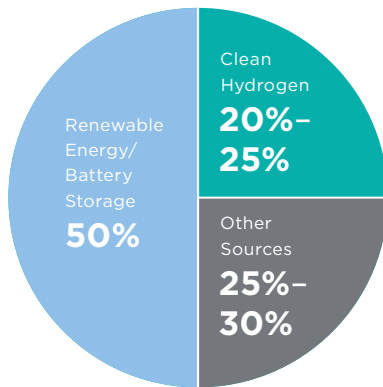


# Clean Hydrogen

## Leading the way to a decarbonized world

The energy transition to a decarbonized world by 2050 will require high-energy, low-emission solutions beyond the traditional renewables of wind, solar and battery storage. The key to meeting the world's energy needs, while reducing atmospheric CO<sub>2</sub>, is clean, cost-effective hydrogen.



## Hydrogen is key to the energy transition.

Contributions by energy source to the energy transition.

# Clean, cost-effective hydrogen compared to traditional hydrogen:

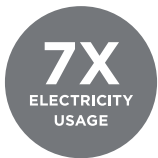
## Methods of producing hydrogen:



### Steam Methane Reforming (SMR)

#### High CO<sub>2</sub>, Low Cost

While affordable, SMR releases 11 tons of CO<sub>2</sub> into the atmosphere for every 1 ton of hydrogen produced.



### Electrolysis

#### High Cost, Low CO<sub>2</sub>

Electrolysis is low-emission but uses 7x the electricity of methane pyrolysis.

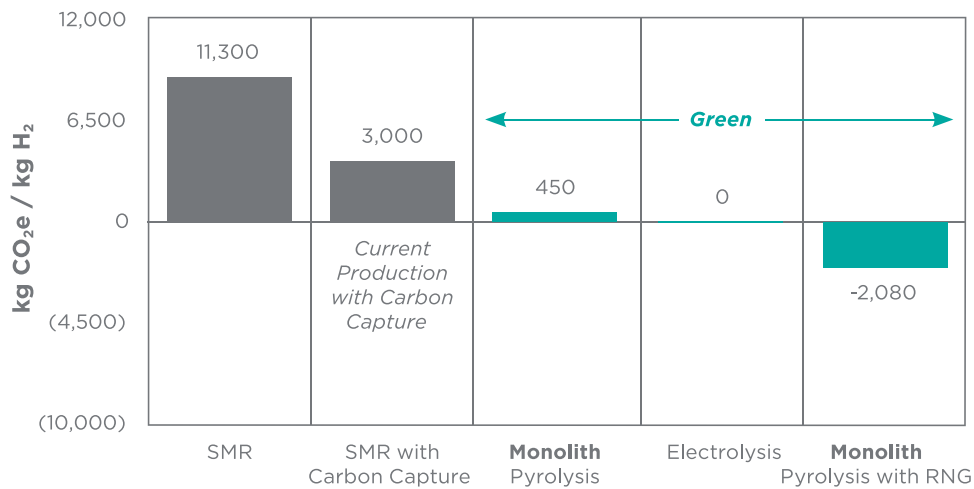


### Pyrolysis

#### Low Cost, Low CO<sub>2</sub>

Pyrolysis is cost-effective, clean and requires less water and land usage.

# Carbon intensity of hydrogen production.



## Pyrolysis: The cleanest production method

Pyrolysis, which uses high temperatures to break down and separate hydrogen and carbon atoms, uses renewable natural gas (RNG) as a feedstock. RNG can be produced from numerous sources including landfills, livestock operations and wastewater treatment centers, making it a low-cost and nearly infinite supply of feedstock. Compared to other hydrogen manufacturing processes, pyrolysis using renewable natural gas has the lowest carbon intensity, deeming it the greenest production method currently available.