

Hydrogen Centre of Excellence's Competition 2 and ERA's Accelerating Hydrogen Challenge

APPLICANT ORIENTATION

August 16, 2023

David Van Den Assem, Director, Hydrogen Centre of Excellence

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Introductions

David Van Dem
Assem
Director, Clean
Technology,
Alberta Innovates



Christophe
Owttrim
Executive Director,
Technology and
Innovation, ERA



Isabella Tarasco
Manager, Strategic
Initiatives and
Programs, ERA



Land Acknowledgement

We acknowledge the many First Nations, Métis and Inuit who live in and have cared for these lands for generations. We are grateful for the traditional Knowledge Keepers and Elders who are still with us today and those who have gone before us.

We respectfully acknowledge that we are situated on traditional territory of the Treaty 6, Treaty 7, and Treaty 8 First Nations; home to Métis Settlements, the Métis Nation of Alberta, and Regions 2, 3 and 4 within the historical Northwest Métis Homeland.

We respect the histories, languages, and cultures of First Nations, Métis, and Inuit whose presence continues to enrich our vibrant community.



Housekeeping

- Microphones are muted
- If you called by telephone, select “telephone” and enter your audio PIN
- Type questions into the “Questions” section of the control panel
- We answer as many questions as possible after the presentation
- If you have technical difficulty during the webinar (interface or audio) contact Kevin at kduncan@eralberta.ca
- Webinar is being recorded and will be posted on our website

Agenda

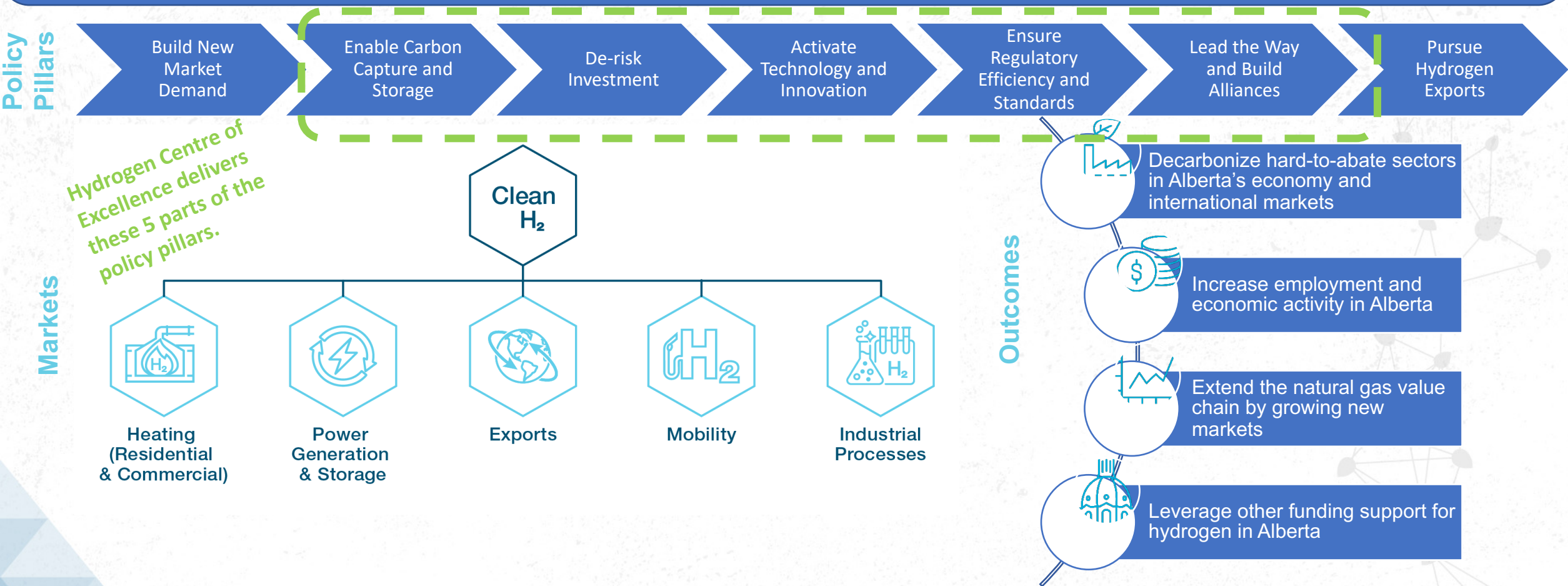
1. Introduction
2. Competition Overviews
 - HCOE Background and Competition 2 Details
 - ERA Background and Accelerating Hydrogen Challenge Details
3. Q&A

