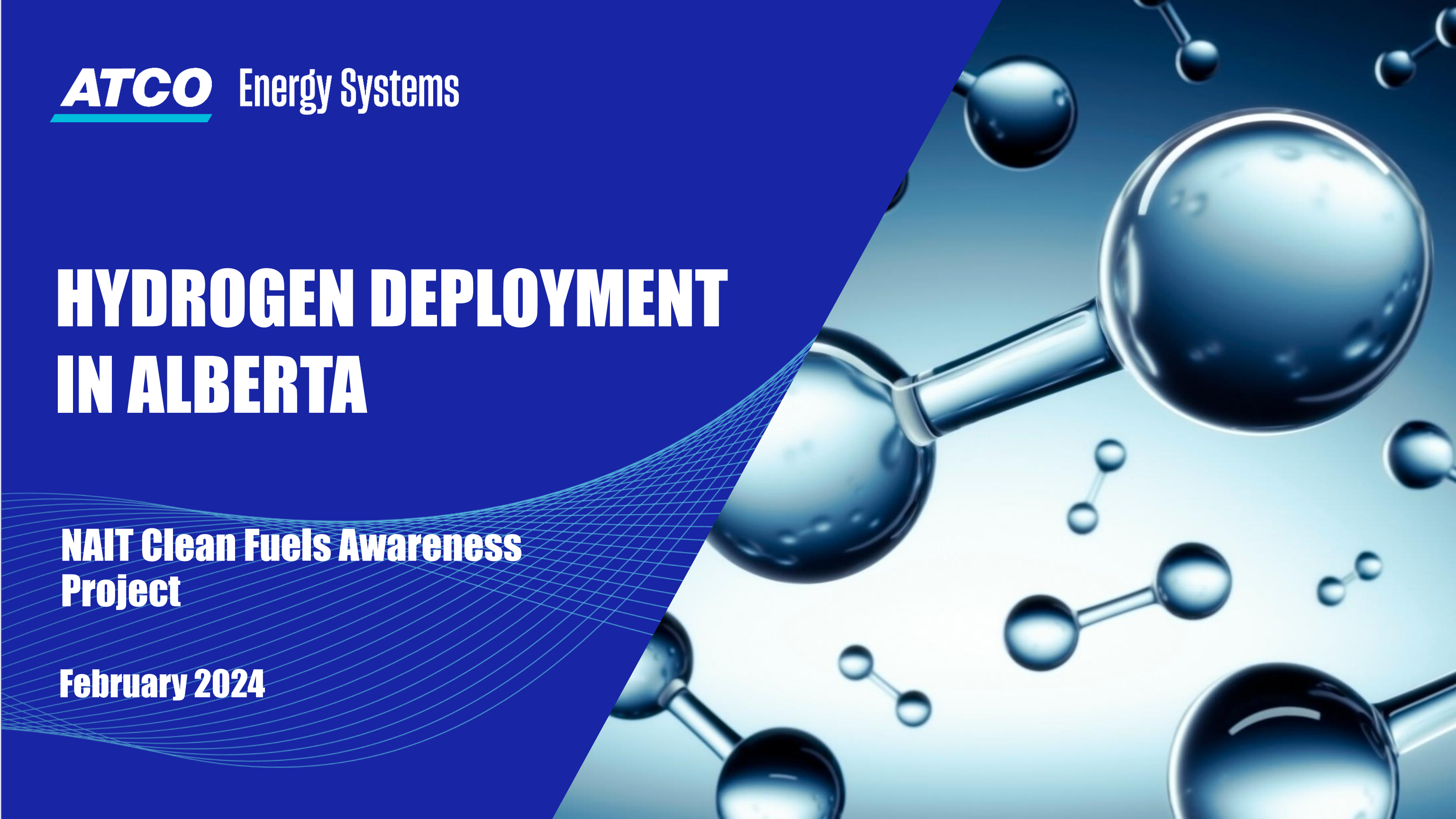


# HYDROGEN DEPLOYMENT IN ALBERTA

**NAIT Clean Fuels Awareness  
Project**

**February 2024**



