

Parliamentary Breakfast

„Inexpensive and secure energy for Europe through sector coupling“

The ENERTRAG Verbundkraftwerk

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Board Member ENERTRAG

Brussels, 17 March 2026



ENERTRAG produces renewable electricity and H₂, in Germany and worldwide

Company 100% owned by the original founders, headquarters in the Uckermark, all profits reinvested into growth

Green Electrons



- > **25 years of experience** as developer / IPP of electricity from wind and solar
- > **1 200 employees** in 10 countries
- > **2 GW** wind & solar implemented, with **€3 billion** equity and debt raised
- 2 TWh/a** electricity production from **1 GW** assets on own balanced sheet
- > **20 GW** wind/solar under **development**

Green Power Plants



- 1 GW green power plant** in operations in the Uckermark (wind, solar, battery, heat storage, electrolysis)
- > **1 000 km** (up to 380 kV) own collector grid and substations
- System and ancillary services**, e.g. control reserves and blackstart
- 4 GW** under 24/7 technical operations from own **control centre**

Green Molecules



- Wind-hydrogen production (0.6 MW)** in operation since 2011
- 250 t/a** green H₂ for **6 fuel-cell trains** from Barnim to Berlin provided
- 185 MW electrolysis** with grant awarded in so-called “hydrogen IPCEI”
- eKerosene projects** with CEMEX/Zaffra in Germany & with Sasol in South Africa
- Green ammonia** project Hyphen (2 Mt/a, 3 GW electrolyser) in Namibia

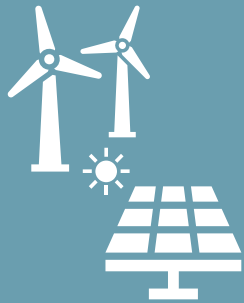
End state at the example of Germany

Sun + Wind + Hydrogen = the Energy System by 2050

Primary Energy

Domestic Production

Electricity



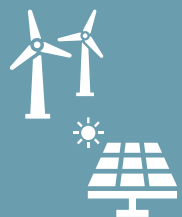
Domestic wind and solar electricity, consumed directly (or via battery) in the electricity sector: ca. 800 TWh/a

1 200 TWh/a
(today: 600 TWh/a)

Domestic "surplus electricity": ca. 400 TWh/a

Imports

600 TWh/a



Electricity abroad for hydrogen production abroad, then import to GE: ca. 600 TWh/a

Hydrogen production through electrolysis



Hydrogen (H₂)

15-16 Mt/a
(today: 1,5-2 Mt/a)

