INTERNATIONAL PARTNERSHIP FOR HYDROGEN AND FUEL CELLS IN THE ECONOMY

# IPHE Country Update Nov 2024 – Apr 2025: CANADA

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| **Covered Period** | November 2024 – May 2025 |

## 1. New Initiatives, Programs, and Policies on Hydrogen and Fuel Cells

On April 28, 2025, a general election was held in Canada and a minority Liberal government led by Prime Minister Mark Carney was elected. The Liberal party was elected on a platform committed to establishing Canada as an energy superpower, building clean energy supply chains, investing in nation-building infrastructure, including new trade infrastructure, streamlining regulatory processes for projects through a Major Federal Project Office and a "One Project, One Review" approach, and adopting a new foreign policy to expand Canadian trade and strengthen Canada's international leadership. The platform committed to moving forward on Canada's clean economy investment tax credits, including the clean hydrogen ITC.

On May 13, 2025, Prime Minister Mark Carney announced his Cabinet, appointing Tim Hodgson as the Minister of Energy and Natural Resources. Although mandate letters have not yet been issued, the new government remains committed to strengthening Canadian energy leadership and supporting clean energy supply chains.

The 2024 Fall Economic Statement, released December 16, 2024, proposed that the Clean Hydrogen Investment Tax Credit, a refundable tax credit that covers between 15% and 40% of eligible equipment used in the production of clean hydrogen, be expanded to include methane pyrolysis as an eligible production pathway. Eligible production pathways currently include water electrolysis and natural gas reforming using carbon capture, utilization and storage. The assessed carbon intensity for hydrogen produced by methane pyrolysis will need to account for the end use of produced solid carbon.

The Government of Canada is working with German officials to launch a 400M EUR funding window through the H2Global mechanism. The bilateral funding window will support commercial transactions between Canadian hydrogen producers and German end-users. Canada and Germany have formalized alignment on an approach to the bilateral window and it is currently under review by the European Commission.

## 2. Hydrogen and Fuel Cell R&D Update

### Methane Pyrolysis Advancements

- FortisBC successfully tested new turquoise hydrogen production equipment and is now exploring a commercial-scale project. FortisBC partnered with Australia's Hazer Group in 2022 to develop a methane pyrolysis pilot plant in

Kitchner, B.C. The CAD11.25M (USD8.21M) project, supported by CAD8M (USD5.84) from the CleanBC Industry Fund, is focused on evaluating key technical aspects rather than producing hydrogen or graphite. FortisBC is now seeking a site in B.C. for a commercial-scale Hazer hydrogen plant, with a final investment decision expected in one to two years.

- Calgary-based Innova Cleantech secured seed funding to accelerate commercialization of its proprietary methane pyrolysis technology, which producers high-value synthetic graphite and clean hydrogen, with the flexibility to generate other carbon products like carbon nanotubes. The company has achieved TLR6 and is commissioning a pilot facility in Sturgeon County, Alberta to validate its commercially viable graphite production for industrial and battery-grade applications.

**Hydrogen Storage**

- The Geological Survey of Canada is partnering with Triple Point Resources on a project to explore the potential for large scale hydrogen storage at the Fischells Salt Dome in Newfoundland and Labrador. The project is part of a broader national effort to improve standards for underground energy storage facilities in Canada.
- The Geological Survey of Canada is undertaking a project, co-led by CanmetENERGY, and funded by NRCan's Office of Energy Research and Development, to characterize reservoir properties in Canadian Salt deposits for hydrogen storage. These studies include petrophysical and fluid flow, geomechanics, geochemistry and stratigraphy, geo-microbiology, emission and risk assessment. The produced data will be used to update CSA Z341 for Underground Hydrogen Storage. This project started in 2022 and will be wrapped up in FY 2025-2026.

**Naturally Occurring Hydrogen**

- The Geological Survey of Canada is undertaking a project, in collaboration with academia and provincial and international geological surveys, to estimate Canada's hydrogen and helium potential.