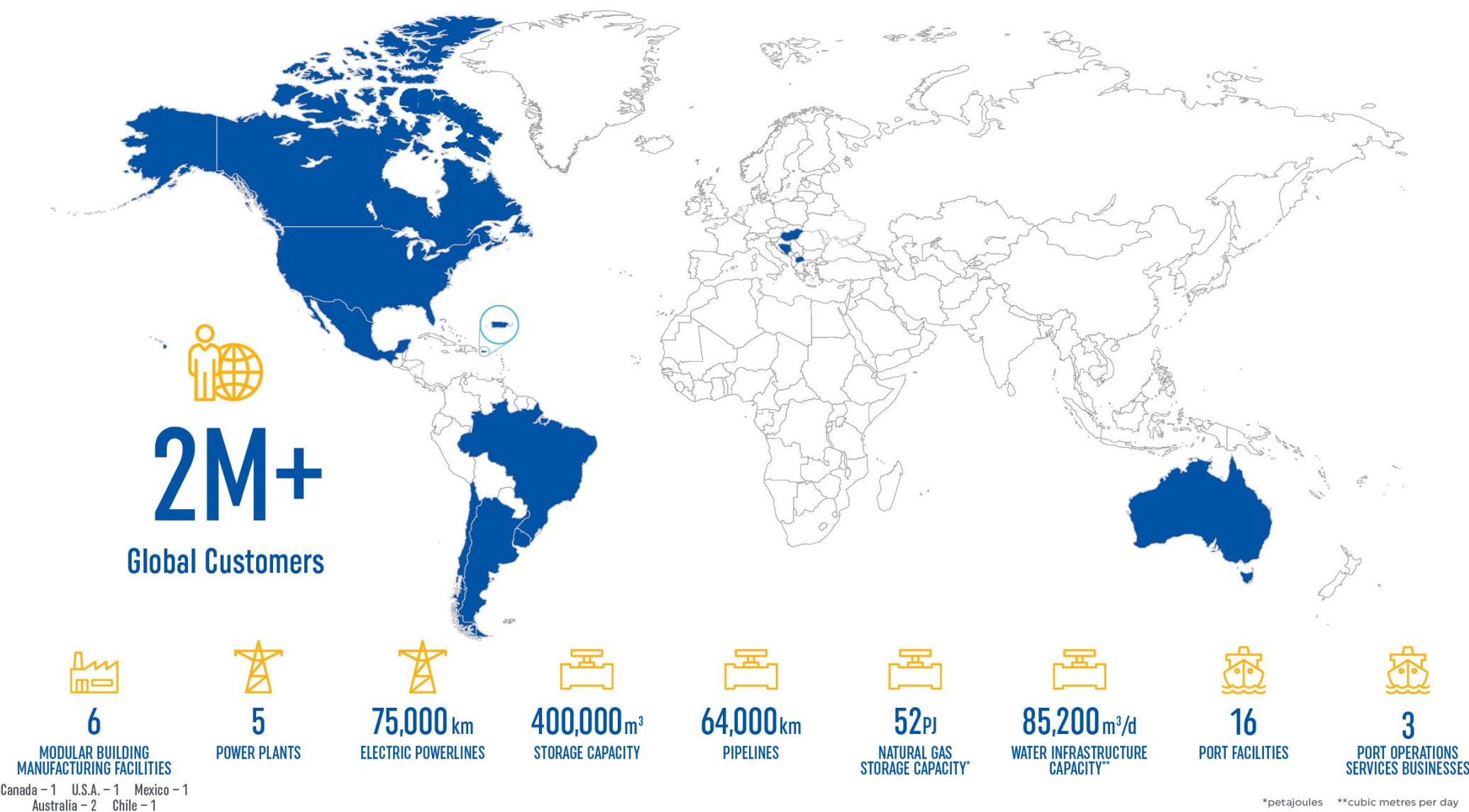




# ABOUT ATCO

# WHO IS ATCO?

We have provided products and services in 100+ countries around the world for over 75 years.