straight H₂

- + CO₂
- + N₂
- + CO₂
- + Iron Ore

- Methanol
- Ammonia
- Kerosene
- Raw Iron

Consumers



Elektronics



Motors



Lighting



Space heating



Space cooling



Process heat



Data centres



Cars, buses



Ships, trains



Trucks



Short-haul aviation



H₂-re-electrification



Chemicals, cement



Long-haul shipping



Fertiliser

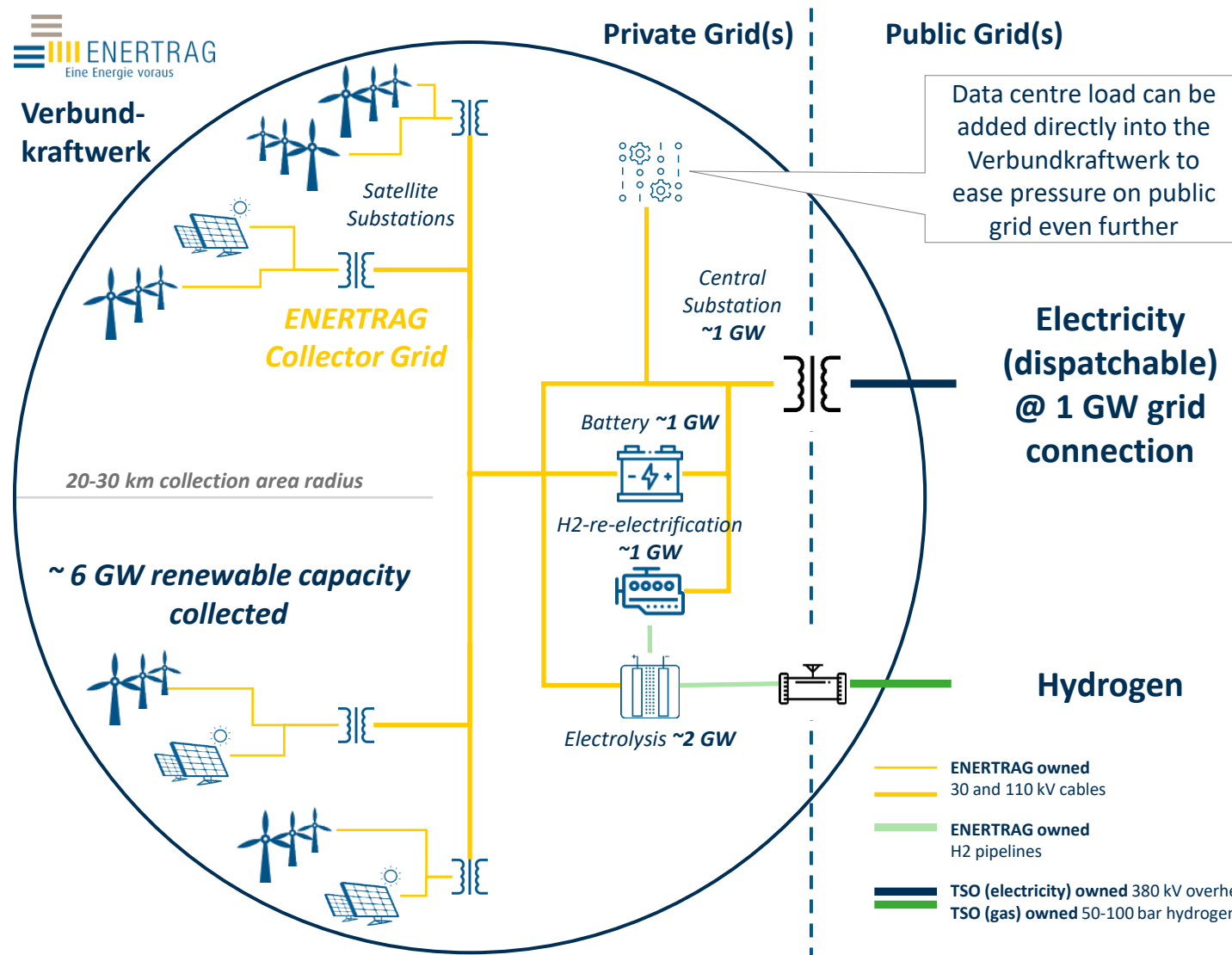


Long-haul aviation

Steelmaking *Easily shippable products*

Architecture: „Verbundkraftwerk“ with collector grid for combined hydrogen and electricity production on demand

Verbundkraftwerk



Lower Grid Costs and Faster Deployment

10 GW of plant capacity (wind, solar, battery, electrolysis, H2 re-electrification) require only **1 GW of TSO electrical grid connection capacity**



Electricity on Demand: 7 TWh/a

Battery & hydrogen re-electrification combination supplies reliable, dispatchable electricity