## 3. Demonstration, Deployments, and Workforce Developments Update

**Transportation**

- Winnipeg Transit received its first hydrogen fuel cell buses as part of plants to test both hydrogen fuel cell and battery electric buses in 40- and 60-foot sizes, with support from the Investing in Canada Infrastructure Program.
- Strathcona County is partnering in the Alberta Zero-Emissions Fleet Fuelling project to explore hydrogen as a fuel for heavy-duty municipal fleets, with plans to launch a mobile hydrogen fuelling station in Spring 2025.The initiative will test hydrogen fuel cell vehicles in Alberta's extreme weather conditions and compare their performance to battery electric vehicles.
- KAG Canada deployed a Class 8 truck equipped with a hydrogen dual-fuel system, expanding its use of Innovative Fuel Systems' Multi-Fuel Technology Platform to offset diesel consumption with clean hydrogen.
- HTEC opened its sixth retail hydrogen refuelling station in Vancouver, in partnership with 7-Eleven Canada and using Cavendish Hydrogen equipment.

HTEC's network has dispensed approximately 102,500 kg of hydrogen and supports up to 300 hydrogen vehicles in BC.

- Port operator DP World completed initial testing of a hydrogen fuel cell-powered rubber-tired gantry (RTG) crane at the Port of Vancouver, as part of a pilot project to decarbonize port operations.
- Edmonton International Airport, with funding from Alberta Innovates, is working with Diesel Tech Industries (DTI) to retrofit two heavy-duty runway snow sweepers by integrating DTI's Guardian Hydrogen Diesel System, which supplements diesel fuel with hydrogen to lower carbon emissions. The retrofitting will begin this spring and should take about a year. The initiative is part of YEG's Hydrogen Hub, an effort to utilize the airport's vast space to develop hydrogen infrastructure and pilot emerging technologies. Other hydrogen technologies being tested at the airport include hydrogen-powered shuttle buses for passengers, industrial-vehicle hydrogen fuel conversions and hydrogen for sustainable aviation fuel (SAF).
- Canadian Pacific Kansas City began operating hydrogen refuelling stations at its Calgary and Edmonton railyard, which will be operated by ATCO EnPower and support its hydrogen-powered locomotives. It began with three in three hydrogen powered locomotives, powered by Ballard's FCwave fuel cells, but has expanded to six and is planning an additional four for late 2025. Its project has grown from initial movement trials to posting more than 6,000 miles of freight service testing by the end of 2024.
- Canadian electrolyzer manufacturer Next Hydrogen Solutions is developing hydrogen production infrastructure for the aviation industry and, in collaboration with Pratt & Whitney, will demonstrate hydrogen combustion technology on a PW127XT regional turboprop engine. The project, called Hydrogen Advanced Design Engine Study, is supported by Canada's Initiative for Sustainable Aviation Technology, which is supported through CAD350M (USD255) in funding from the Strategic Innovation Fund.
- The Government of Ontario is providing nearly CAD2M (USD1.46M) to the University of Toronto to conduct research on how hydrogen can be used as a clean fuel by aircrafts.
- The first piloted aircraft to make a vertical takeoff and landing (VTOL) powered by a hydrogen fuel cell made its first flight at Roland-Désourdy Airport in Bromont, Québec. The three-minute, 16-second test flight demonstrated the hover and manoeuvring capabilities of the hydrogen powertrain. Development of the hydrogen fuel cell-powered R44 is being led by Unither Bioélectronique, a wholly owned Canadian subsidiary of United Therapeutics Corporation.

**Hydrogen Hubs**

- The Edmonton Region Hydrogen HUB entered its "activation phase," shifting from analysis to implementation. Launched in 2021 with support from municipalities, First Nations, and industry partners, the HUB has completed its initial funding agreements and will now focus on scaling up hydrogen manufacturing, transportation, and infrastructure, engaging local industries to seize emerging opportunities.
- The City of Calgary, with partners Alberta Innovates and Calgary Economic Development (CED), is launching the Calgary Region Hydrogen Hub, aiming to create 100 jobs and attract $75 million in private investment. Supported by a $1.5 million investment, CRH2 will collaborate with Alberta's hydrogen

producers and key demand sectors, including airports, industrial fleets, and hydrogen corridors.

**Hydrogen Production**

- Hydrogen Naturally, a Calgary-based company, received CAD3M (USD2.19M) from Emissions Reductions Alberta to advance development of a negative-emission hydrogen production facility using forestry waste such as woodchips and sawdust. The project will utilize gasification technology that captures carbon emissions and stores them underground. The funding will support a feasibility study to gather regulatory, engineering, and environmental data for the first hydrogen unit.

**Workforce Development**

- The University of Alberta launched the Centre for Hydrogen Innovation, Workforce Development and Outreach to advance hydrogen research, influence policy, and train a skilled workforce. The centre aims to connect academia with government and industry, accelerating technology development and global collaboration.
- Newfoundland and Labrador is investing CAD315,000 (USD229,960) to support the College of the North Atlantic's hydrogen training program. The CAD700,000 (USD 511,023) initiative to address workforce gaps in the province's emerging hydrogen sector. The College introduced the program in 2024, with the first group of students in the Hydrogen Technician program now halfway through their two-year diploma program.

