

Investment Opportunity – Hydrogen Economy

The Edmonton Metropolitan Region is the launch point for the emerging North American hydrogen economy. The region will be a global epicentre, attracting investment because of its ability to produce low-cost, zero-emissions hydrogen at a global scale.

WORLD'S LARGEST LOW-CARBON HYDROGEN AND CCUS PROJECTS

**WORLD'S 2ND
LOWEST-COST
HYDROGEN PRODUCER**

MORE THAN 60%

of Canada's hydrogen supply comes from Alberta with a large portion produced in the Edmonton region

**MORE ENGINEERS
PER CAPITA** *than any other
Canadian province*

**50 KM
HYDROGEN PIPELINE
IN THE REGION**

**CANADA'S FIRST
AND LARGEST
HYDROGEN HUB**

OPPORTUNITY

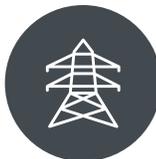
Hydrogen is a \$2.5 trillion global opportunity and will play a key role in the world's energy transition.

The hydrogen economy can provide opportunities to invest in a number of sectors and industry.

INDUSTRIAL &
RESIDENTIAL
HEATING



POWER
GENERATION



EXPORTS



TRANSPORTATION



INDUSTRIAL
FEEDSTOCK &
CHEMICALS



LOW-CARBON HYDROGEN

The Edmonton region will be a first mover in hydrogen use adoption because of its strong industry clusters that have the greatest potential for a hydrogen transition.

EDMONTON METROPOLITAN REGION VALUE PROPOSITION

EXISTING INFRASTRUCTURE AND TECHNOLOGY

- Unique geology enables carbon capture, utilization and storage (CCUS) that allows production of low-carbon hydrogen at a global scale.
- The region includes 3 of the world's 5 hydrogen CCUS plants, with another on the way.
- A vast network of pipeline infrastructure including the world's largest CO₂ pipeline and dedicated H₂ pipelines.

ACCESS TO LOW-COST FEEDSTOCK

- Alberta companies have access to abundant and low-cost natural gas reserves, creating a cost advantage for hydrogen production.
- Low-carbon hydrogen produced in the region with CCUS technologies is 50% lower-cost than technologies producing hydrogen from renewable energy sources.
- Alberta is also rich in renewables including solar energy, geothermal, biomass, hydro and wind.

OPPORTUNITY TO SCALE

- The region already produces more hydrogen than anywhere else in Canada – and by a large margin. This is even before recent regional investment announcements.
- More than an estimated \$5 billion in new hydrogen projects and future plans have been announced in Q2 and Q3 of 2021 alone.
- Both the governments of Canada and Alberta are making significant investments in hydrogen and CCUS to attract investment and spark growth.

TALENT

- The region includes a highly skilled workforce in the energy sector with a large talent pool of qualified engineers and tradespeople.
- Post-secondary institutions (University of Alberta, NAIT) support innovation and work closely with industry to ensure talent needs are met.
- World-leading expertise in CCUS technology, energy, and engineering.

ECOSYSTEM SNAPSHOT

EDMONTON REGION HYDROGEN HUB

Canada's first and largest hub, implementing a strategy to accelerate the regional hydrogen economy.

ALBERTA'S INDUSTRIAL HEARTLAND (AIH)

A globally recognized and diversified energy cluster with a world-leading hydrocarbon processing industry. Home to two refinery complexes with carbon capture technology and the world's largest CO₂ pipeline.

SHELL CCUS PROJECTS

- Quest - A large-scale carbon capture facility that has stored >5 million tonnes of CO₂ from industrial sources since 2015.
- Polaris - Once approved, the proposed facility will store ~300 million tonnes of CO₂ over its lifetime.

INNOVATION ECOSYSTEM

- University of Alberta
- Northern Alberta Institute of Technology (NAIT)
- C-FER Technologies
- InnoTech Alberta
- City of Edmonton's Advanced Energy Research Facility
- NRC Nanotechnology Research Centre
- Alberta Machine Intelligence Institute (Amii) - Reducing Emissions through Machine Intelligence (REMI) program

AIR PRODUCTS CANADA LTD. HYDROGEN ENERGY COMPLEX

- A \$1.3 billion investment to build the world's largest net-zero hydrogen network including the only liquid hydrogen production facility in Western Canada.
- Will produce >1,500 tonnes of hydrogen/day and capture >3 million tonnes of CO₂ a year.

ALBERTA CARBON TRUNK LINE (ACTL)

Includes fully integrated, large-scale CCUS system and the world's largest capacity pipeline capable of transporting 14.6 million tonnes of CO₂/year.

Contact Edmonton Global's Brent Lakeman to receive a detailed base case with projected regional demand for hydrogen in the Edmonton Metropolitan Region.

Brent Lakeman | +1.780.991.7439 | blakeman@edmontonglobal.ca