Hydrogen Competitions Overview

- One Funding Window to HCOE, ERA and NRCan
- Two competitions:
 - Low-TRL (starting TRL 3-6) administered by HCOE
 - High TRL (starting TRL 7-9) administered by ERA
- Total funding available: \$50M
- Launch Aug 1, 2023
- All EOIs due Sept 26, 2023

ALBERTA'S HYDROGEN AMBITION

By 2030, clean hydrogen is integrated at scale into Alberta's domestic energy system for use in mobility, heat, power generation and renewable energy storage, and industrial applications. Alberta has established itself as the global supplier-of-choice in clean hydrogen exports.



Ecosystem

- Opportunity Analysis



- Public Awareness

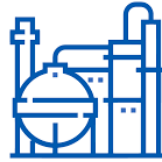


- Partnership Building



Technology

- Production



- Transportation/Distribution



- Carrier/Storage



- End Use/Markets

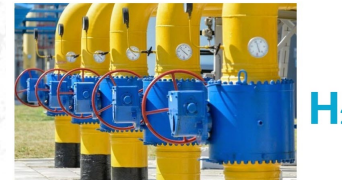


Service

Pilot Facilities



Testing Services



Codes + Standards



Hydrogen Centre of Excellence – Competition 2



Alberta Innovates at a Glance



Investment
of \$189 million
for 2020-21



558
Employees
Alberta Innovates 219
C-FER 99
InnoTech Alberta 240



11
Locations



2
Subsidiaries
C-FER Technologies
Innotech Alberta

Hydrogen Centre of Excellence Scope

- \$50M over 4 years, leveraged with other sources
- Purpose
 - Closes innovation, technology and support gaps
 - Innovation support across entire hydrogen value chain (production to end use)
- Focus Areas
 - **Identify technology gaps** and support innovation in technology readiness level range of 3-6
 - **Deliver innovation programs**, including funding to support hydrogen solutions
 - **Inform the public** about the scope, benefits and deployment of hydrogen
 - **Develop and improve** testing and demonstration facilities and services
 - **Facilitate** the development of partnerships and alliances

HCOE – Competition 2

- A total of \$25M available from Alberta Innovates and Natural Resources Canada
- Hydrogen Technologies between TRL 3 and 6
- FEED studies for TRL 7+
- Production, transmission/distribution, storage/carriers, end uses (heat, power, fuel, industrial applications)
- Maximum of \$2M per project, up to 50% of total project cost*

*up to 75% for post-secondary institutes and Indigenous-led organizations

Production

- Pyrolysis
- In-situ production/extraction
- Small modular nuclear reactors
- Electrolysis
- Novel technologies to support SMR and ATR
- Other novel low-carbon production methods



Transmission and Distribution

- Establishing and designing hydrogen fueling station
- Assessing infrastructure suitability
- Determinations of accepted metallurgy, coatings, dimensions for transportation
- Novel components and processes, materials and metallurgy RD&D



Storage

- Tank storage
- Sub-surface storage (caverns and/or reservoirs)
- Liquid organic hydrogen carriers (LOHC)
- Associated materials and metallurgy RD&D



End Use

- Fuels cells and dual fuel for medium to heavy duty transportation
- Industrial, commercial and consumer heating applications
- Innovative power applications
- Development of export market capabilities



