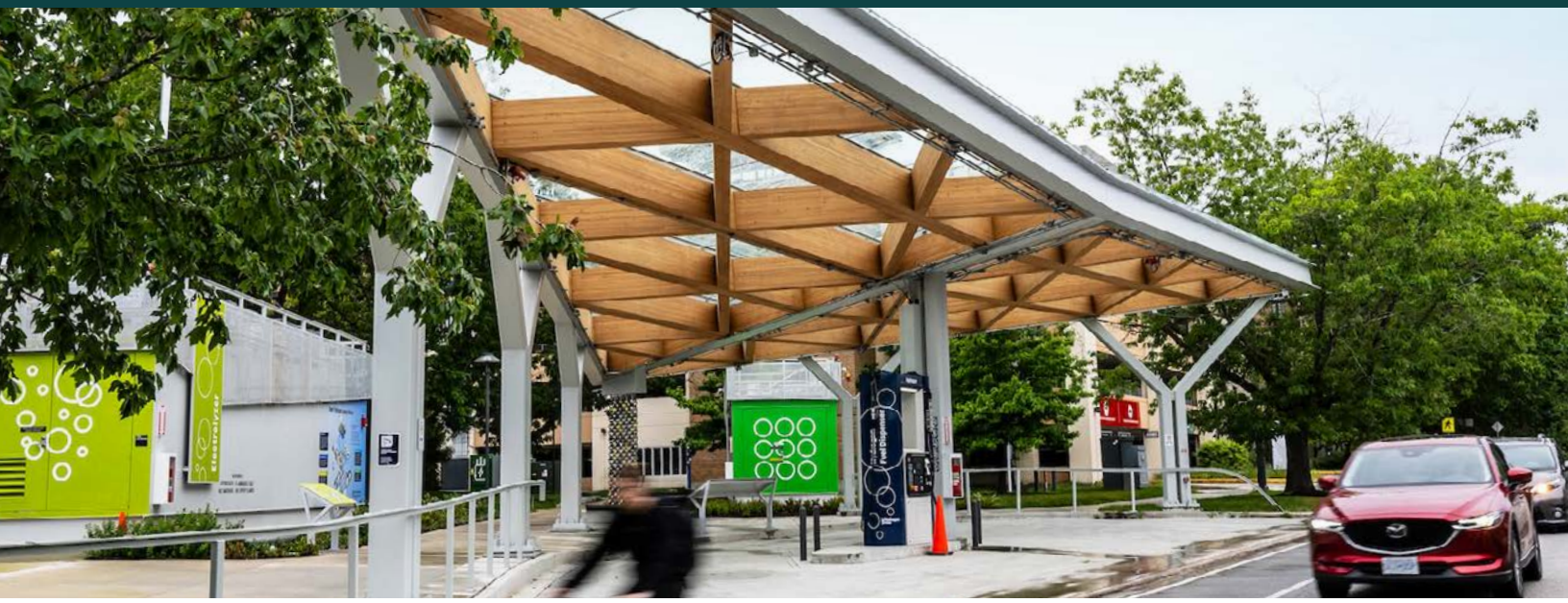
Hydrogen BC | BC's Hydrogen Future



Hydrogen is emerging as a key element in British Columbia's (BC's) transition to a low-carbon economy. Its versatility as an energy carrier offers significant potential for decarbonization across various sectors, including transportation, energy, and industry. BC has positioned itself as a leader in the hydrogen economy through the BC Hydrogen Strategy, which outlines a comprehensive plan to scale up hydrogen production, infrastructure, and end-use. This strategy aims to leverage the province's renewable energy and natural gas resources, geological storage capacity, and innovative technologies to make BC a global hub for hydrogen innovation.

Demand Applications:

1. TRANSPORTATION:

Hydrogen serves as a clean fuel for a wide range of transportation methods, including light-duty, medium-duty, and heavy-duty vehicles, as well as rail applications. Fuel cell electric vehicles (FCEVs) offer rapid refueling and extended range, making them suitable for fleet operations and various types of vehicles. For light-duty and medium-duty vehicles, such as passenger vehicles and buses, hydrogen provides a viable alternative to traditional fuels, while heavy-duty vehicles, such as trucks, benefit from the extended range and reduced refueling times. Rail is also a promising sector for hydrogen integration, providing a clean alternative to diesel locomotives.

