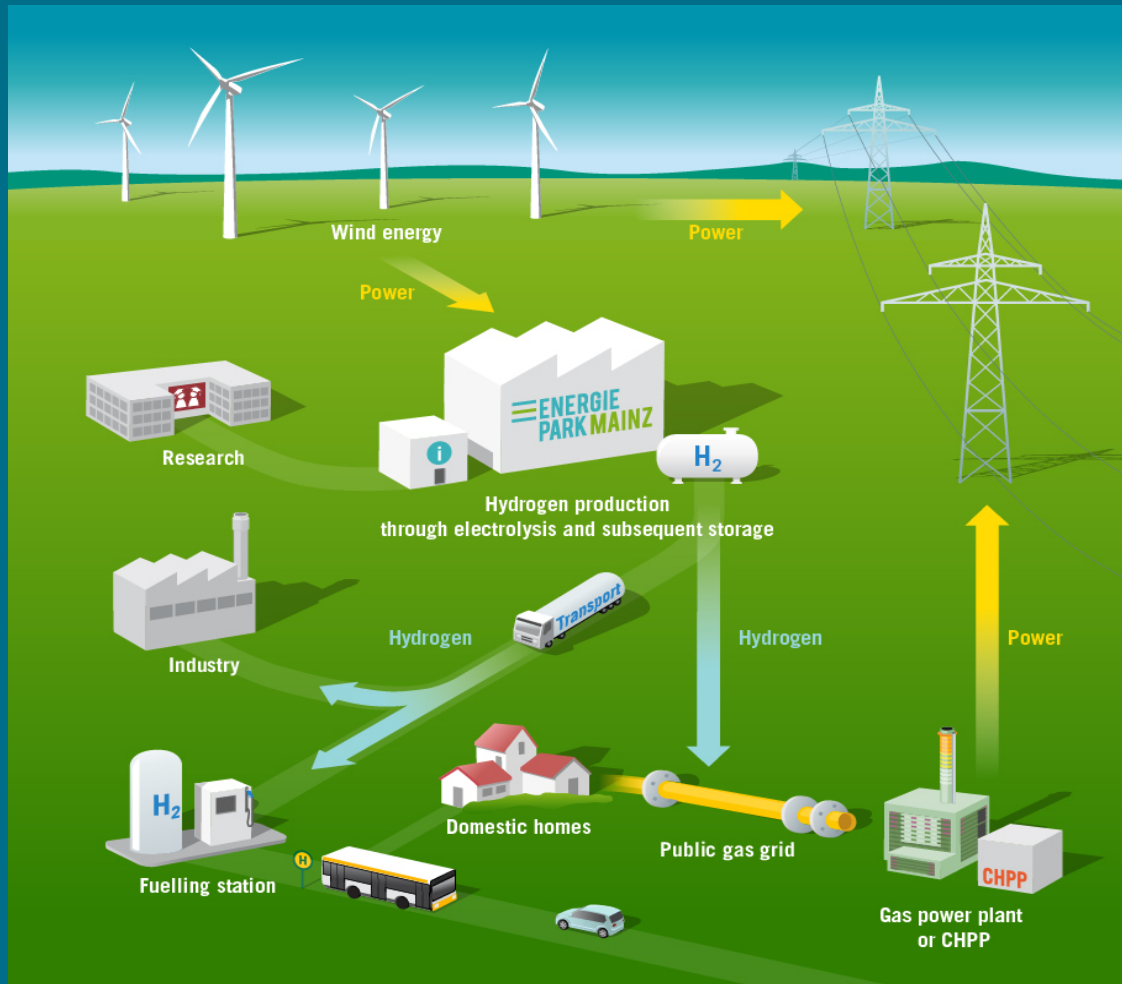


# INTELLIGENT COUPLING OF INFRASTRUCTURES IN THE MAINZ-REGION

## SCHEME OF THE ELECTROLYTIC HYDROGEN PRODUCTION IN MAINZ



### CONCEPT: MAINZ ENERGY PARK

- ▶ Hydrogen as a connector between different sectors
  - (RE) Electricity
  - Mobility
  - Natural gas
  - Industry
- ▶ Decentralized, scalable approach
- ▶ 6 MW Electrolysis power:
  - 3 Systems (cell stacks)
  - 2 MW maximum power each
  - Continuous power 5 MW

# INTELLIGENT COUPLING OF INFRASTRUCTURES IN THE MAINZ-REGION

## UTILIZATION OF HYDROGEN TO DECARBONIZE THE NATURAL -GAS-SYSTEM



### TRANSMISSION LINE FOR THE SUPPLY OF THE MAINZ-EBERSHEIM DISTRICT WITH APPROX. 1,000 NETWORK CONNECTIONS

- ▶ Mainly (> 95%) residential customers and gas usage only for heating and cooking
- ▶ Operating pressure of the gas pipe 7-9 bar
- ▶ Approach for the preparation of the H2 feed:
  - Inspection of all residential connections and installations incl. recording of all terminals
  - Checking for rule-conforming design
  - Continuous increase of the H2 addition
- ▶ Since 2016: Operation of the partial network with 10 vol.% H2



# INTELLIGENT COUPLING OF INFRASTRUCTURES IN THE MAINZ-REGION

## UTILIZATION OF HYDROGEN TO DECARBONIZE THE PUBLIC-TRANSPORT-SYSTEM



### PROJECT "H2-BUS RHEIN-MAIN" WITH THE MAINZ AND WIESBADEN TRANSPORT AUTHORITIES

- Joint H2 filling station in Wiesbaden
  - High availability
  - Provision of large quantities in a short time
  - Expandable
- 
- ▶ Delivery by truck trailer from the Mainz Energy Park
  - ▶ 11 fuel cell buses by the end of 2021 / beginning of 2022
  - ▶ Further bus procurements planned in Mainz and Wiesbaden
  - ▶ Establishment of a regional H2 mobility cluster with partners



# INTELLIGENT COUPLING OF INFRASTRUCTURES IN THE MAINZ-REGION

## UTILIZATION OF HYDROGEN TO DECARBONIZE INDUSTRY APPLICATIONS



### TRIAL ADMIXTURE OF HYDROGEN IN GAS-FIRED INDUSTRIAL PRODUCTION PROCESSES IN THE RHINE-MAIN REGION

- ▶ Construction of a mobile H<sub>2</sub> feed-in plant for temporary use in industrial companies.
- ▶ Supply via 200 / 300 bar trailer
- ▶ Test of different blending rates of H<sub>2</sub> in natural gas - up to 100% H<sub>2</sub> use in the processes
- ▶ Currently planning construction with several companies from different industries
- ▶ Start of first H<sub>2</sub> use in production processes 2022
- ▶ Only a first step. In the long term, onsite solutions or pipeline supply necessary

