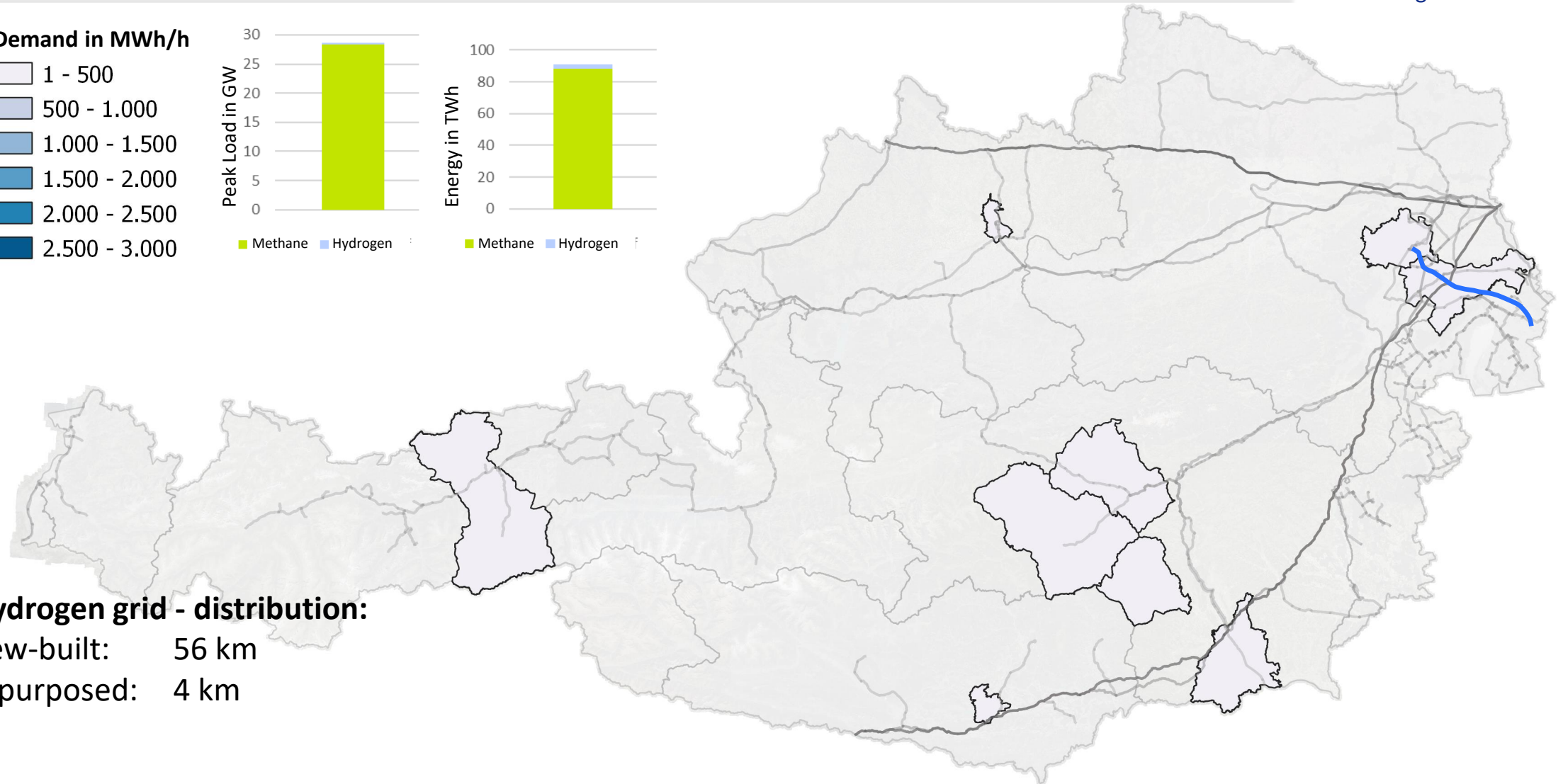
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H₂-Demand in MWh/h



Hydrogen grid - distribution:

