

# Fuel Facts: Hydrogen



**Innovative hydrogen technologies support a clean, affordable, and diverse energy landscape in Indiana.**

## Did You Know?

- NASA began using liquid hydrogen in the 1950s as a rocket fuel.
- Indiana's own Purdue University is researching and developing hydrogen applications at [Discovery Park](#) and the [Hydrogen Systems Lab](#).
- Hydrogen is also widely used in agricultural fertilizers.

Hydrogen is abundant and versatile which can provide energy across multiple energy sectors including transportation and electricity.

## WHAT IS HYDROGEN

Hydrogen is the smallest and the most abundant element on earth. It is clean and naturally occurs with other elements, such as water. Hydrogen has high energy content for its light weight, which makes it very attractive for new and emerging energy technologies. Hydrogen can carry energy from one place to another like electricity and hydrogen can be stored for long periods of time.

## HOW HYDROGEN CAN BE USED

Hydrogen fuel cells, which combine hydrogen and oxygen to produce electricity and water, are being used in transportation as an alternative fuel. Some hydrogen fuel cells cars are already on the road, but much of the ongoing hydrogen research and development within the transportation sector is about building hydrogen fuel cells for larger vehicles. This may provide opportunities for greater fuel efficiency for heavy vehicles and loads, such as freight trucks, boats, and busses.

Hydrogen may also be used as a gas to heat buildings like conventional natural gas. Hydrogen can be blended with natural gas at low concentrations resulting in cleaner energy without additional costs of new infrastructure.

Researchers are also examining hydrogen for energy storage to provide on-demand electricity similar to battery storage. On-demand energy storage is an important component to Indiana's energy future to serve as back up for short-term electricity disruptions and to fill gaps in electricity generation from intermittent resources like wind and solar.

Hydrogen is an innovative and clean technology that harnesses its natural abundance and versatility to provide options across multiple energy sectors including transportation and electricity. With further technology advancements, hydrogen can contribute to a cleaner, lower-cost, and more resilient energy future.

