Bloomenergy®

Singapore Energy Week

Decarbonization Roadmap: Greening the world with solid oxide fuel cell / electrolizer technology

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World Leader in Solid Oxide Technology

$794m 2020 Revenue	**30% CAGR** Over last decade	**~$4bn** Product + Service Backlog	**>$650mm** Cumulative R&D	**400** Issued Patents
~600MW Installed Base	**99.999%** Energy Server Uptime	**>50%** Reduction in CO_2 vs. US Grid	**>99%** Reduction in Air Pollutants	**Near Zero** Water Usage

TECHNOLOGY PLATFORM OVERVIEW

SOFC ENERGY SERVERS PROVIDE A CLEAR PATH TO HYDROGEN POWER

100% Natural Gas or Biogas

Today's solution enables tomorrow's transition

Natural Gas + Hydrogen Blend

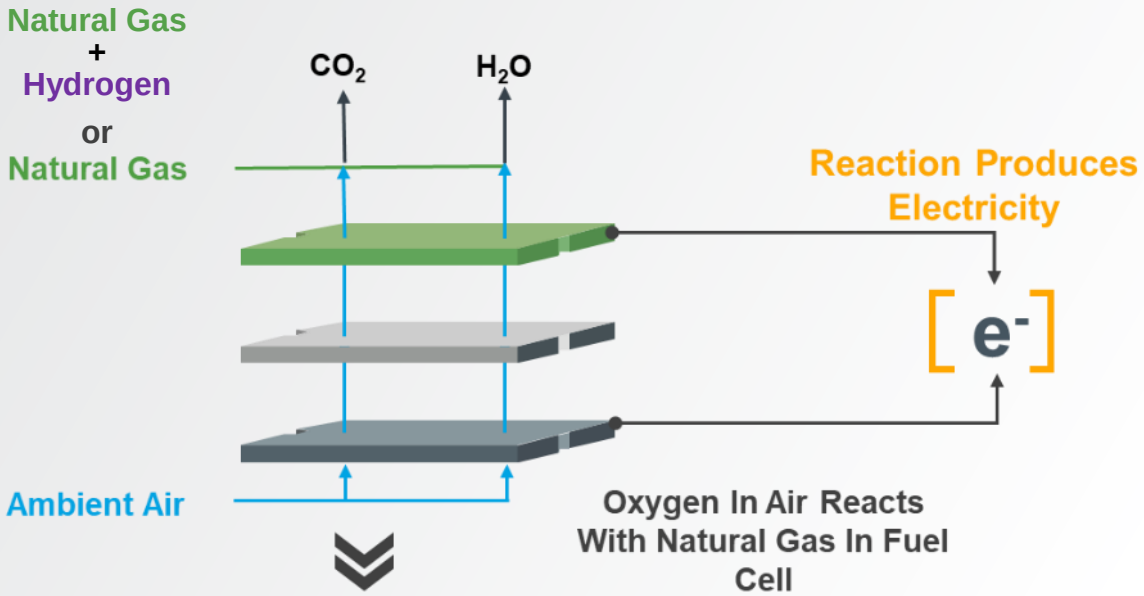
Hydrogen can be utilized in part to meet clean energy goals

100% Hydrogen

Bloom's technology provides for a risk-free transition when needed

TECHNOLOGY PLATFORM OVERVIEW

MODULAR, SCALABLE, EFFICIENT



Technology Highlights

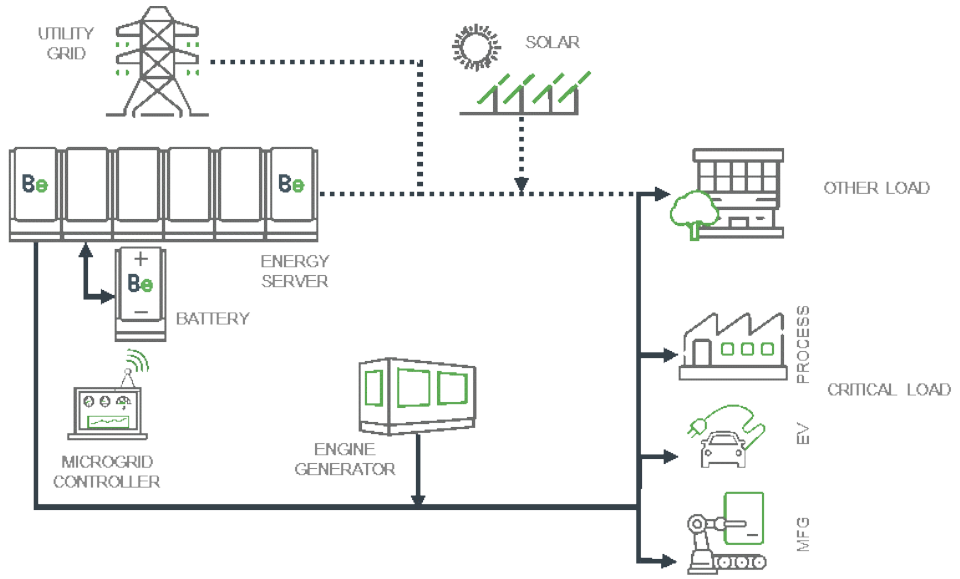
- >99% Availability
- 65-53% Electrical Efficiency (LHV net AC)
- 800 lbs/MWh CO2 Emissions (~50% of CC)
- Negligible Non-CO2 Emissions
- Noise Equivalency of Normal Conversation
- No water requirement (steady state)