HCOE Timelines

Activity/Milestone	Timing
Announcement and launch	August 1, 2023
Expression of Interest Submission Deadline	September 26, 2023, 5:00 PM MST
Shortlist Notification	November 8, 2023
Full Project Proposal Submission Deadline	December 15, 2023
Funding Decision Notification	January 2023
Project completed by	March 31, 2026



ACCELERATING HYDROGEN CHALLENGE

\$25 million to advance hydrogen production, storage, transmission, and end-use technology



About ERA

MANDATE

Reduce GHG emissions and grow Alberta's economy by accelerating the development and adoption of innovative technology solutions.

VISION

Alberta has competitive industries that deliver sustainable environmental outcomes, attract investment, and build a diversified, lower carbon economy.

STRATEGIC PRIORITIES

- 1 ACCELERATE TECHNOLOGY
- 2 DRIVE COMMERCIALIZATION
- 3 MAXIMIZE IMPACT



Investment impact

**\$855
MILLION**
TOTAL INVESTMENT



**245
PROJECTS**

41
MILLION TONNES
OF CUMULATIVE
EMISSIONS
REDUCTION
BY 2030

105
MILLION TONNES
OF CUMULATIVE
EMISSIONS
REDUCTION
BY 2050

7.2:1


LEVERAGED
FUNDING
FROM PUBLIC
AND PRIVATE
INVESTORS

\$7 BILLION
TOTAL
PROJECT
VALUE

Investment impact

33,400 PERSON-YEAR
JOBS IN ALBERTA
 **BY 2025**

OVER \$900M
NET ECONOMIC BENEFIT OF
AVOIDED CLIMATE DAMAGES



 **\$4.9**
BILLION
GDP IMPACT
TO ALBERTA
BY 2025

Funding overview – ERA Accelerating Hydrogen Challenge

- Up to \$25 million available
- Maximum \$7 million per project
- Minimum of \$500,000
- Funding must be matched at least 1:1
- Leverage with funding partners where possible

See ***Eligible Expense and Cost Instructions*** for details regarding eligibility of costs

Technology examples

- Low-emissions hydrogen production
 - Next-generation solutions for producing hydrogen from methane
 - Electrolytic production of hydrogen from water and clean electricity
 - Other emerging alternative hydrogen production pathways including photolytic hydrogen, bio-hydrogen, etc.
- Novel hydrogen infrastructure
 - Hydrogen pipeline technologies including coatings and treatments
 - Novel hydrogen storage
 - Hydrogen distribution and delivery solutions
 - Hydrogen safety and infrastructure enablers
 - Hydrogen districts, clusters, and similar

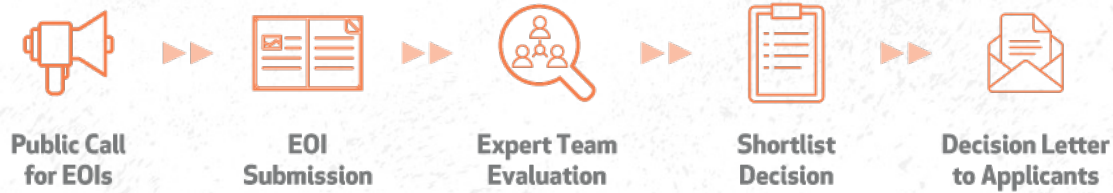
Technology examples

- Novel hydrogen carriers
 - Liquid carriers such as ammonia, methanol, or synthetic fuels
 - Metal-organic frameworks and similar
 - Power-to-gas and other hydrogen-based energy storage solutions
- Hydrogen in industry
 - Substitution of low-emissions hydrogen as an industrial feedstock, chemical input, or fuel
 - Hydrogen fuel cells and turbines for production of power and/or heat for commercial or industrial applications
- Hydrogen in transportation
 - Novel hydrogen fueling infrastructure
 - Hydrogen-fueled vehicles and equipment (fleets, transit, freight, services, mining, construction, agriculture, etc.)
 - Hydrogen for rail and aviation