# ATCO GAS & PIPELINES: A HOUSEHOLD NAME



## INNOVATION AND ESG

proven track record



## 100 YEARS

of safe and reliable clean energy

**9,000 KM**

of transmission pipeline

**41,000 KM**

of distribution pipeline



**800 GWH**

salt cavern storage



**1.3 MILLION**

Customers

**300**

Communities



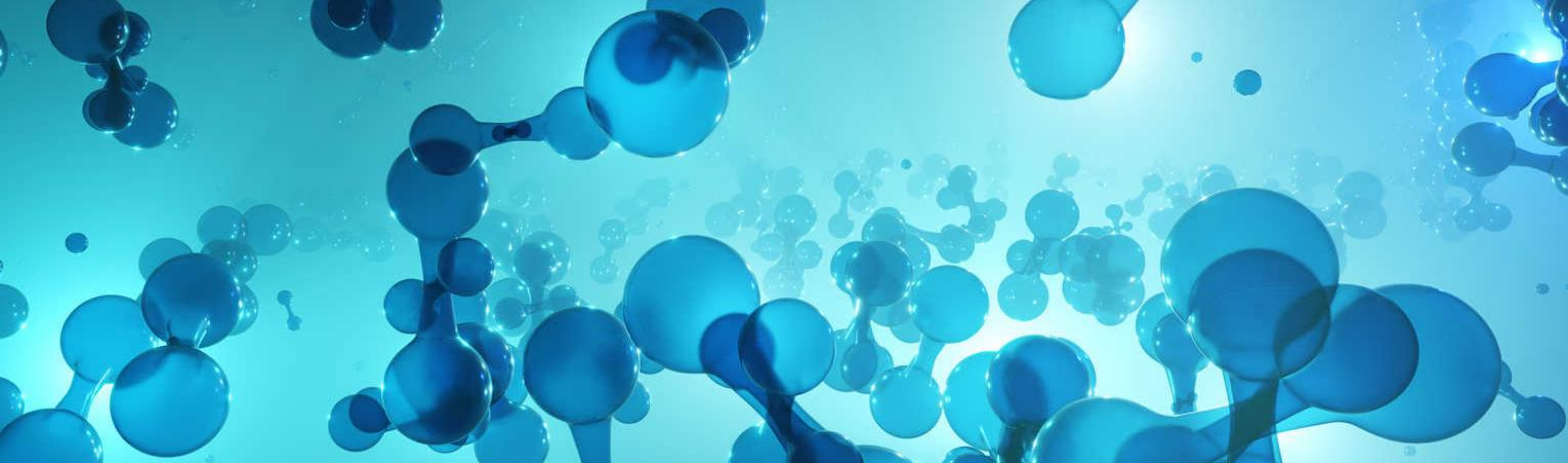
**50 GW**

peak delivery

**45%**

of provincial  
total





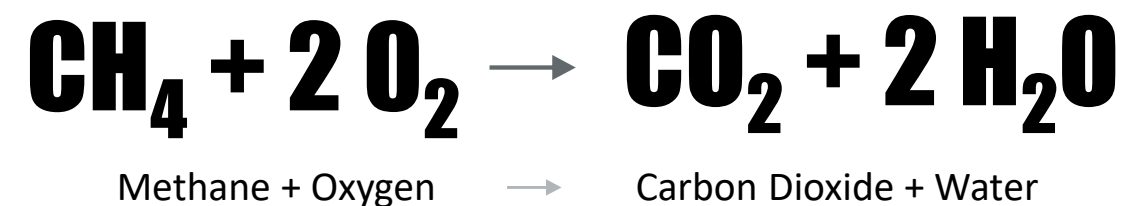
# **FORT SASKATCHEWAN BLENDING PROJECT**



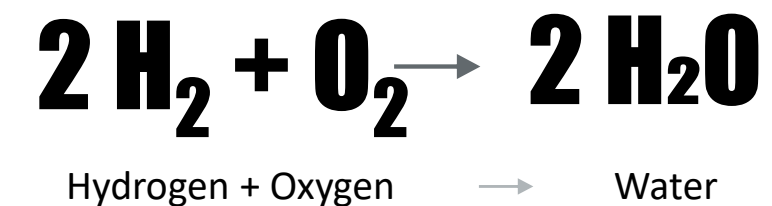
# COMBUSTION OF NATURAL GAS AND HYDROGEN



## Natural Gas Combustion



## Hydrogen Combustion



When burned, H<sub>2</sub> produces only heat and water vapour with **no carbon emissions**