Fuel Cell	Stack	Server Module	System	Power Center
100um thick / 25W	12.5kW	50kW	250 KW	MWs – GWs

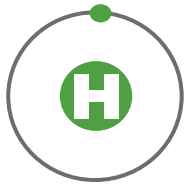
TECHNOLOGY PLATFORM OVERVIEW

BLOOM'S CARBON FREE TOTAL SOLUTION

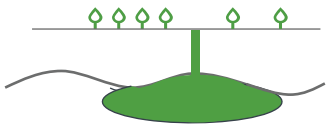
RESILIENT MICROGRIDS



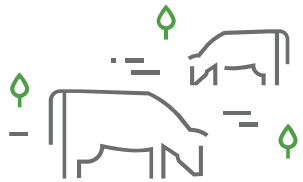
CARBON FREE



Renewable Hydrogen



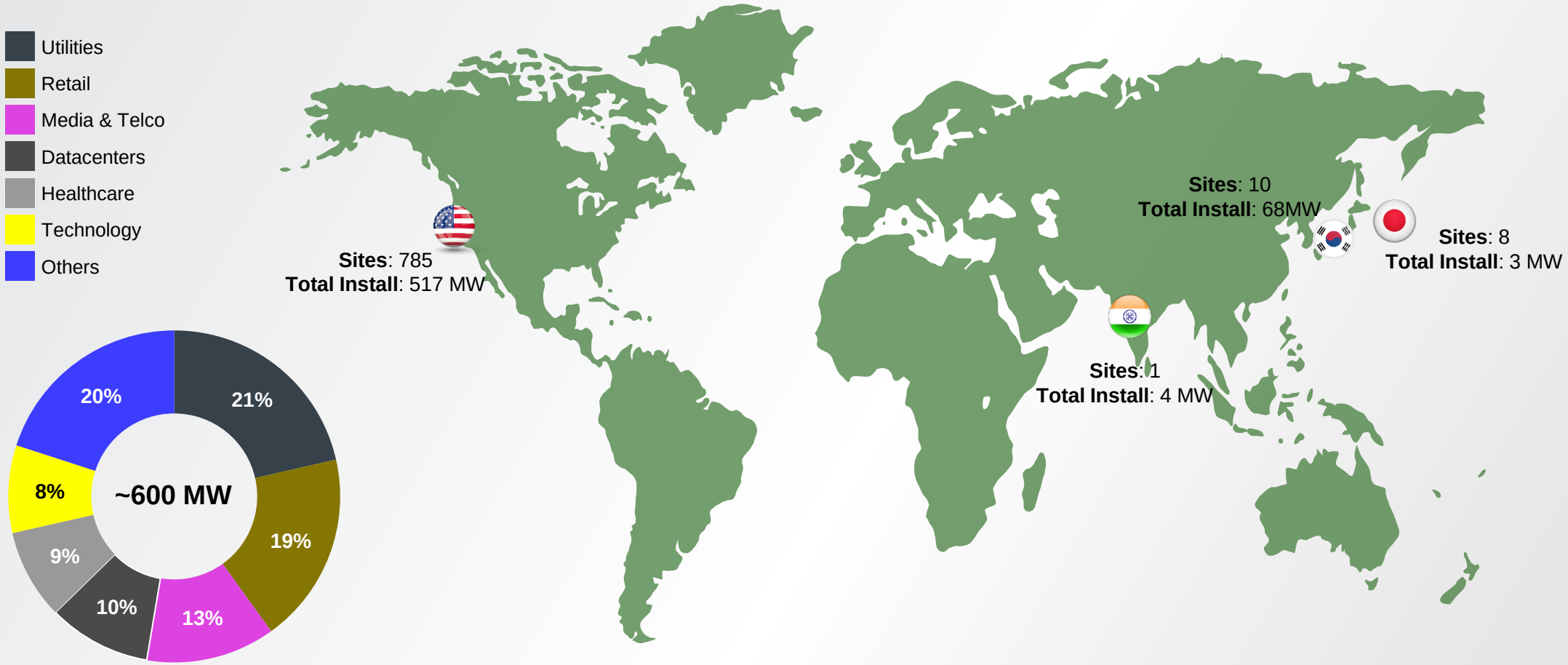
Carbon Capture



Onsite / Directed Renewable Biogas

BLOOM AT A GLANCE

PROVEN AT SCALE, ACROSS THE GLOBE



TECHNOLOGY PLATFORM OVERVIEW

UNPARALLED POWER DENSITY

1 MW Solar PV Facility

1 MW Bloom Energy

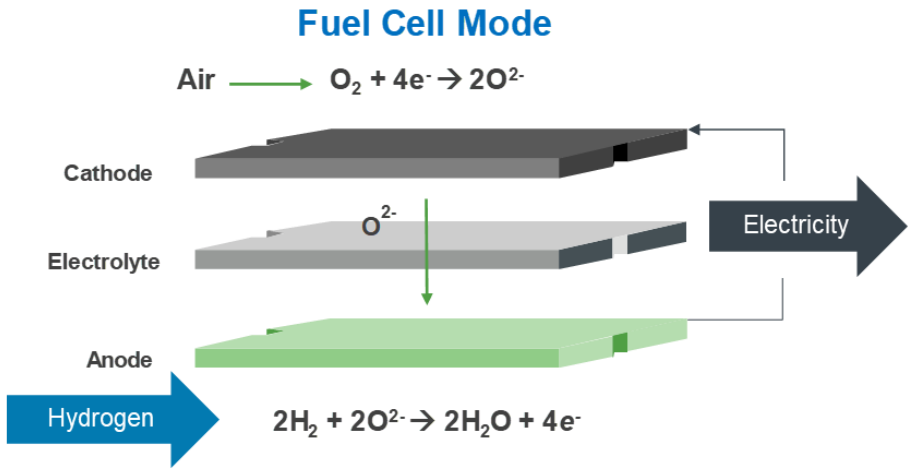
Solar requires **~12,500% more space** than Bloom

When stacked in a **"Power Tower"** configuration, Bloom achieves unparalleled power density

