

Chemistry and Plastics: Supporting the development of Canada's hydrogen sector.

Canada's chemistry and plastics sector is a crucial pillar in increasing the production of hydrogen in the country. By embracing hydrogen's potential, it will play a leading role in Canada achieving net-zero emissions by 2050.

Canada is already a **world leader in hydrogen production** with multiple low-carbon pathways to expand and address the demand of a net-zero future.



Canada's hydrogen opportunity at-a-glance:

\$50 BILLION

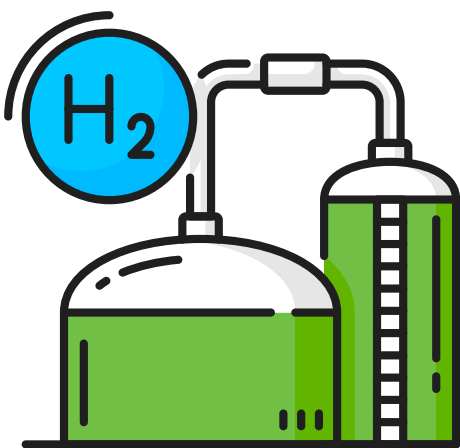
Projected value of domestic market for hydrogen and related products in Canada, by 2050

TOP 10

Canada is a Top 10 producer of hydrogen worldwide

1ST

Largest provider of Low Emissions Hydrogen to the Asia Pacific Economic Cooperation Region (APEC)



How is hydrogen made?

Hydrogen can be made through various processes. One way is to use clean electricity such as **solar**, **wind** and **nuclear**, to **electrolyse water**. An electrochemical reaction is used to split water into its components of hydrogen and oxygen, emitting zero-carbon dioxide in the process.

Hydrogen is also a by-product from the production of chlorine and sodium hydroxide. Carbon capture utilization and storage (CCUS) allows for methane based H₂ production where carbon dioxide is separated and permanently sequestered. The result is low-emission hydrogen which can be utilized as a feedstock or a low emissions fuel.

CIAC members are already hard at work building the hydrogen sector:

ChemTrade

North Vancouver, British Columbia

Chemtrade Logistics and Hydra Energy have teamed up to accelerate the adoption of hydrogen in long-haul transportation. The business model includes the capture, cleaning, and compression of hydrogen. Multi-year pilots demonstrated an ability to reduce greenhouse gas (GHG) emissions up to 40 per cent, using hydrogen-injection technology and fuel source without impacting truck performance or range.



ERCO Worldwide and HTEC: 15-tonne per day, clean hydrogen plant

North Vancouver, British Columbia

ERCO Worldwide and HTEC have agreed to co-locate on a section of industrial land in North Vancouver and construct a 15-tonne per day plant to capture, purify and process the by-product hydrogen from ERCO's facility to meet the growing market demand for low-carbon transportation fuels. Targeted to be operational by year-end 2025.



Air Products: Net-zero hydrogen energy complex

Edmonton, Alberta

Air Products is constructing a \$1.6 billion landmark net-zero hydrogen energy complex in Edmonton, Alberta. The facility – which is made possible by \$475 million in federal and provincial funding – will make Edmonton the centre of Western Canada's hydrogen economy and set the stage for Air Products to operate one of the most competitive and lowest-carbon-intensity hydrogen networks anywhere in the world.



Inter Pipeline, Itochu and Petronas

Grande Prairie, Alberta

Inter Pipeline (IPL), Itochu and Petronas are evaluating a \$1.3 billion project that will use CCUS and abundant Western Canadian natural gas to make low emission hydrogen and further process the H₂ feedstock into one million tonnes of low-emission ammonia for export to global markets.



Shell and Mitsubishi Corporation

Fort Saskatchewan, Alberta

Shell Canada Ltd. and Mitsubishi Corporation are collaborating on a CCUS-enabled, low-carbon hydrogen facility in Alberta's Industrial Heartland. The project aims to produce 165,000 tonnes of low-carbon hydrogen that will be converted to ammonia for export to Asian markets.



Dow Canada: World's first net-zero carbon emissions integrated ethylene cracker and derivatives site

Fort Saskatchewan, Alberta

Dow is building the world's first net-zero carbon emissions integrated ethylene cracker and derivatives site in Fort Saskatchewan, Alberta. The project will more than triple Dow's ethylene and polyethylene and will utilize CCUS and convert cracker off-gases into a clean hydrogen fuel and carbon dioxide that will be transported and stored.