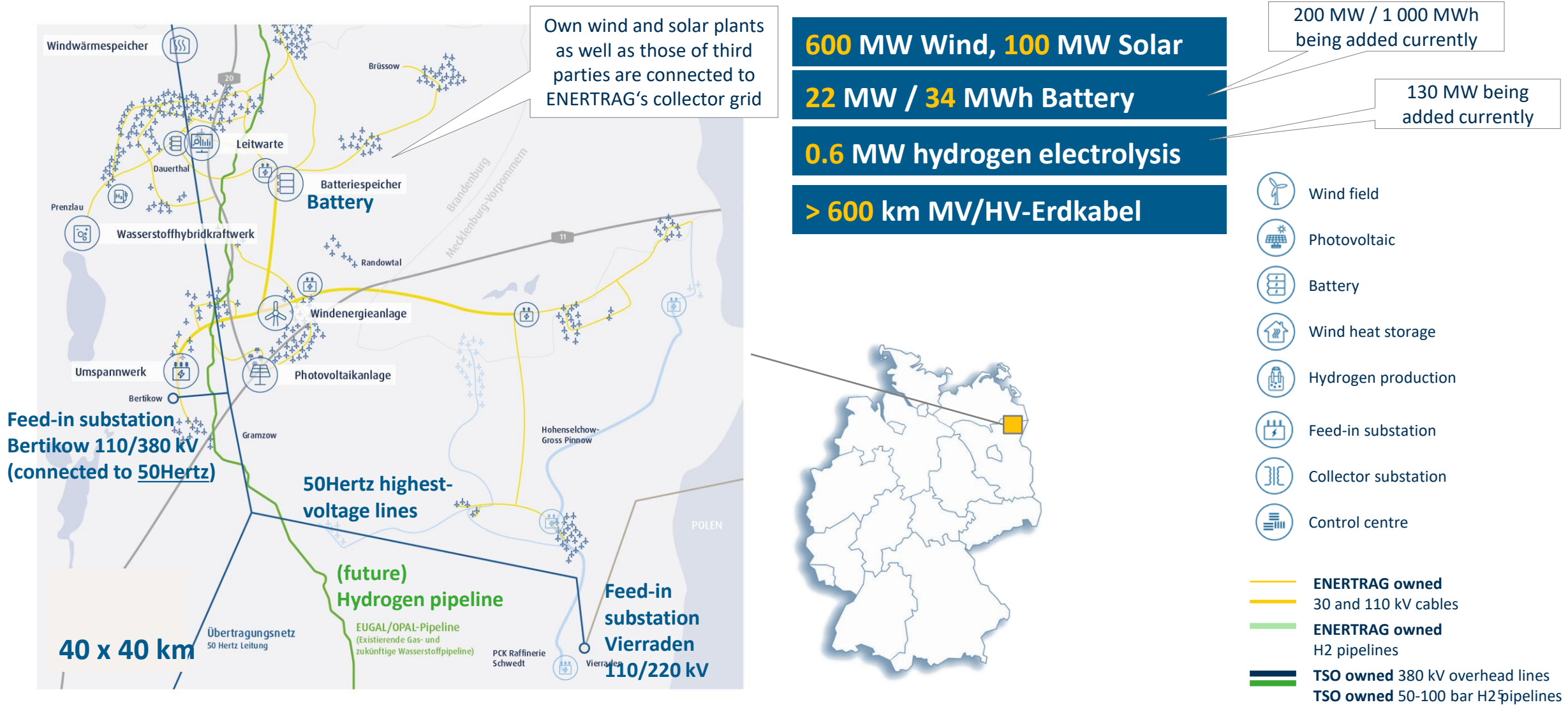
- When too much primary electricity is generated, it gets stored in batteries and H2
- With too little primary electricity, batteries discharge & hydrogen is re-electrified



Competitive hydrogen production from surplus electricity: 100-120 kt/a

2 GW Electrolysis are powered with surplus wind & solar electricity and hence produce competitively priced **100-120 kt/a green hydrogen** for feed-in into the German hydrogen core pipeline grid