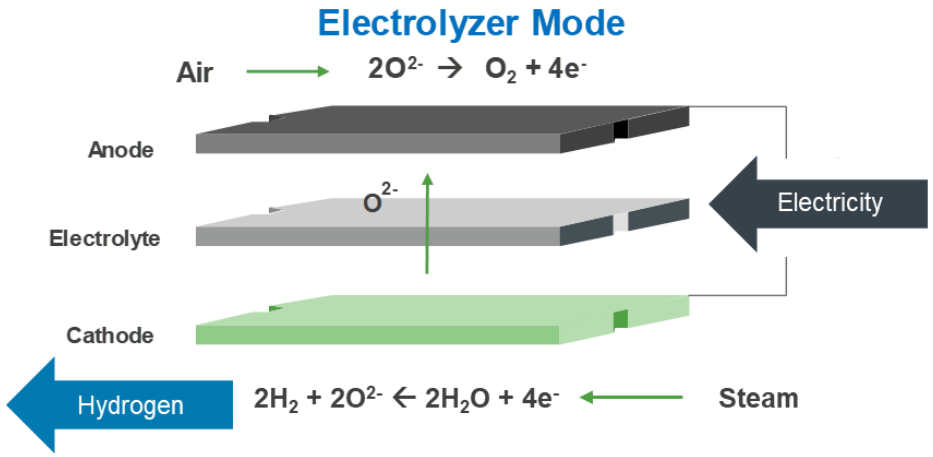
TECHNOLOGY PLATFORM OVERVIEW

REVERSIBLE FUEL CELL

Fuel Cell Mode

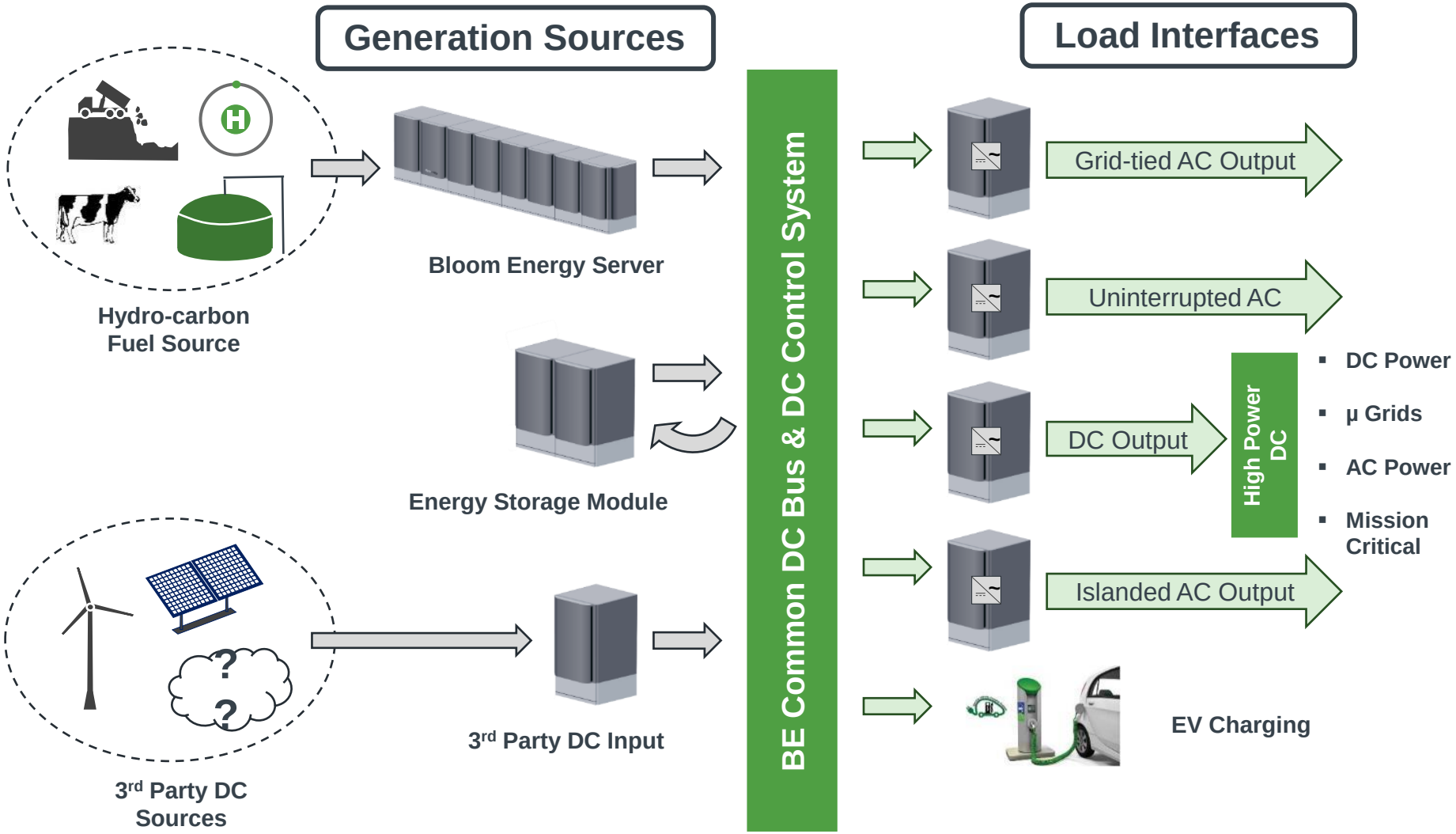


Electrolyzer Mode



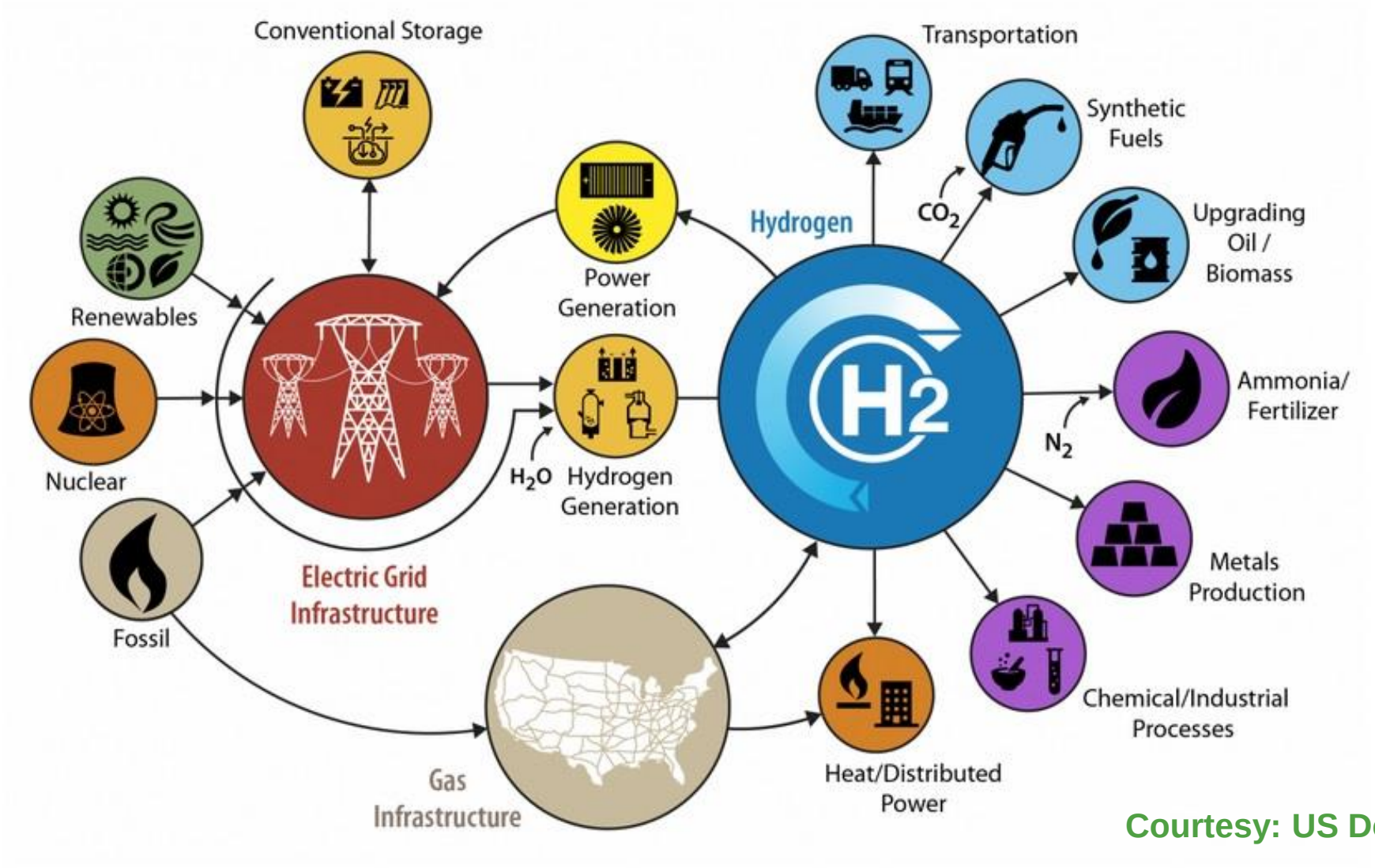
DECARBONIZING THE FUTURE

ENERGY INTEGRATION



DECARBONIZING THE FUTURE

H2 INTEGRATION



Courtesy: US DoE

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DECARBONIZING THE FUTURE

H2 & THE ENERGY TRANSFORMATION

+37,000 TWh/yr
(in 2040)
Energy

Stationary

- **Fossil Fuels**
  - Natural Gas
    - CO_2
    - Be SOFC
    - Be Natural Gas to Bloom with CCUSS
