

What is Hydrogen?

A highly energy dense molecule which is the lightest and most abundant element in the universe but is mostly found bonded in hydrocarbons and water on Earth.



“**74%**”

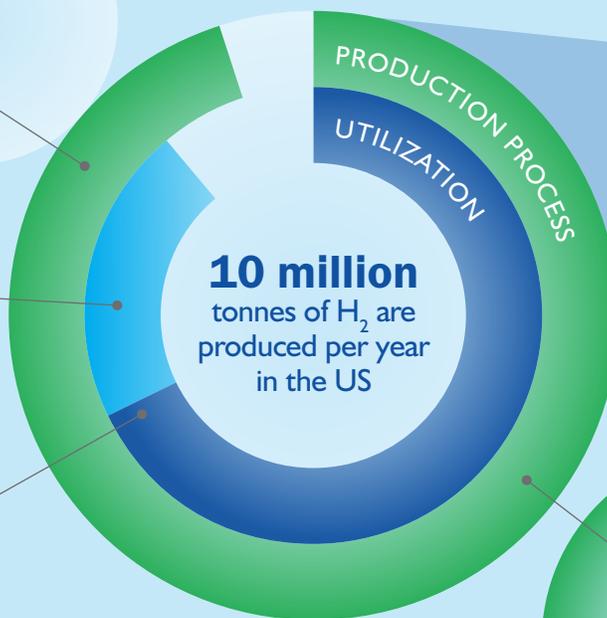
of the mass in the known universe is hydrogen. At our current and every conceivable scale, humanity’s future necessitates mastering hydrogen.”

— JACOB LEACHMAN, PH.D.
Hydrogen Properties for Energy Research (HYPER) Laboratory
Washington State University

95%
of the H₂ in the US comes from fossil fuel methane through steam reformation (DOE)

21%
of total H₂ production is used in producing ammonia (NH₃) for fertilizer production

68%
of total H₂ production is used in petroleum processing



Total production is equivalent to **6%** of all gasoline sales on an energy basis

Hydrogen from fossil fuels accounts for **93 million** tonnes of CO₂ emitted annually.

Why is it important?

- Renewable electricity is cheap and H₂ can be made from electricity – through a process called electrolysis.
- Renewable hydrogen holds the potential to decarbonize many sectors such as refining, agriculture, transportation, industry, steel making, electricity, natural gas utilities, and more. Policy changes will be needed for renewable hydrogen to fulfill its potential.

Using renewable hydrogen could get H₂ emissions down to **zero!**

1kg
= 1 gallon

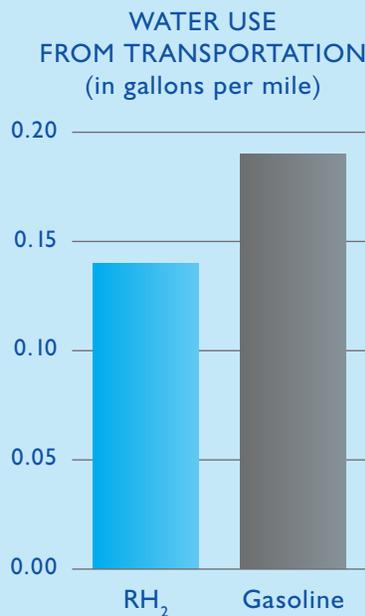
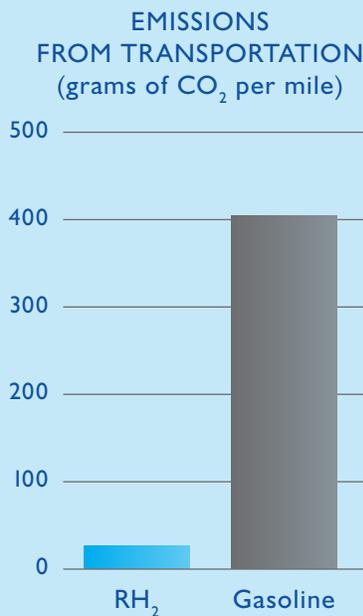
One kg of H₂ provides the same amount of energy as one gallon of gasoline

2.5x
as efficient

Hydrogen fuel cell electric vehicles are 2.5x as efficient as gas power cars

62mpge
vs. 25mpg

For a 25 mpg gasoline engine the equivalent FCEV will get 62 mpg



*RH₂ = Renewable Hydrogen

Hydrogen could grow to a **\$12 trillion** business by **2050**
(Goldman Sachs)

Hydrogen FAQs

Isn't hydrogen dangerous?

Hydrogen is just as safe as other fuels such as natural gas and propane when properly handled. Hydrogen has been safely used by many industrial sectors for over 50 years.

Is hydrogen expensive?

The price of renewable hydrogen is most directly related to the price of renewable electricity which is projected to decline and grow in low cost surpluses.

Learn more at renewableh2.org

RHIA
RENEWABLE HYDROGEN ALLIANCE