Eligible applicants

- Potential applicants include, but are not limited to:
 - Technology developers
 - Industry + Associations
 - research and development (R&D) organizations
 - post-secondary institutions
 - Municipalities
 - not-for-profit organizations
 - Indigenous businesses
 - government research labs
- Partnerships encouraged
- Applicants may originate from anywhere
- Technology must be demonstrated/implemented in Alberta

1 EXPRESSION OF INTEREST (EOI) STAGE



2 FULL PROJECT PROPOSAL (FPP) STAGE



3 PROJECT EXECUTION STAGE



ERA submission and evaluation process

Timelines

Action	By whom	Timing
Expression of Interest Submission Deadline	Applicants	September 26, 2023
Expression of Interest Shortlist Notification	ERA	Mid November 2024
Full Project Proposal Submission Deadline	Applicants	January 2024
Full Project Proposal Oral Presentation	Applicants	February 2024
Funding Decision Notification	ERA	March 2024

Online Portal Instructions

- Step 1: Register
- Step 2: Select the correct program (HCOE Competition 2 and ERA hydrogen Challenge)
- Step 3: Fill out the application
- Step 4: Submit the application

Online Portal Instructions

- Step 1: Register

Registration

I am a representative of a(n):

Academic Institution - Alberta

Academic Institution - Other

For-Profit Organization - SME

For-Profit Organization - Other

Government Entity - Alberta and Affiliates

Government Entity - Other

Non-Profit/Not-for-Profit Organization

What should I choose?

The Applicant on your Application will be the organization you are representing. If you are representing multiple organizations, you will need to sign up individually for each organization you represent. Please note: at this time we do not have any programs geared towards individuals/sole proprietors, so you cannot register as one of these.

The following will help you understand which organization you are representing. Please follow the statement that matches you best. For more information or questions, please contact inbox_grants@albertainnovates.ca.

I am with an Academic Institution within the Province of Alberta
-Register with Academic Institution - Alberta

I am with an Academic Institution outside the Province of Alberta
-Register with Academic Institution - Other

Online Portal Instructions

- Step 2: Select the correct application (HCOE Competition 2)

The screenshot shows a user interface for an online portal. At the top, it says "Welcome [NAME]". Below this are three main navigation buttons: "Organization Profile" (with a building icon), "Personal Profile" (with a group of people icon), and "Change Password" (with a key icon). Underneath these is a section titled "Applications" with a link that says "Click here to view all of your applications." Below the link are four application status cards: "Funding Opportunities" (with a lightbulb icon and a red border), "Draft Applications" (with a "0" icon), "Submitted Applications" (with a "0" icon), and "Approved/Declined Applications" (with a "0" icon).

Online Portal Instructions

Funding Opportunities

 1-8 of 8

Program Name	Competition Name	Competition Deadline	Program Home Page
Hydrogen Centre of Excellence	Competition 2	September 26, 2023	<input type="button" value="Apply Now"/>
Postdoctoral Fellowships in Health Innovation 2+1	PFHI 2020/2021 Competition		Link <input type="button" value="Apply Now"/>
Health Innovation Continuous Intake	Health Innovation Continuous Intake		Link <input type="button" value="Apply Now"/>
Clean Resources Continuous Intake	Clean Resources Continuous Intake		Link <input type="button" value="Apply Now"/>
Industry Commercialization Associates	Industry Commercialization Associates - Continuous Intake		Link <input type="button" value="Apply Now"/>
Industry r&D Associates	Industry r&D Associates - Continuous Intake		Link <input type="button" value="Apply Now"/>
Micro-Voucher	Micro-Voucher - Continuous Intake		Link <input type="button" value="Apply Now"/>
Voucher	Voucher - Continuous Intake		Link <input type="button" value="Apply Now"/>

Online Portal Instructions

- Step 3: Fill out the application

New Grant > ⓘ

Application ID: _____ Program Name: @type@

Cycle Name: [?(?object=utaproviderL2) \$Name\$ #]

The red * before a question indicates that it is mandatory for submission.