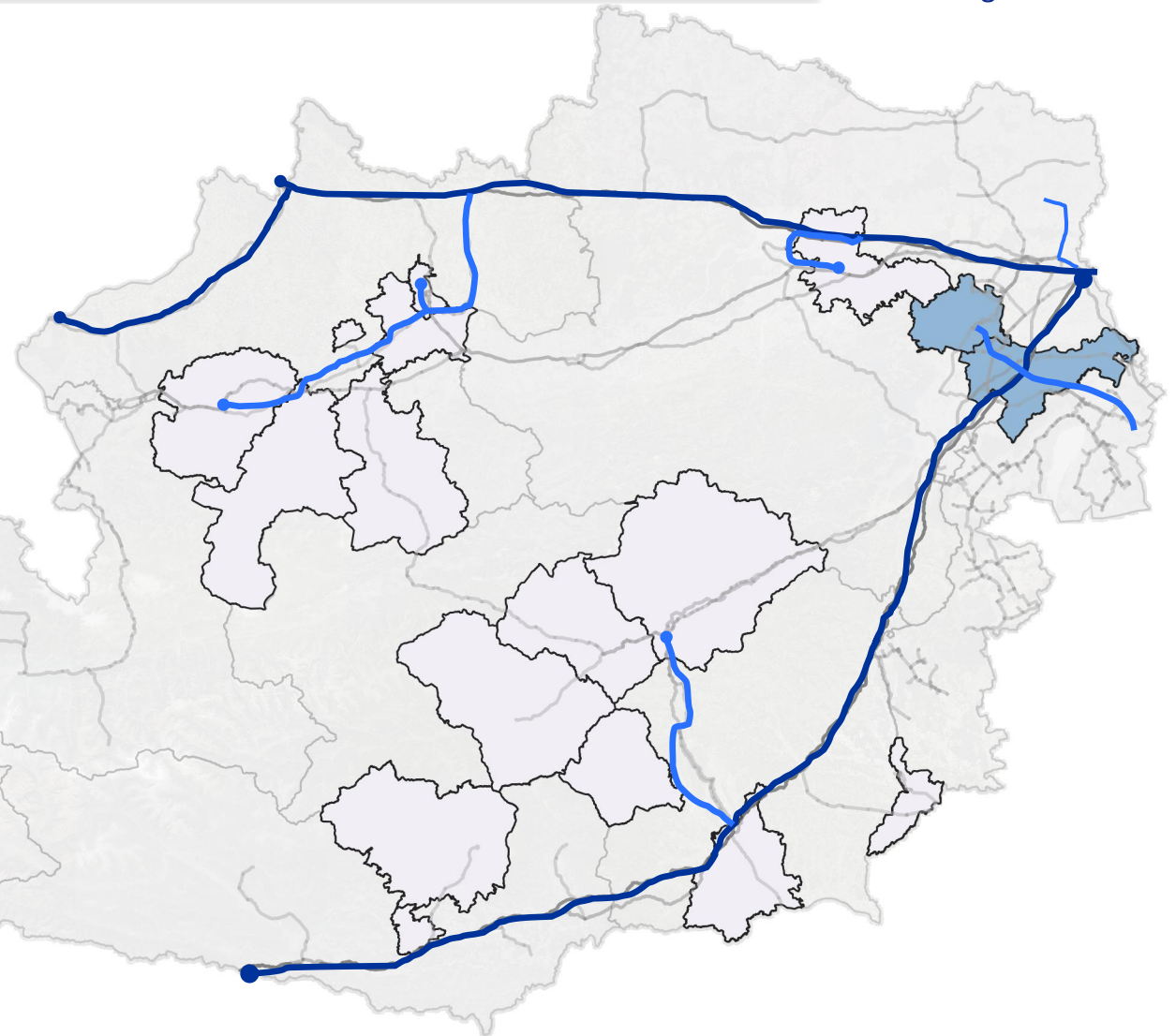
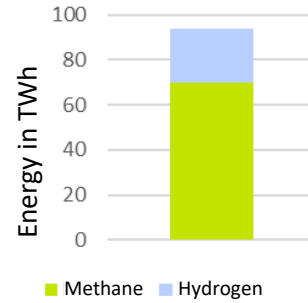
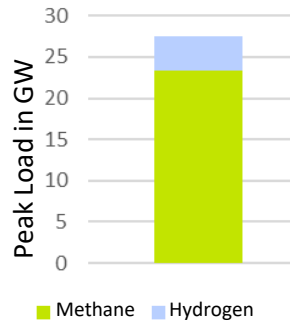
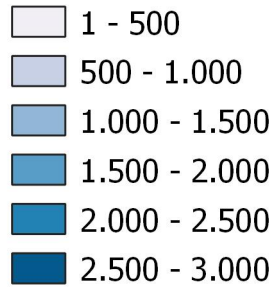
new-built: 56 km
repurposed: 4 km



H₂-Roadmap for Austria: Hydrogen Peak-Demand 2030

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H₂-Demand in MWh/h



Hydrogen grid - distribution:

new-built: 190 km

repurposed: 130 km

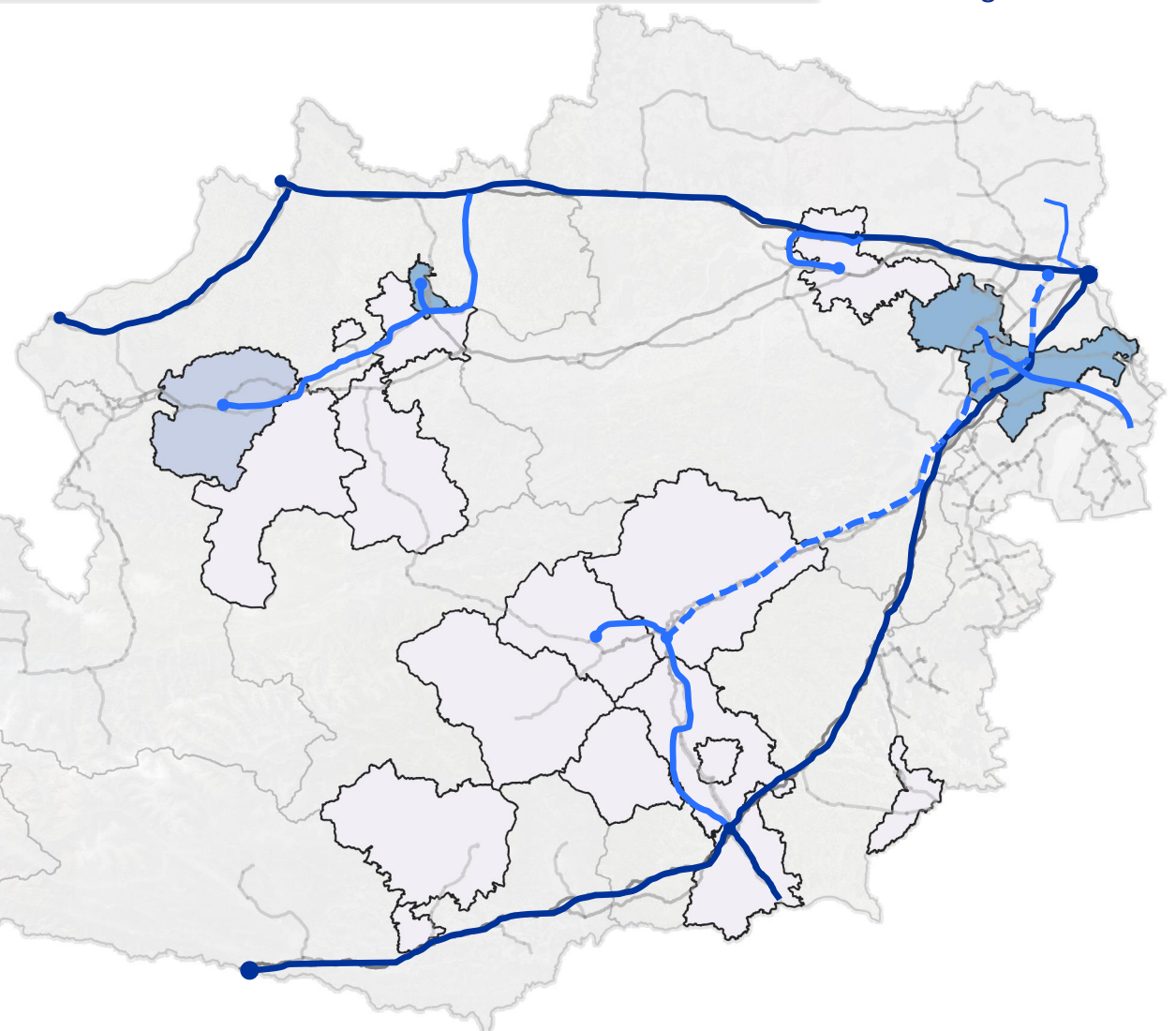
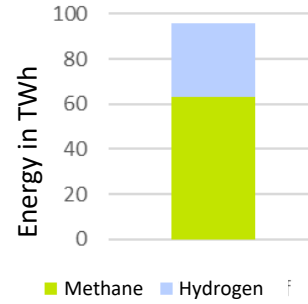
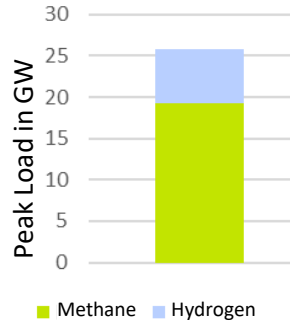
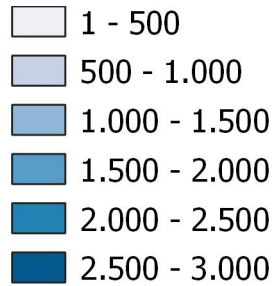
Hydrogen grid - transmission:

repurposed : 712 km

H₂-Roadmap for Austria: Hydrogen Peak-Demand 2035

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H₂-Demand in MWh/h



Hydrogen grid - distribution:

new-built: 190 km
repurposed : 377 km

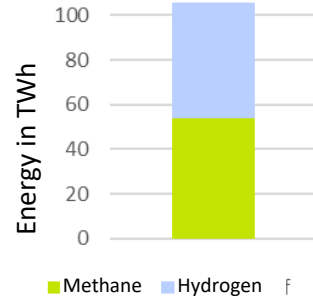
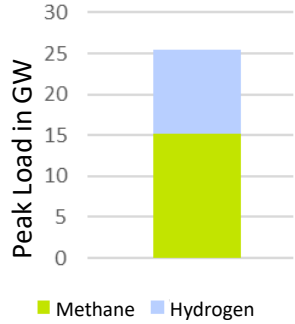
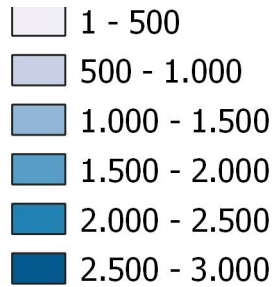
Hydrogen grid - transmission:

repurposed : 712 km

H₂-Roadmap for Austria: Hydrogen Peak-Demand 2040

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H₂-Demand in MWh/h

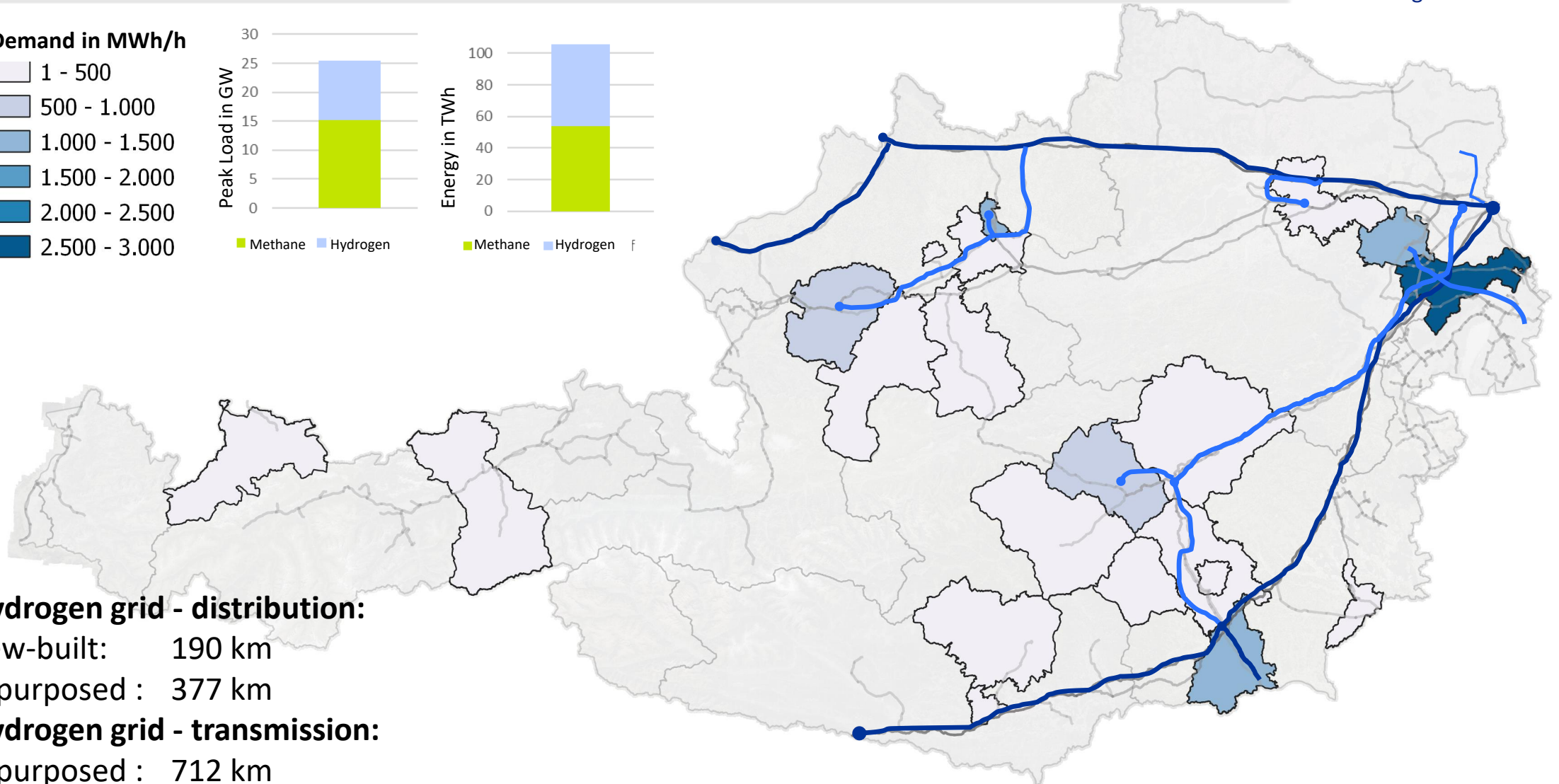


Hydrogen grid - distribution:

new-built: 190 km
repurposed : 377 km

Hydrogen grid - transmission:

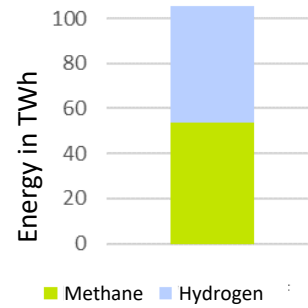
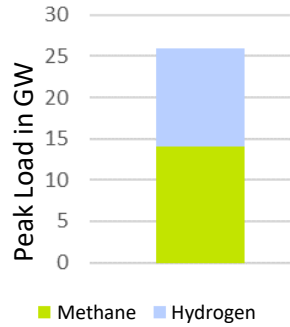
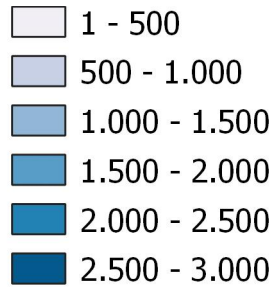
repurposed : 712 km



H₂-Roadmap for Austria: Hydrogen Peak-Demand 2050

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H₂-Demand in MWh/h

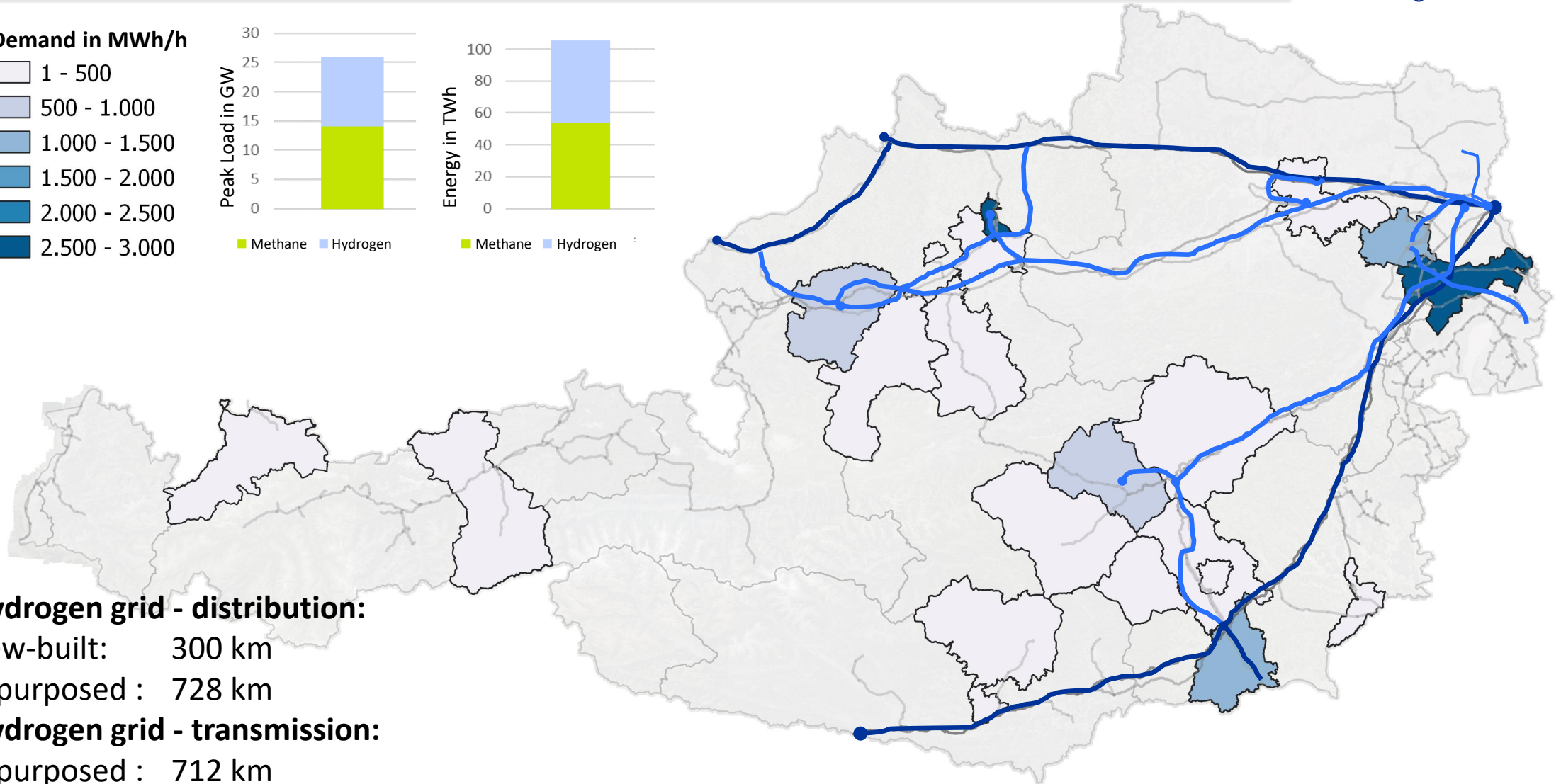


Hydrogen grid - distribution:

new-built: 300 km
repurposed : 728 km

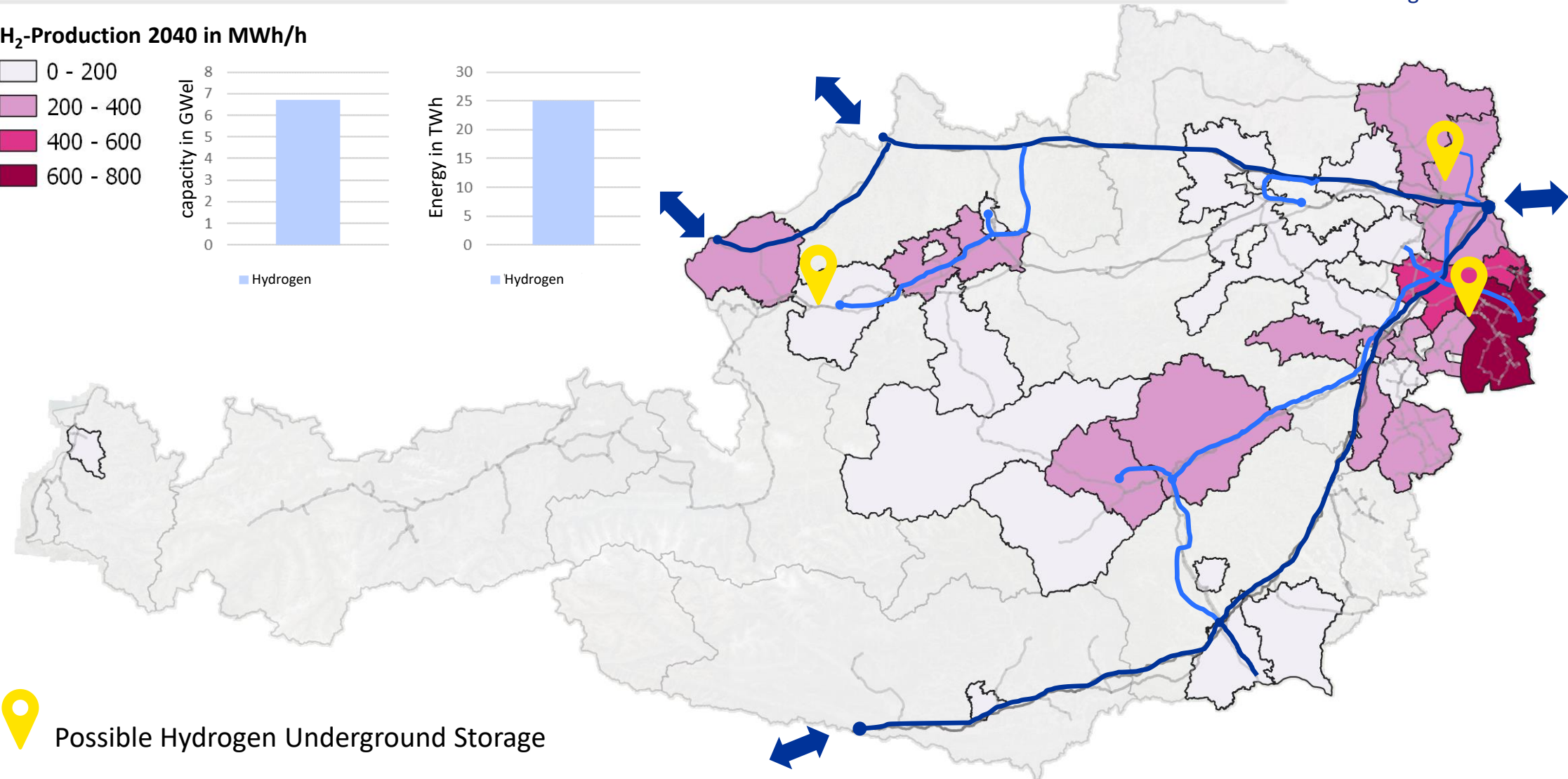
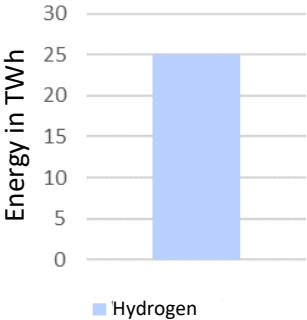
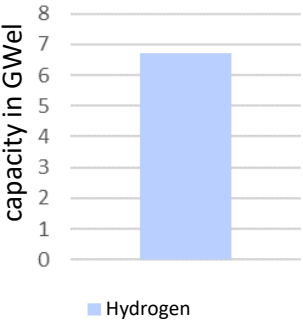
Hydrogen grid - transmission:

repurposed : 712 km



H₂-Roadmap for Austria: Hydrogen Domestic Production 2040

H₂-Production 2040 in MWh/h



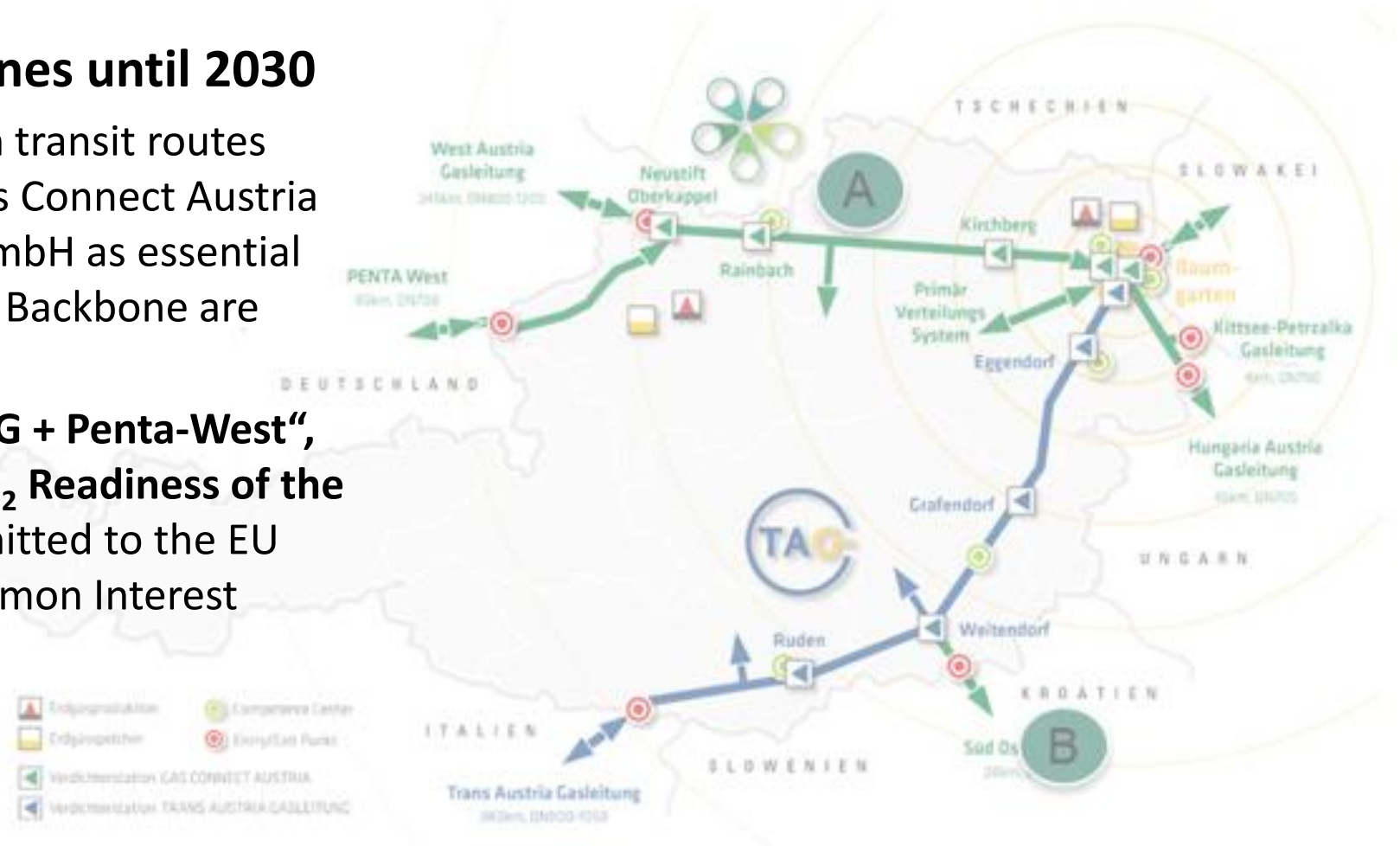
 Possible Hydrogen Underground Storage

- ▶ The H₂-Roadmap shows that the organic transformation from the existing gas grid to separated methane and hydrogen grids is possible and efficient
- ▶ The existing gas infrastructure is technically suitable for hydrogen transport with appropriate adaptations
- ▶ The repurposing of about 1,400 km of existing gas pipelines and about 300 km of new gas pipelines allow to cover the entire future transport needs for methane and hydrogen in Austria
- ▶ The storage of hydrogen in Austrian gas storage facilities enables the seasonal shifting of energy surpluses
- ▶ **Regulatory and commercial burden have to be removed to make this development happen in order to support the decarbonization of the energy system**
- ▶ **Brave and swift decisions from the industry, the regulators and policy makers are of great importance**

[Further information as to the H2-Roadmap for Austria: AGGM integrated Long Term Planning 2022, page 17 et. seqq.](#)