BC is home to more than 50% of Canada's clean hydrogen and fuel cell companies, with Metro Vancouver's cluster exporting BC-engineered fuel cells worldwide for heavy-duty vehicles. Companies like Ballard Power Systems and Unilia are contributing significantly to the development of fuel cell technology, providing solutions for both domestic and international applications. HTEC is leading hydrogen-powered transportation in BC, owning Canada's largest hydrogen fueling network and spearheading the BC Hydrogen Pilot Truck Project to replace diesel vehicles with hydrogen fuel cells.

Hydrogen British Columbia

Canadian Hydrogen Association | Association Canadienne de L'hydrogène

To learn more go to www.canadah2bc.ca

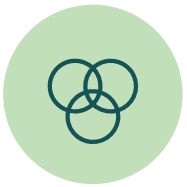
Demand Applications:

2. NATURAL GAS BLENDING:

Blending low-carbon hydrogen into natural gas can reduce greenhouse gas emissions from heating in residential, commercial, and industrial settings compared to using traditional natural gas.

FortisBC is working to continually increase their supply of renewable and low-carbon gas, exploring hydrogen blending into natural gas infrastructure to decarbonize heating. FortisBC and Enbridge are collaborating on studies to determine the percentage of hydrogen that can be safely transported through existing pipeline infrastructure.

Transportation



Natural Gas Blending

Industrial Processes

3. INDUSTRIAL PROCESSES:

Hydrogen can replace fossil fuels in industries requiring high-temperature processes, such as metal smelting, cement manufacturing, industrial heat, power generation, and chemical feedstocks. Other potential industrial uses include power generation where direct electrification is impractical, and hydrogen as a feedstock for producing chemicals like ammonia and methanol. The versatility of hydrogen makes it well-suited for these diverse applications, particularly in industries where emissions are difficult to abate.

Companies such as Ekona Power and BC Research Inc. are leading efforts in hydrogen integration for industrial processes. Building on existing natural gas infrastructure with their methane pyrolysis technology, Ekona offers industrial partners a cost-effective solution to decarbonize operations. BC Research Inc. focuses on hydrogen production and purification, supporting industries like chemical manufacturing and power generation.

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Hydrogen Hubs and Regional Development:

Establishing hydrogen hubs—regions where production, distribution, and utilization of hydrogen are co-located—is crucial for scaling up hydrogen infrastructure and enabling the economic feasibility of these projects. The BC Hydrogen Strategy outlines the development of these hubs as a key component to build a robust hydrogen sector.

Foresight, in partnership with the Clean Energy and Major Projects Office, is exploring the development of hydrogen hubs in the Lower Mainland, Northeast BC, the Interior (Kootenays and Okanagan), and Vancouver Island. Foresight released the first hydrogen hub assessment in July 2024. The Lower Mainland report, along with the remaining regions, can be found here. The City of Prince George and City of Prince Rupert are also leading the Northern BC Hydrogen Hub initiative aimed at building the foundational infrastructure needed to support the hydrogen economy in northern BC.

Export Opportunities:

BC's proximity to key trading partners, such as Japan, South Korea and the United States, positions it as a potential exporter of low-carbon hydrogen. In addition to this, organizations like the Pacific Northwest Economic Region (PNWER) play a critical role in facilitating cross-border collaboration and market access, which is vital for developing export opportunities for BC's low-carbon hydrogen and associated technologies.

By scaling up hydrogen production and establishing export infrastructure, BC can capitalize on the growing international demand for low-carbon energy solutions. This effort supports job creation and export revenue generation, strengthens local economies, and reinforces the province's reputation as a leader in clean energy innovation.

Indigenous Partnerships:

Indigenous partnerships are critical to the success and sustainability of the hydrogen sector in BC. By forming equitable partnerships with these communities, companies can ensure that development aligns with Indigenous rights, values, and environmental stewardship. Collaboration fosters trust, supports reconciliation efforts, and ensures that Indigenous voices are heard and respected throughout the process.

These partnerships also create significant economic and social opportunities for Indigenous communities. Involving Indigenous leaders and businesses in hydrogen projects ensures local benefits, such as job creation, training programs, and revenue sharing, are realized. Indigenous knowledge can further enhance environmental protection, helping to create more sustainable hydrogen production practices that align with BC's climate goals. When Indigenous communities are active participants and beneficiaries in the hydrogen sector, the entire industry benefits from stronger relationships, shared expertise, and long-term success.

Salish Elements is an Indigenous-owned green hydrogen production company working on projects across BC. Salish Elements works closely with partners, such as the Xaxli'p First Nation, to unite First Nations, government, technology providers, and other stakeholders in the development of hydrogen projects.

SALISH ELEMENTS
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