1

H

HYDROGEN  
1.0079

# FORT SASKATCHEWAN HYDROGEN BLENDING

## PROJECT OVERVIEW

**IN FALL 2022**

2,100 ATCO customers became the first in Alberta to use a 5% hydrogen/natural gas blend



Mostly residential homes



Some small businesses



One school

EMISSIONS  
REDUCTION  
ALBERTA



**ATCO**

JD McLean Park

**2 KM**  
Gate 5 Blending Facility



86 Ave

Fort Saskatchewan Community Hospital

Veterans Way

**5% - 20%**

Greenfield Way

Southfort Blvd

Southridge Blvd



**MAP OF  
HYDROGEN  
BLENDING PROJECT**

# ORGANIZATIONAL CHANGE MANAGEMENT (OCM)



Pipes



People



Processes



Organizational Change Management

- Modifications to existing practices & procedures, or
- Confirmation something doesn't need to change
- New tools, equipment, training
- Customer engagement & education programs



# TECHNICAL CHALLENGES & INTERNATIONAL COLLABORATION



In order to adapt our business and ensure the safety of our customers, ATCO has partnered with several institutions and organizations worldwide for:

- Appliance testing
- Leak detection
- Odorant effectiveness
- Gas stratification
- Risk assessments
- Code gap analysis
- Material impact testing
- Meter compatibility



# EDUCATION & ENGAGEMENT

ATCO has engaged and pursued education of the public and customers through:



Hydrogen Blending Home Inspection (HBHI) Program



SME to develop Clean Fuel Operations Program with NAIT



Assisted SAIT in development of Hydrogen Massive Open Online Course (MOOC)



Collaboration with LAHJ, fire departments, industry associations, local and provincial govt's, regulators, etc.



