

# Hydrogen Innovation Fund – Background

## Overview

Ontario is in the midst of a profound energy transformation with decarbonization poised to significantly shape the province's future energy landscape. Achieving a fully decarbonized supply mix will require contributions from several new and emerging technologies. As Ontario explores pathways to achieve a low-carbon energy future, one of the fuels that shows considerable potential is hydrogen.

Hydrogen is still in its early stages. In April 2022, Ontario's Ministry of Energy published the [Low Carbon Hydrogen Strategy](#), which identified several immediate actions, including the launch of a hydrogen production facility in Niagara Falls, identifying strategic locations across the province with the infrastructure and resources to become "hubs" for hydrogen investment and continuing to support hydrogen research and development.

In January 2023, the Ministry of Energy instructed the IESO to develop a Hydrogen Innovation Fund with the goal to investigate, evaluate and demonstrate how low-carbon hydrogen technologies can be successfully integrated into Ontario's electricity system.

## About Hydrogen

Hydrogen can be produced using electricity. Once produced, it is a very flexible source of energy with multiple potential end-uses:

### Electricity Sector Uses:

- Providing energy or grid services like: peaking generation capacity, ancillary services, long-term and/or seasonal storage and helping to decarbonize existing generation assets
- Smoothing the energy output from renewable resources, like wind and solar
- Blending with natural gas to reduce the emissions impact of natural gas combustion

### Other Sector Uses:

- Hydrogen fuel cells for transportation, including passenger vehicles and heavy freight trucks
- Industrial production of ammonia for fertilizer, methanol and other liquid synthetic fuels

When produced using clean electricity sources, hydrogen has the potential to be an important enabler of decarbonization. When hydrogen is burned the only by-product is water vapour, making it an attractive alternative to high-carbon fossil fuels like natural gas.

With an electricity grid that is approximately 90 per cent emissions-free already, a skilled workforce and an innovation-oriented research sector, Ontario is well positioned to support the transition to a low-carbon hydrogen future.

In addition to helping mitigate the impacts of climate change, hydrogen has the potential to enhance energy system resilience, support economic development and job creation and attract investment to Ontario.

## The Hydrogen Innovation Fund

The Hydrogen Innovation Fund will enable the IESO and project proponents to test existing and emerging technologies in order to objectively evaluate how hydrogen can support electricity grid reliability, affordability and decarbonization.

The fund received high interest from stakeholders, attracting over 25 proposals. Over the next three years, these projects will be researching and testing hydrogen, including the grid impact of hydrogen electrolyzers while producing hydrogen for other end-uses, the viability of hydrogen to be used as a grid resource that can provide energy, operating reserve and other ancillary services and the ability of Ontario's electricity system to support the development of a hydrogen economy.