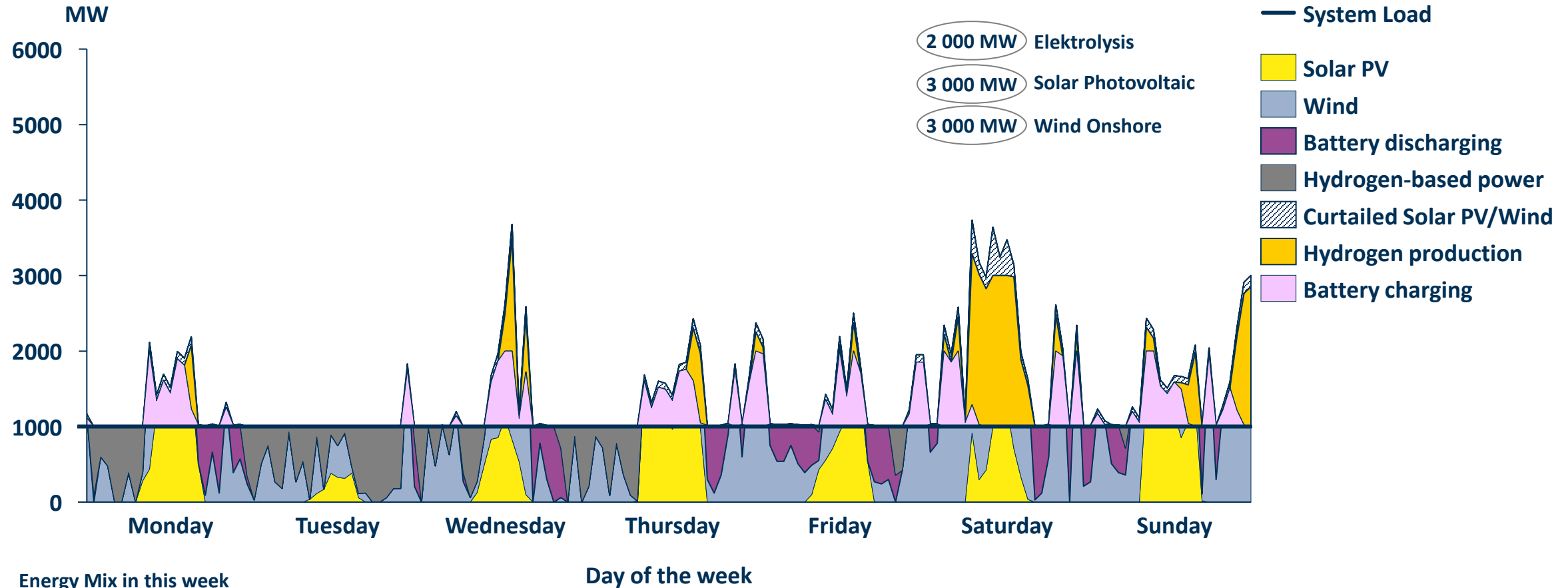
In operation: ENERTRAG's Verbundkraftwerk Uckermark with collector grid and 860 MVA 110/380-kV transformer capacity at its main feed-in substation



In a very low-wind-low-sun week, a lot of gas power needs to be generated

Simulated hourly solar PV and wind power supply, battery and gas-power complement for a week with very low resource availability