Open houses and community events



**Over 85% inspection rate for private homes in HBHI program**

Almost 1,800 customers

Over 5,800 appliances inspected





# OTHER PROJECTS





Future methane pyrolysis  
pilot project

Fort Saskatchewan  
Operating Centre

On-site electrolyzer

Fort Sask. Gate 5  
Blending Facility



# FORT SASKATCHEWAN OPERATIONS CENTRE



H<sub>2</sub> and clean energy  
appliance testing  
demonstration space



Operating &  
training centre



Hosting/testing of  
novel H<sub>2</sub> production  
technologies

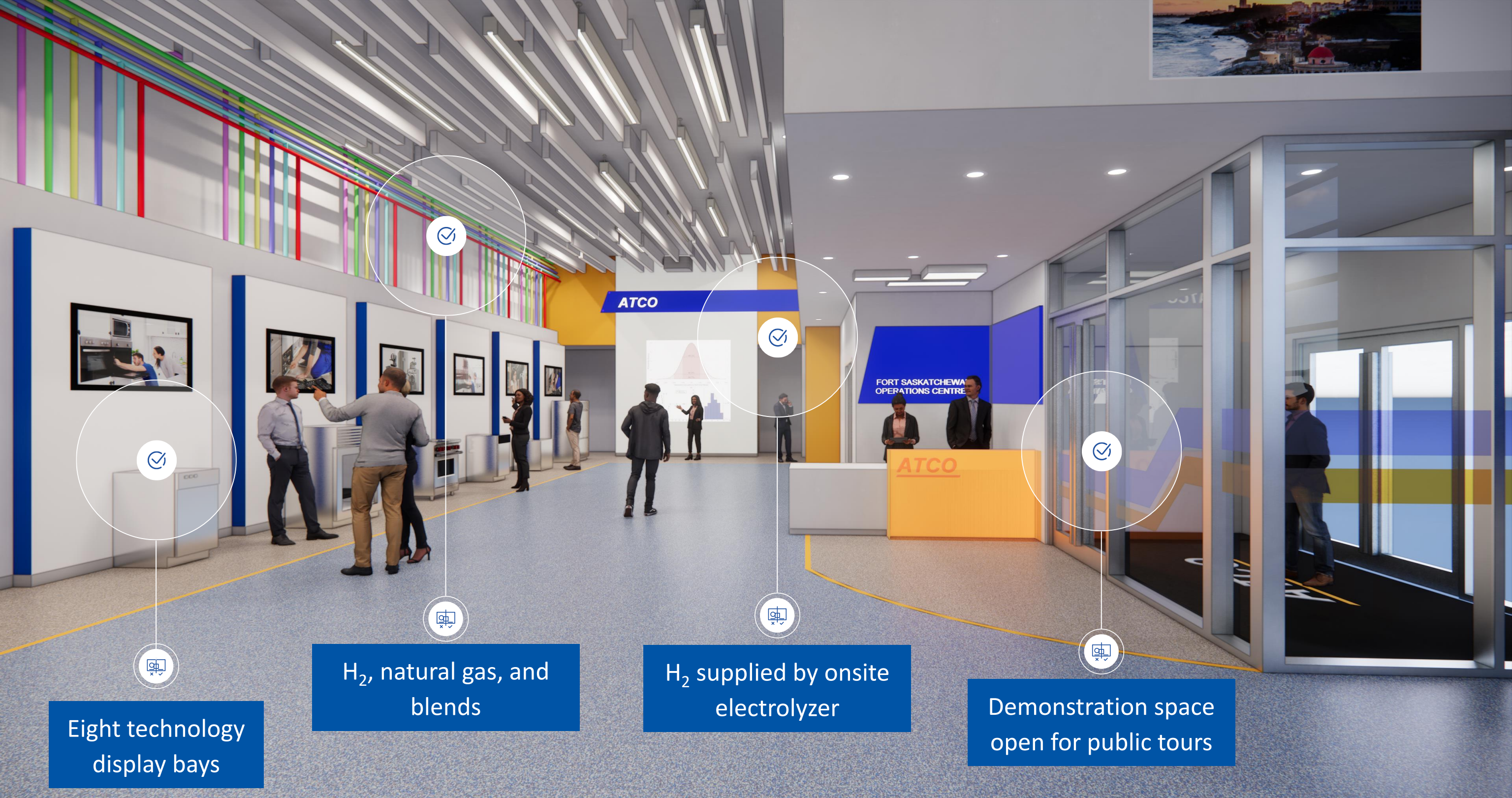


100% Hydrogen  
heated (1<sup>st</sup> in  
North America)



Co-located with  
Fort Sask Gate 5  
blending facility





H<sub>2</sub>, natural gas, and  
blends

H<sub>2</sub> supplied by onsite  
electrolyzer

Demonstration space  
open for public tours

Eight technology  
display bays



# END USE APPLIANCES



**ATCO is working with Gradient Thermal, DNV and Enefen** to design, manufacture and certify a 100% hydrogen forced air furnace and hot water heater.



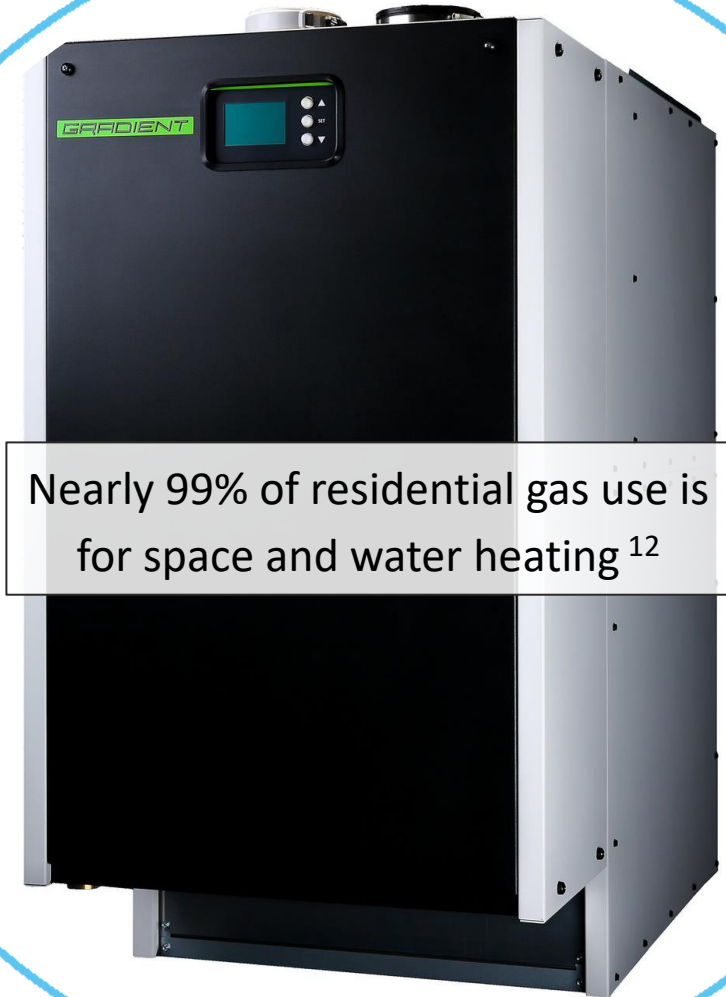
**Successful testing** in both Netherlands and Alberta.