**Research & Innovation**

- University of British Columbia Okanagan and FortisBC have partnered to create a hydrogen research lab focused on exploring how hydrogen can be integrated into FortisBC's gas supply to inform codes and standards for hydrogen delivery in the province.
- A consortium of partners including econext, Memorial University (MUN), its Marine Institute (MI), the College of the North Atlantic (CNA), the Qalipu Development Corporation (QDC), and the Miawpukek First Nation (MFN) formed to launch the Newfoundland and Labrador Hydrogen Innovation Partnership. The aim of the partnership is to attract attention and investment for R&D and innovation in the province.

## 4. Events and Solicitations

<u>Upcoming in 2026:</u>

The **Canadian Hydrogen Convention**, to be held in Toronto April 22-23, 2026, in Edmonton, is the largest event in Canada showcasing hydrogen as a key enabler of net-zero. It brings together energy executives, government officials and Indigenous leaders and includes more than 100 exhibiting companies. It attracts more than 2,5000 delegates and over 10,000 attendees.

The second annual **Hydrogen East Halifax** event, to be held in Halifax, Nova Scotia on April 13, 2026, bring together experts across the hydrogen economy in Atlantic Canada. Held in conjunction with Smart Energy Halifax, the conference brings together policymakers, investors, Indigenous leaders and the private sector to network, facilitate

business to business collaboration and discuss policies and regulations within the hydrogen landscape.

Upcoming in 2025:
**Hydrogen East Toronto**, to be held June 18 and 19, 2025 in Toronto, Ontario, brings together hydrogen stakeholders to explore the opportunities and challenges associated with hydrogen deployment in Ontario. It serves as a platform for collaboration, knowledge exchange, and the development of strategies to accelerate the adoption of hydrogen technologies and to explore its role in decarbonization.

**Energy NL**, to be held June 2-5, 2025, brings together energy experts across Newfoundland and Labrador to discuss the province's energy landscape, including wind to hydrogen.

**Hy-fcell Vancouver**, to be held June 3-5, 2025, in Vancouver, British Columbia, brings together participants from across the hydrogen and fuel cell industry, and related sectors to discuss solutions for clean energy with hydrogen and fuel cells.

## 5. Investments: Government and Collaborative Hydrogen and Fuel Cell Funding

- Natural Resources Canada's Clean Fuels Fund is providing CAD3.52M (USD2.57M)[1] to Atura H2 L.P. for a feasibility and FEED study for a 20MW electrolysis facility in Ontario.
- Transport Canada's Green Shipping Corridor Program is providing up to CAD22.5M (USD16.43M) to the Halifax Port Authority to accelerate development of the Halifax – Hamburg green shipping corridor, including through the establishment of green hydrogen production.
- The Natural Sciences and Engineering Research Council of Canada provided CAD800,000 (USD 584,026) to University of British Columbia Okanagan and FortisBC to support the establishment of hydrogen research lab.
- Innovation, Science and Economic Development Canada's Strategic Innovation Fund invested CAD49M (USD35.77M) in HTEC's CAD472M (USD344.58M) project build and operate a facility that will capture and liquefy 15 tonnes per day of industrial by-product hydrogen in North Vancouver, British Columbia. It is part of HTEC's H2 Gateway program, which will include up to 20 hydrogen refuelling stations, three hydrogen production facilities and a fleet of 100 hydrogen heavy-duty fuel cell electric trucks.
- PrairiesCan is investing CAD1.5M (USD1.09M) through its Regional Innovation Ecosystems program to help establish the Calgary Region Hydrogen Hub and CAD50,000 (USD36,501) under its Community Economic Development and Diversification (CEDD) program to support a study exploring opportunities related to a regional hydrogen hub in the Grande Prairie area. It is also investing CAD328,760 (USD240,005) under the Alberta Indigenous Clean Energy Initiative to enable Three Nations Energy GP to explore the feasibility of using excess electricity in the summer months to produce hydrogen.
- Export Development Canada provided CAD5M (USD3.65M) in capital debt financing to Next Hydrogen Solutions, a Canadian electrolyser manufacturer to

[1] Based on Bank of Canada Annual Exchange Rate for 2024

support its growth and global expansion. Next Hydrogen aims to scale up innovative electrolyser technology following successful pilots. EDC views this financing as the beginning of a strategic relationship that could showcase Canadian innovation in the global hydrogen economy.