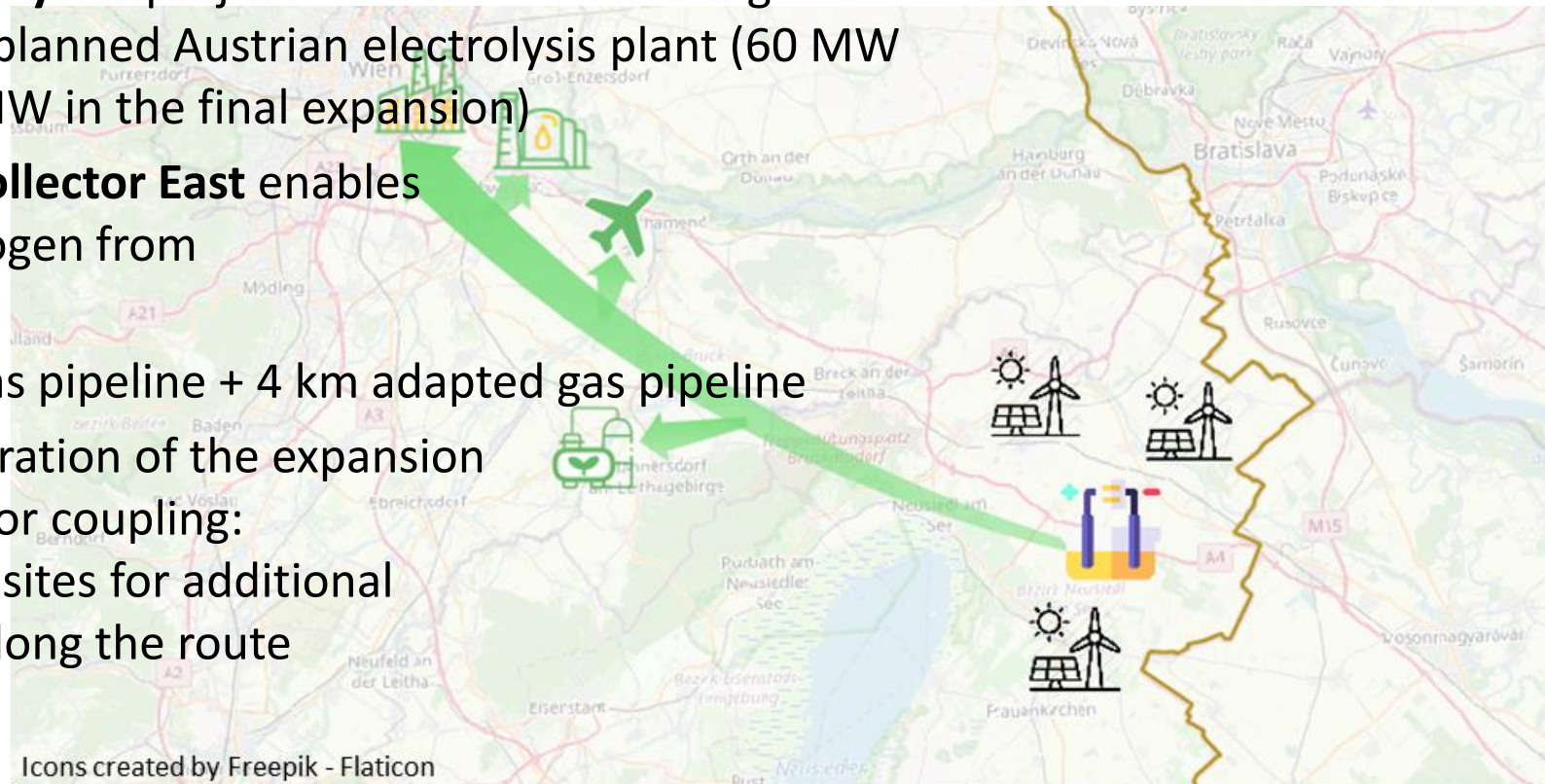
H₂Ready transmission pipelines until 2030

- ▶ The West-East and North-South transit routes through Austria of the TSOs Gas Connect Austria and Trans Austria Gasleitung GmbH as essential part of the European Hydrogen Backbone are 100%-H₂Ready
- ▶ The Projects "H₂ Backbone WAG + Penta-West", "H₂ Backbone Murfeld" and "H₂ Readiness of the TAG Pipeline System" are submitted to the EU Commission as Projects of Common Interest



H₂Collector East – transport of renewable hydrogen from 2026

- ▶ **Pannonian Green Hydrogen - PanHy** is a project of VERBUND and Burgenland Energie. It is currently the largest planned Austrian electrolysis plant (60 MW in the first expansion stage, 300 MW in the final expansion)
- ▶ The planned pipeline-project **H₂Collector East** enables the supply of the renewable hydrogen from Burgenland to Vienna from 2026
- ▶ 56 km new built 100% H₂-ready gas pipeline + 4 km adapted gas pipeline
- ▶ **H₂Collector East** allows the acceleration of the expansion of renewable energy through sector coupling:
7 transformer stations – potential sites for additional electrolysis plants – are located along the route



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- ▶ attend the AGGM [Competence Center Training](#) and learn more about the Austrian gas market!