ⓘ **Please click on Save Draft before beginning the Application******

Some functions of this Application, as well as any system generated fields, will not be present until a draft is saved.

Please Note: the Application DOES NOT save automatically; remember to save early and save often.

[Generate Application PDF](#)

INSTRUCTIONS AND DISCLAIMER | ELIGIBILITY | APPLICANT INFORMATION | REPRESENTATIVE INFORMATION | NON-CONFIDENTIAL SUMMARY | PROJECT OVERVIEW | PROJECT WORKPLAN, BUDGET AND TEAM | PROJECT RISK ANALYSIS AND MITIGATION

ⓘ Instructions and Disclaimer

This Application form collects pertinent information about the Investment being requested. This enables Alberta Innovates to assess the merits of the proposed Application and its fit with our strategic priorities and corporate goals. The Applicant must complete the Application in its entirety. Applicants that fail to complete all mandatory sections may not be considered. It is essential that you read and understand the Program Guide before completing this Application. All capitalized words or terms which are not defined within this Application have the respective meaning as set out in the Program Guide or Investment Agreement. In this Application, the term "you" and "Applicant" are used interchangeably.

To complete this Application, move from left to right through the tabs above. If you require assistance in completing your Application, please contact the Alberta Innovates' representative listed in the Program Guide. If you are unsure who to contact, please email inbox_grants@albertainnovates.ca.

The Application will be reviewed by experts who are within and potentially outside of Alberta Innovates. These experts will provide their recommendations to Alberta Innovates and Alberta Innovates may, at its sole and absolute discretion, provide constructive feedback to the Applicant based on the expert reviews. At no time will Alberta Innovates disclose information about the reviewers to the Applicant and the Applicant is not entitled to access or review the experts' recommendations.

Alberta Innovates will use its reasonable efforts to inform the Applicant of the investment determination made in respect of an Application in a timely fashion. Any failure to inform the Applicant of the investment determination regarding an Application will not result in any obligation or liability of Alberta Innovates to the Applicant or any other interested party.

Alberta Innovates has sole and unfettered discretion over its funding decisions, including but not limited to the decision to fund or not fund, or the amount, timing, and terms attached to such funding and Alberta Innovates owes no duty of reasonableness to the Applicant. All decisions of Alberta Innovates, including but not limited to the decision to fund or not fund, or the amount, timing, and terms attached to such funding, are final, binding on the Applicant, and non-appealable. Alberta Innovates is not an administrative agency, commission, or tribunal, and as such the Applicant has no right of appeal. NEXT >

[Save Draft](#) [✓ Submit Application](#) [Withdraw Application](#)

Online Portal Instructions

- Step 3: Fill out the application
 - Save often
 - Select “High TRL” if you wish to submit your proposal to Emissions Reduction Alberta
 - Select “Medium TRL” if you wish to submit your proposal to HCOE
 - To edit the budget and metric tables, click the “open table” button above each table to be edited
 - Save often
 - Attachments are allowed to supplement proposal information, but they need to be brief – excessively long attachments will be truncated or eliminated. Sample attachments include GANTT charts, process flow diagrams, etc.
 - Save often

Online Portal Instructions

- Step 4: Submit the application

New Grant > ⓘ

Application ID: _____ Program Name: @type@

Cycle Name: [#(?object=utaproviderL2) \$Name\$ #]

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[Save Draft](#) | **[✔ Submit Application](#)** | [Withdraw Application](#)

Wrap up and next steps

- Unanswered questions?
 - Review the guidelines and supporting materials online
 - www.eralberta.ca + applications@eralberta.ca
 - www.albertainnovates.ca +
- Begin your submission today – don't wait until the deadline to submit!

Thank you