- The Zero Emission Transit Fund provided CAD10.9M (USD$7.96M) to enable MiWay, Mississauga's Transit Agency, to purchase 10 hydrogen fuel cell buses and install refuelling equipment at its Malton transit facility.
- NRCan and Alberta Innovates invested CAD1M (USD730) towards the commercial deployment of Ekona's methane pyrolysis platform. The funding will support the completion of a FEED study for a 20TPD commercial clean hydrogen production plant in Alberta.

| Federal Hydrogen Funding Since November 2024 | | | |
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| **Project Funded** | **Project Type** | **Amount** | **Funding Department/Agency** |
| **Atura 20MW Electrolysis Feasibility** | Production | CAD3.52M (USD2.57M | NRCan's Clean Fuels Fund |
| **Halifax – Hamburg Green Shipping Corridor** | Infrastructure & Trade | CAD22.5M (USD16.43M) | TC's Green Shipping Corridor Program |
| **Hydrogen Research Lab** | R&D | CAD800,000 (USD 584,026) | NSERC |
| **HTEC North Vancouver Capture and Liquefaction** | Production | CAD49M (USD35.77M) | ISED's Strategic Innovation Fund |
| **Calgary Region Hydrogen Hub** | Hub | CAD1.5M (USD1.09M) | PrairiesCan Regional Innovation Ecosystems |
| **Grande Prairie Hub Study** | Hub | CAD50,000 (USD36,501) | PrairiesCan Community Economic Development and Diversification |
| **Three Nations Energy GP Feasibility Study** | Production | CAD328,760 (USD240,005) | PrairiesCan Alberta Indigenous Clean Energy Initiative |
| **Next Hydrogen Commercial Scaling** | Company Scaling | CAD5M (USD3.65M) | Export Development Canada |
| **MiWay FCEV Deployment** | Deployment | CAD10.9M (USD$7.96M) | Housing, Infrastructure and Communities Canada's Zero Emission Transit Fund |
| **EverWind Fuels Green Shipping** | Infrastructure & Trade | CAD22.5M (USD$164.26M) | TC's Green Shipping Corridor Program |
| **Ekona Methane Pyrolysis FEED** | Production | CAD750,000 (USD54.52M) | NRCan's Energy Innovation Program |
| **Total** | | CAD116.85M (USD85.3M) | |

Federal funding complements funding efforts undertaken by provincial governments. In April 2024, for instance, launched a $30M round of its Hydrogen Innovation Fund, doubling its 2023 budget. Other examples of provincial funding programs that have made recent funding hydrogen and fuel cell funding announcements include but are not limited to: Alberta's Emissions Reduction Alberta and Alberta Innovates, Nova Scotia's Clean Fuels Fund and Newfoundland and Labrador's Green Transition Fund.

## 6. Regulations, Codes & Standards, and Safety Update

In January 2025, the Government of Canada published the Hydrogen Codes & Standards Roadmap, identifying existing gaps in codes and standards along the hydrogen value chain, the priorities of Canadian stakeholders, and proposed actions to address gaps in the short- and medium-term. Implementation of the roadmap recommendations is in progress. Canada would welcome the opportunity for an IPHE webinar discussing the roadmap.

**Provincial Regulatory Developments**

- The Government of British Columbia introduced a dedicated regulatory framework for hydrogen through its Hydrogen Facility Regulation (BC Reg 27/2025), which came into effect on April 1, 2025. The new regulation streamlines permitting, construction, operation, and safety requirements for hydrogen facilities. Overseen by the BC Energy Regulator, the regulation applies to facilities producing less than 100,000 tonnes of hydrogen per year, with a classification system distinguishing smaller Class 1 facilities from larger Class 2 facilities. Larger hydrogen projects and those co-located with ammonia or methanol production will continue to be regulated under an amended Processing Facility Regulation. This update replaces the previous oil and gas-based regulatory approach, providing clearer guidelines tailored to hydrogen development.
- The Government of Alberta introduced Bill 52, known as the Energy and Utilities Amendment Act, to remove barriers to blending hydrogen into the natural gas distribution system for residential and commercial customers. The bill proposes defining hydrogen separately from natural gas, requiring customer support for blending projects, ensuring only recipients of hydrogen-blended gas pay associated costs, and granting regulatory authority to enable blending.