

Hydrogen

With an abundant supply of low-cost natural gas feedstock, decades of experience in producing hydrogen, and suitable pore space to sequester carbon dioxide emissions permanently, Alberta has become a global leader in the hydrogen economy.

Alberta is among the largest global hydrogen producers, with 2.5 million tonnes produced in 2022, opening Canada's hydrogen transition pathway. Alberta leads Canada in hydrogen production, and is one of the lowest-cost producers of clean hydrogen in the world.

The Numbers



1st
Highest capital investment per capita in Canada



\$81B
Direct contribution to Alberta GDP in 2021



142
Number of countries Alberta exports to



945
Cleantech companies

The Opportunity




\$50B
Projected value of hydrogen market in Canada by 2050



23%
Alberta's combined federal-provincial business tax rate is lower than that of 44 US states



60%
Canada's hydrogen supply is produced in Alberta



60%
12 to 60 per cent proposed refundable tax credit for eligible project costs

Government Incentives

The Alberta Petrochemicals Incentive Program
12% of eligible capital cost

Alberta Carbon Capture Incentive Program
12% of eligible capital cost

Emission Reduction Alberta (ERA)
Investment for leading H2 pilot projects

Alberta Clean Hydrogen Centre of Excellence
\$50 million in funding available for eligible projects

Heartland Incentive Program
2-2.5% of project capital cost returned through property tax abatement and infrastructure supports

Company Spotlight



\$1.3 billion investment to build the world's largest net-zero hydrogen network, including the only liquid hydrogen production facility in Western Canada.



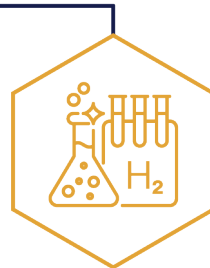
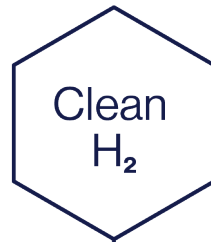
Dow plans to use CCUS and build the world's first net-zero carbon emissions integrated ethylene cracker (valued at \$11 billion) with Linde at its site in Fort Saskatchewan.



Shell's Quest Project is the world's first commercial-scale CCS to capture emissions from oil sands, transporting it 65km north for permanent storage. It holds the record for the most CO₂ captured by any onshore CCS facility with dedicated geological storage globally.

Hydrogen Road Map

The Alberta government developed the Hydrogen Roadmap to build a provincial hydrogen economy, meet market demand, and pursue hydrogen exports.



Heating
(Residential
& Commercial)

Power
Generation
& Storage

Exports

Transportation

Industrial
Processes

Heating (Residential and Commercial)

Incremental future

Pilot projects are testing hydrogen blended at 5% by volume with natural gas.

Transformative future

Hydrogen blended at 15% by volume. Pure hydrogen networks and communities for 200,000 residences, taking advantage of expected growth in the Alberta housing market.

Power Generation and Storage

Incremental future

Feasibility and demonstration projects in place. Public-private partnership support for hydrogen energy storage pilot projects (underground salt caverns, depleted oil and gas reservoirs).

Transformative future

1200 MW of Alberta's power generation is using 15% volume. Turbine projects and seasonal storage systems from surplus of renewable power through power-to-gas.

Exports

Incremental future

Exporting clean hydrogen carriers by rail to the US. Framework and plan in place, to export clean hydrogen to global markets.

Transformative future

Fully permitted and constructed pipeline to the west coast, liquefaction, and export infrastructure. Alberta exports 1 million tonnes of hydrogen carriers (such as ammonia) to global markets by 2030.

Transportation

Incremental future

1% of gasoline vehicles and 5% of diesel vehicles have transitioned to fuel cell electric vehicles (FCEV).

Transformative future

5% of gasoline vehicles and 10% of diesel vehicles have transitioned to FCEVs.

Industrial Processes

Incremental future

CCUS is added to existing hydrogen production at bitumen upgrading and/or oil refining sites to reduce emissions by 6 Mt per year.

Transformative future

CCUS is added to hydrogen production facilities at bitumen upgrading and/or oil refining sites. CCUS is added to hydrogen production at ammonia and methanol facilities to reduce emissions by 12 Mt per year. Operating project for clean ammonia production.

Big. Bold.
Alberta.