Capacity of connection to the public grid = 1 000 MW



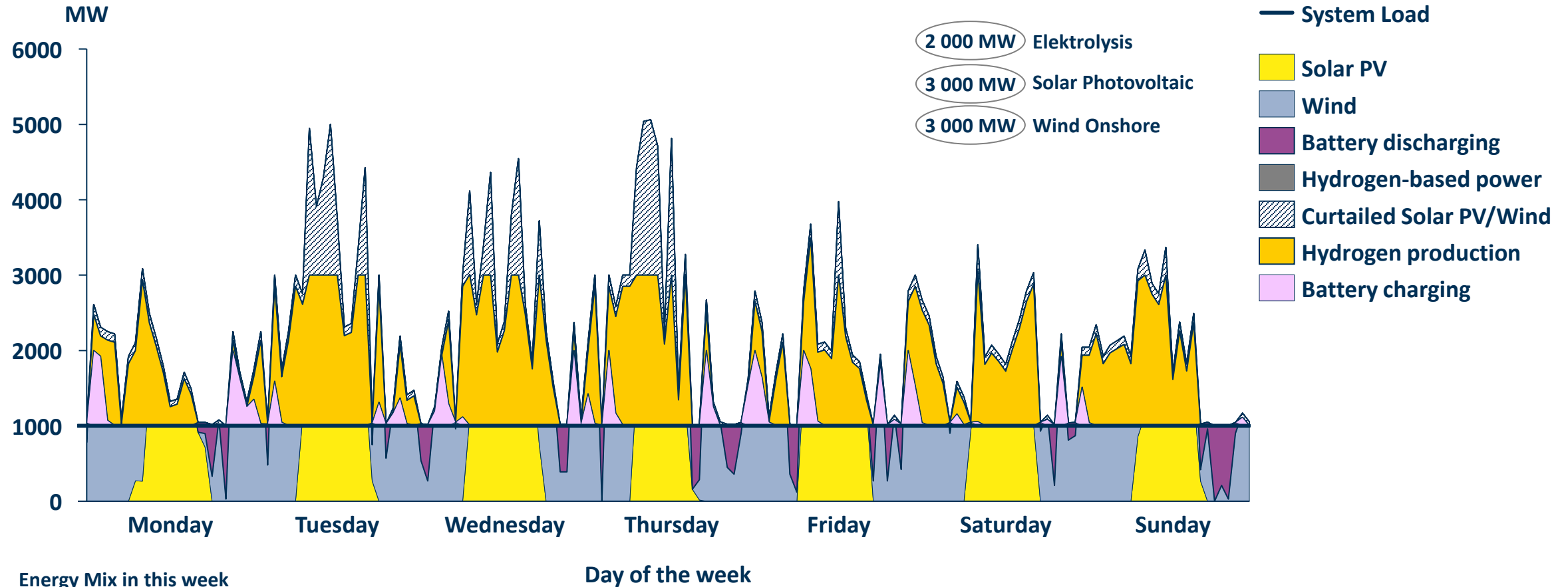
Energy Mix in this week

Wind and solar PV:	74% of total electricity generated
Battery discharging:	16% of total electricity generated
Hydrogen-based power:	14% of total electricity generated
Hydrogen production:	17% of all wind/solar energy is converted into hydrogen → 780 t in that week
Curtailment:	5% of all wind/solar energy is curtailed

Very windy/sunny week: more hydrogen produced, no hydrogen-based power

Simulated hourly solar PV and wind power supply, battery and gas-power complement for a very resource-rich week

