



B.C. Hydrogen Strategy

A sustainable pathway for B.C.'s energy transition



Executive summary

British Columbia is committed to achieve net-zero emissions by 2050. It is an ambitious target given that two-thirds of the energy we use for transportation, buildings and industry currently comes from fossil fuels. Meeting our CleanBC goals requires a determined effort to increase energy efficiency, electrify the economy and switch to low-carbon fuels such as biofuels and hydrogen.

When burned or used in a fuel cell, hydrogen produces no carbon emissions. Large-scale deployment of renewable and low-carbon hydrogen will play an essential role in reducing B.C.'s emissions. Independent estimates suggest that hydrogen has the potential to reduce annual emissions by 7.2 megatonnes by 2050 – equivalent to 11% of the province's 2018 emissions.¹

Because of its versatility, hydrogen is one of the only solutions for decarbonizing sectors of the economy where direct electrification is not practical, such as heavy-duty transportation and industrial heat. Hydrogen can be used in fuel cells to produce energy for transportation and stationary power systems, especially important for industrial sites and remote communities powered by diesel. When blended into the natural gas grid, hydrogen can displace fossil fuels to heat and power our homes and buildings. Hydrogen can also be used for producing low-carbon synthetic fuels to reduce emissions in transportation and industry.

Realizing the potential of hydrogen requires government, industry and researchers to work together. As part of CleanBC, the B.C. Hydrogen Strategy outlines the Province's plan to accelerate the production and use of renewable and low-carbon hydrogen and be a world leader in the growing hydrogen economy.

The strategy includes 63 actions to undertake over the short term (2020-2025), medium term (2025-2030) and long term (2030-beyond). These include:

- incentivizing the production of renewable and low-carbon hydrogen;
- developing regional hydrogen hubs where production and demand are co-located;
- financial supports for deploying fuel cell electric vehicles and infrastructure;
- expanding the use of hydrogen across different industrial sectors and applications;
- promoting the adoption of hydrogen in areas where it is most cost-effective in terms of emission reductions;
- creating the B.C. Centre for Innovation and Clean Energy to drive the commercialization of new hydrogen technology; and
- establishing ambitious carbon-intensity targets and a regulatory framework for carbon capture and storage.

B.C. has already implemented robust policies to encourage hydrogen use in the transportation sector. B.C.'s carbon tax and low carbon fuel standard (LCFS) are reducing emissions while incentivizing the switch to renewable and low-carbon fuels. CleanBC committed to increasing the stringency of the LCFS by doubling the required reduction in carbon intensity of transportation fuels to 20% by 2030. Introduced in 2019, the *Zero-Emission Vehicles Act* requires automakers to meet an escalating annual percentage of new light-duty zero-emission vehicle sales, including hydrogen fuel cell electric vehicles. Hydrogen is expected to play a larger role for medium- and heavy-duty vehicles by supporting larger payloads and range.

¹ Zen and the Art of Clean Energy Solutions, *BC Hydrogen Study - Final Report* (2019).

The Province also recently introduced policies to support the production of hydrogen. In 2021, the Province and BC Hydro introduced the Clean Industry and Innovation Rate to offer discounted electricity for hydrogen production. In addition, recent amendments to the *Greenhouse Gas Reduction Regulation* enable utilities to produce or purchase hydrogen for displacing fossil fuels in the natural gas grid.

Unlike most other jurisdictions, B.C. has the resources to produce both green and blue hydrogen with low carbon intensity. More than 98% of B.C.'s electricity is renewable, allowing us to leverage our clean electricity to produce green hydrogen via electrolysis. B.C. also has low-cost natural gas reserves, significant geological storage capacity and expertise in carbon capture and storage (CCS) technology, giving us the potential to produce blue hydrogen from natural gas with adequate and permanent CCS.

Not all types of hydrogen production are equal in terms of climate benefits. To reduce emissions and decarbonize the economy, the B.C. Hydrogen Strategy must focus on advancing and providing support only for renewable and low-carbon hydrogen pathways, with long-term targets for declining carbon intensity consistent with net-zero emissions by 2050. Our immediate priorities will be to:

- scale-up green hydrogen production using B.C.'s abundant supply of clean, renewable electricity; and
- establish a regulatory framework for CCS to enable blue hydrogen production while ensuring it has similar or lower emissions.

B.C. is already a world leader in hydrogen and fuel cell technology. Provincial support for innovation has led to the creation of a vibrant cluster of companies and expertise in hydrogen. More than half of Canada's companies active in the hydrogen and fuel cell sector are located in B.C. This local expertise has fuelled strong synergies between government, industry and post-secondary institutions.

B.C. is well-positioned to grow its hydrogen sector to meet the increasing demand for low-carbon solutions locally and around the world. Hydrogen is a clean energy solution for powering B.C.'s future as it presents an opportunity to reduce emissions, attract new investment and create skilled, well-paying jobs. Given our proximity to export markets, we could capture a significant portion of the global hydrogen market estimated to be greater than \$305 billion by 2050.

Unlocking hydrogen's potential requires acting with urgency and working together to implement the B.C. Hydrogen Strategy. Accelerating the adoption of renewable and low-carbon hydrogen through policy, partnerships, innovation and infrastructure will help us achieve our CleanBC commitments and build a sustainable economy.