    - Be Hydrogen
- **Nuclear**
  - Be SOEC
  - Be Bloom Electrolyzes Excess Nuclear Power to Hydrogen
  - Be Hydrogen
  - Be SOFC
  - Be Hydrogen to Power
- **Renewables**
  - Waste to Biogas
    - CO_2
    - Be SOFC
    - Be Biogas to Bloom with CCUSS
    - Be Hydrogen
  - Be SOEC
  - Be Bloom Electrolyzes Renewables to Hydrogen
  - Be Hydrogen
  - Be SOFC
  - Be Hydrogen to Power

Transportation

- **Land**
  - H2
  - Hydrogen Fuel Cell Vehicle
    - Be SOFC
    - or
    - Be SOEC
    - Be Bloom Generating Hydrogen at stations
    - H_2
  - Electric Vehicles
    - Be SOFC
    - Be Bloom Powering EV Chargers
- **Sea**
  - Marine Transport
    - Be SOFC
    - Be Bloom Powering Marine Shipping

H_2 "Blue Hydrogen", Hydrogen generated during carbon capture of Natural Gas

H_2 "Pink Hydrogen", Hydrogen generated by electrolyzing excess Nuclear Power

H_2 "Gold Hydrogen", Hydrogen generated during carbon capture of Biogas Gas

H_2 "Green Hydrogen", Hydrogen generated by electrolyzing excess renewables

H_2 Hydrogen generated by BE SOFC or SOEC from any of the above means

ELECTOLYZER & FUEL CELL APPLICATIONS

ZERO CARBON ECONOMY USING BLOOM