Capacity of connection to the public grid = 1 000 MW

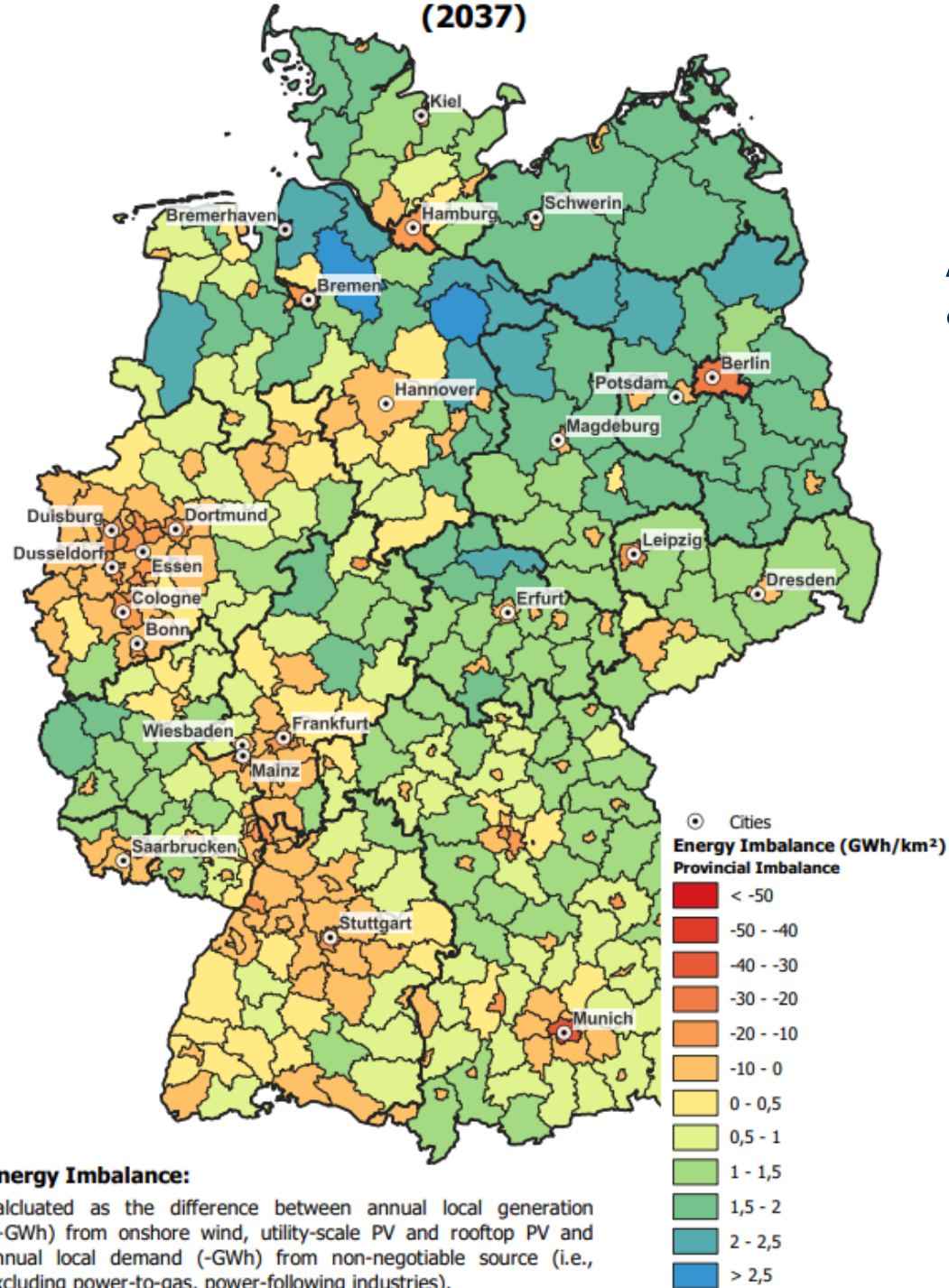


Energy Mix in this week

Wind and solar PV:	94% of total electricity generated
Battery discharging:	6% of total electricity generated
Hydrogen-based power:	0% of total electricity generated
Hydrogen production:	40% of all wind/solar energy is converted into hydrogen → 3 500 t in that week
Curtailment:	11% of all wind/solar energy is curtailed

(2037)

Annual wind and solar energy surplus and shortage per district (Landkreis)