**Refinement underway with field-certification** planned in 2023.

**99%**

Nearly 99% of residential gas use is for space and water heating <sup>12</sup>



**1%**



**Other appliances and standards** <sup>13,14,15</sup> are available outside the Canadian marketplace

- Barbeque
- Boiler
- Stove/range
- Fireplace



# BREMNER COMMUNITY & HOME ONE



ATCO and Qualico will study the use of hydrogen in the community of Bremner



Funding will be used for a **Front End Engineering Design (FEED) Study** to determine optimal equipment and design choices



A 100% hydrogen heated show home will be built: Home One



# UTILITY HYDROGEN PROJECTS

## Transmission Asset Conversion

in partnership with TC Energy

## Large Scale Blending

Edmonton Region Hydrogen Blending

## Pyrolysis Partnerships

Trials of early TRL novel hydrogen production technologies

## Bremner 100% H<sub>2</sub> Community

Partnership with Qualico for the largest 100% community

## Fort Saskatchewan H<sub>2</sub> Blending Project

2,100 customers at a 5%, increasing to 20% in 2024

## Blending Demos

up to 22% blend in Canadian winters

## 100% H<sub>2</sub> Appliances

Partnership with Gradient Thermal

## Fort Saskatchewan Operations Centre

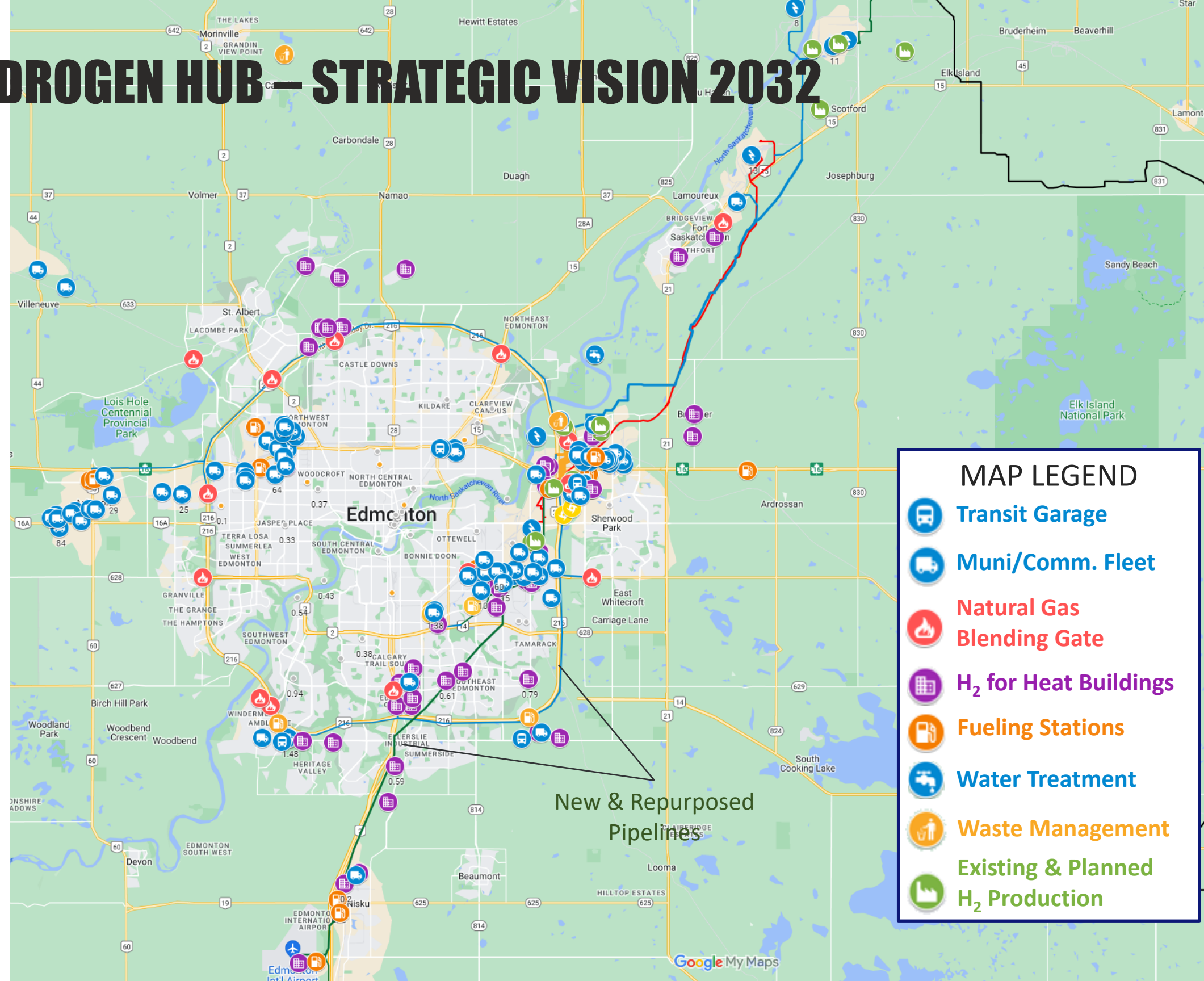
1<sup>st</sup> 100% H<sub>2</sub> heated building in North America, clean energy demo centre

