



POWER-TO-GAS (P2G)

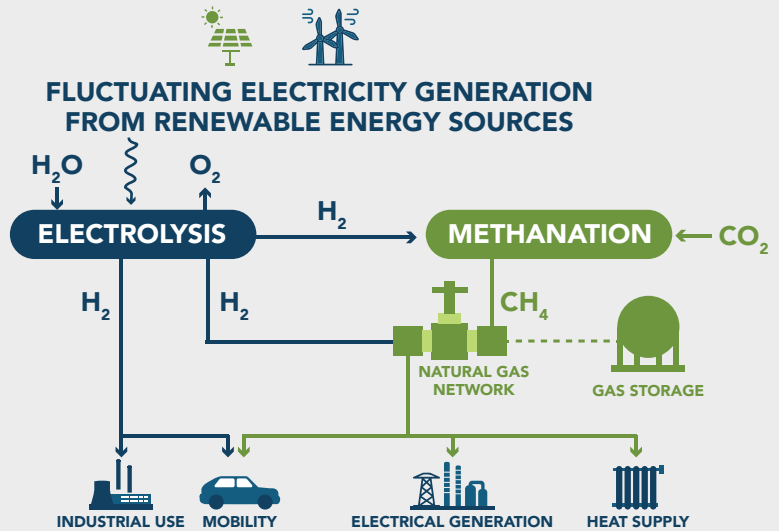
Power-to-Gas is an important component of a low-carbon energy future and can help improve the economics of zero-carbon fuels, enhance the resilience of our energy supply, and increase the deployment of renewable energy technologies.

H₂

WHAT IS POWER-TO-GAS?

Power-to-Gas (P2G) converts surplus renewable energy into gaseous hydrogen that can be delivered through existing natural gas infrastructure. P2G can be stored taking advantage of existing natural gas infrastructure and used during times of peak energy demand.

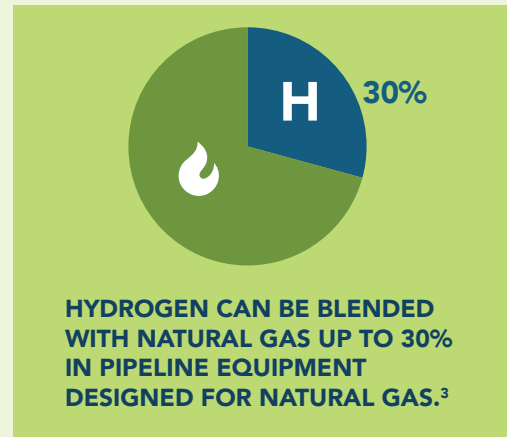
Hydrogen can be blended with natural gas or it can be converted into methane as a renewable natural gas option.¹



NATURAL GAS COMPATIBILITY

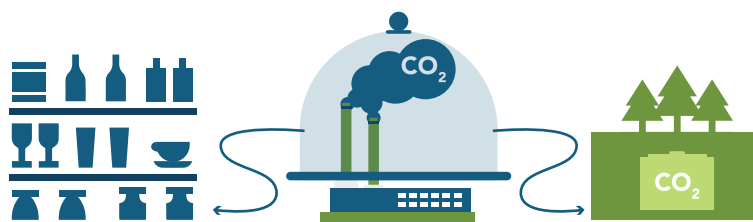
Some utilities are already safely blending hydrogen into their natural gas pipelines to reduce their greenhouse gas emissions and are funding multiple research and development projects. Hydrogen can also be further processed into fuels such as synthetic methane, able to fully displace geologic natural gas making use of existing infrastructure and equipment.

In the future, infrastructure to support distribution of 100% hydrogen may exist, supporting further emissions reductions across various sectors.



P2G, CARBON CAPTURE, AND CHP

Burning synthetic methane does produce CO₂ but is considered carbon neutral since it was produced utilizing captured carbon that would have been released to the atmosphere. Adding Carbon Capture, Utilization, and Sequestration (CCUS) would make the system act as carbon negative. Combined Heat & Power (CHP) systems can be added to these facilities to allow them to capture and harness the waste heat that is produced, increasing the system's efficiency.



THE CAPTURED CARBON CAN BE STORED UNDERGROUND OR UTILIZED AS A FEEDSTOCK FOR NUMEROUS PRODUCTS.

1. The Oxford Institute for Energy Studies, Power to Gas: Linking Electricity and Gas in a Decarbonizing World, 2018
 2. IRENA, Green Hydrogen Cost Reduction, 2020
 3. U.S. DOE, HyBlend: Opportunities for Hydrogen Blending in Natural Gas Pipelines, 2021