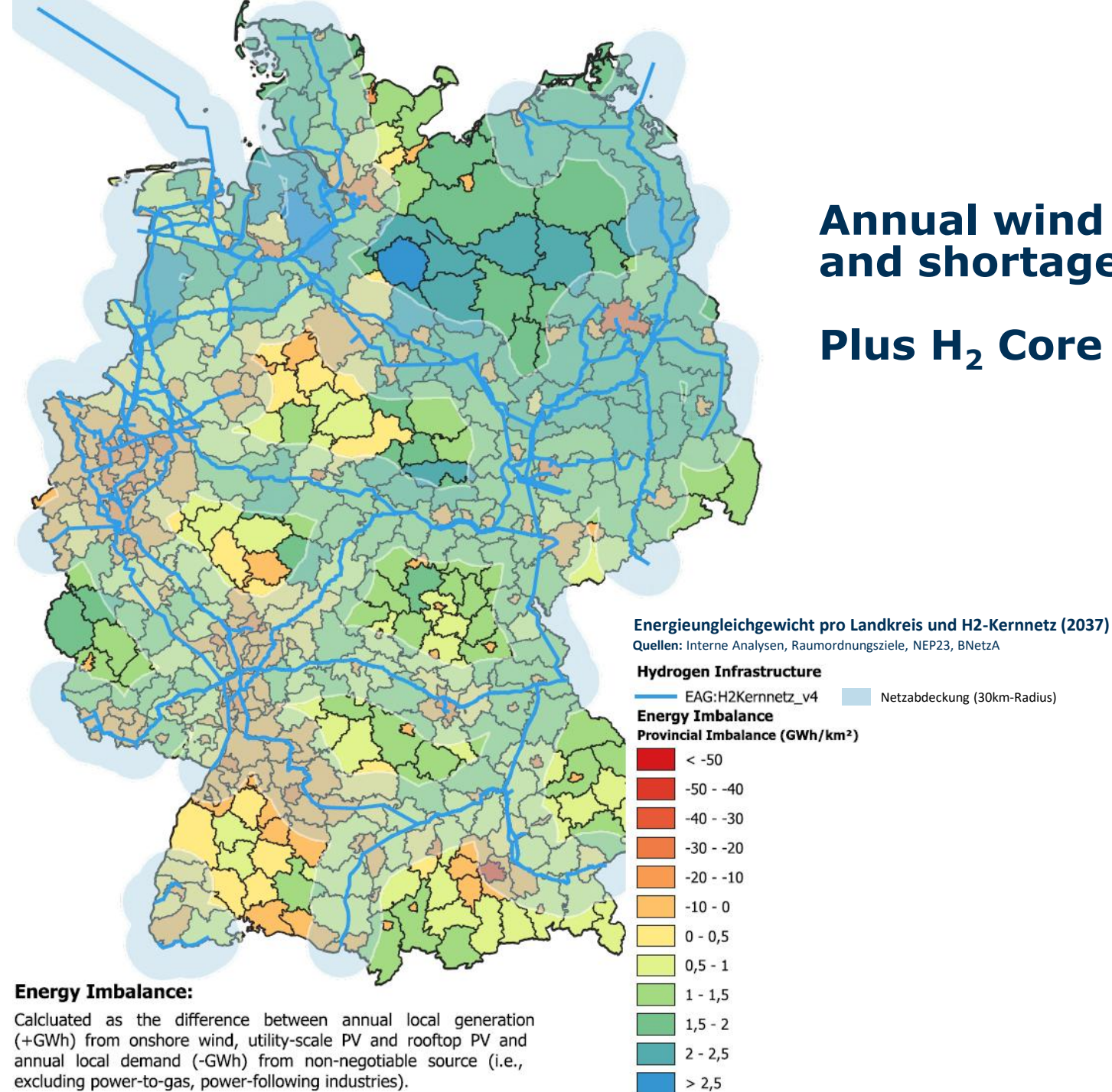


Energy Imbalance:

Calculated as the difference between annual local generation (+GWh) from onshore wind, utility-scale PV and rooftop PV and annual local demand (-GWh) from non-negotiable source (i.e., excluding power-to-gas, power-following industries).

Annual wind and solar energy surplus and shortage per district (Landkreis)

Plus H₂ Core Grid (H₂-Kernnetz)



Energy Imbalance:

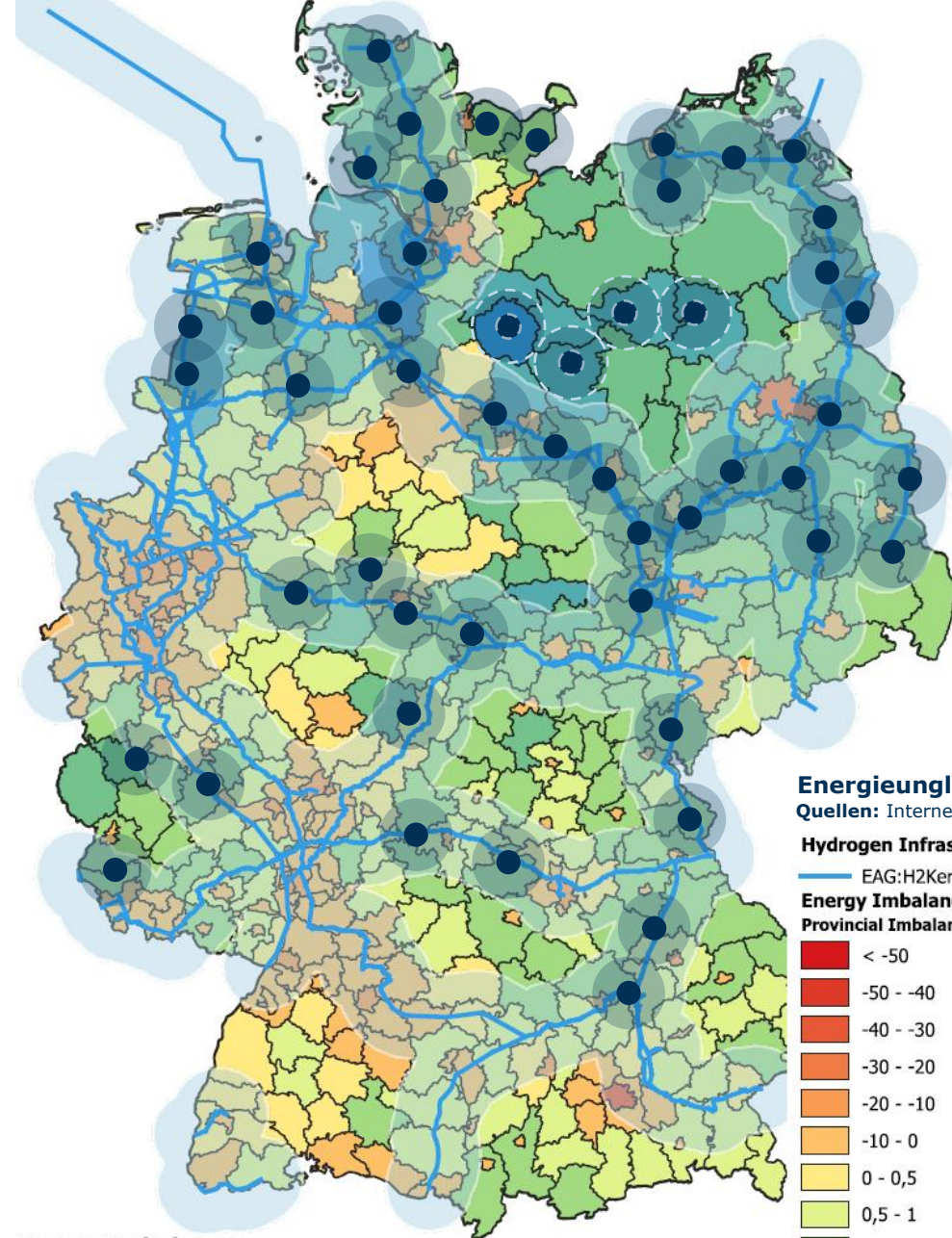
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Verbundkraftwerks (VKWs) make sense where energy surplus meets H₂ Core Grid (H₂-Kernnetz)

50 VKWs, strategically placed across Germany, would make 100.000 km² of land area a renewable-electricity catchment area; ca. 600 TWh/a wind and solar primary electricity would be harvested and benefited at source into

350 TWh/a **electricity on demand** (50 GW firm capacity) and

5 Mt/a inexpensive hydrogen from domestic production (1/3 of total German end-state demand for hydrogen)



Energiegleichgewicht pro Landkreis und H₂-Kernnetz (2037)

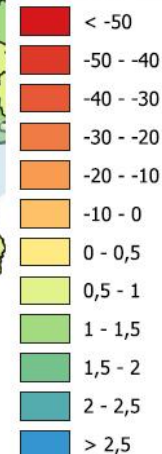
Quellen: Interne Analysen, Raumordnungsziele, NEP23, BNetzA

Hydrogen Infrastructure

— EAG:H2Kernnetz_v4 ● Netzabdeckung (30km-Radius)

Energy Imbalance

Provincial Imbalance (GWh/km²)



- VKW catchment radius of ca. 25 km (ca. 2.000 km² catchment area)
- Because of missing connection to H₂ core grid, VKWs without substantial H₂ production (possibly data centres)

Energy Imbalance:

Calculated as the difference between annual local generation (+GWh) from onshore wind, utility-scale PV and rooftop PV and annual local demand (-GWh) from non-negotiable source (i.e., excluding power-to-gas, power-following industries).

Let's be together

“One Energy Ahead”