## Home One

Pure hydrogen show home, partnership with Qualico



# EDMONTON REGION HYDROGEN HUB – STRATEGIC VISION 2032

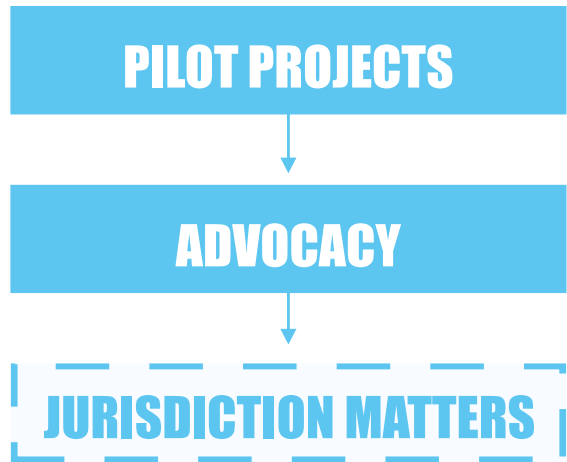




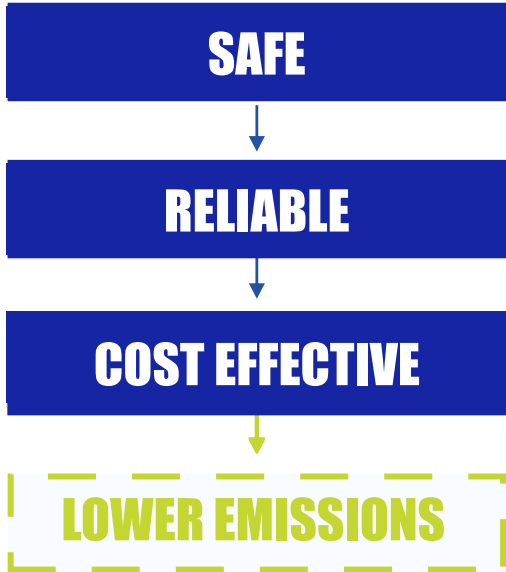
# CALL TO ACTION



Broad awareness of  
H<sub>2</sub> as a  
decarbonization  
pathway



Regulation changes to  
enable utility  
investment



Abundant low-carbon hydrogen supply



Codes, standards, and  
appliance evolution

# COLLABORATION

**ATCO** Energy Systems

**THANK YOU**

