



ACCELERATING HYDROGEN CHALLENGE

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

Online Submission:

albertainnovates.smartsimple.ca

Deadline:

Friday, September 22, 2023
5 PM Mountain Daylight Time (UTC-6h)

**CALL FOR EXPRESSION OF INTEREST
GUIDELINES**



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Legal Notice

Emissions Reduction Alberta is a registered tradename of the Climate Change and Emissions Management (CCEMC) Corporation and is referred to as ERA throughout this document. By submitting an Expression of Interest (“EOI”), you confirm that you have read, understand and accept the information contained in this Call for Expressions of Interest and, that each of you, the applicant (the “Proponent”), and any project partners agree as follows:

- a) ERA may at any time suspend, terminate, cancel, withdraw, amend or alter all or any portion of this request for proposals (“RFP”) EOI stage (“EOI Stage”), including but not limited to the EOI requirements, the EOI selection and review process and the EOI eligibility criteria.
- b) ERA reserves the unqualified right to accept or reject any or all EOIs for any reason. ERA is not required to accept the highest ranked EOI nor is it required to accept any EOI recommended for advancement to the full project proposal (“Full Project Proposal”) stage (“FPP Stage”) by the applicable ERA evaluators.
- c) The final decision with respect to the projects to be included in the EOI short-list rests solely with ERA Board of Directors (“Board of Directors”). The Board of Directors’ evaluation of EOIs may be based on, but is not in any way limited to, the criteria set out in this RFP. The Board of Directors may consider any criteria determined by the Board of Directors to be relevant to ERA’s mandate, regardless of whether such additional criteria have been disclosed to the Proponent.
- d) EOIs that do not comply with the requirements described in this RFP may be rejected in whole or in part or not considered by ERA. ERA reserves the unqualified right to accept or reject a non-compliant EOI.
- e) This EOI Stage is an invitation for EOIs only. It is not an offer and the submission of an EOI does not create a contract or agreement of any kind between ERA and the Proponent.
- f) No conduct, act or omission of CCEMC, CCEMC operating as ERA, or its directors, officers, consultants, project advisors, agents, servants and their respective successors and assigns (collectively the “ERA Parties”), other than a written notice to the Proponent in writing signed by an authorized person for ERA, will constitute an acceptance of an EOI.
- g) Acceptance of an EOI does not create any binding contract between ERA and the Proponent. ERA shall not be obligated in any matter whatsoever to any Proponent until a written contribution agreement (“Contribution Agreement”) between CCEMC operating as ERA and the Proponent has been duly executed relating to an approved FPP.
- h) As between the parties, the EOI and all documents and materials you submit to ERA in connection with the EOI Stage and all intellectual property in and to the foregoing are the exclusive property of ERA immediately upon delivery to ERA. For clarity, this refers to the materials themselves, not to any technology or innovations disclosed or discussed in them.

Intellectual property developed during the course of the project will be addressed through the Contribution Agreement and will normally be owned by the Proponent.

- i) You, the Proponent and any project partners will keep this EOI Stage confidential and will not use, reproduce or distribute it, any portion of it, or any data, information, drawings, or specifications included in or provided with it except as necessary to prepare an FPP as requested by ERA.
- j) Neither ERA nor any of ERA Parties will have any liability whatsoever to you, the Proponent or any project partners, or any of them, in connection with this EOI Stage or any EOI prepared in response to it.
- k) You, the Proponent and any project partners will not make a claim against CCEMC, CCEMC operating as ERA, or ERA Parties for any reason whatsoever or howsoever relating to this EOI Stage. You are undertaking the expenditures required to prepare and submit an EOI entirely at your own risk, and you waive any right and release ERA and ERA Parties from any demands, liability, claim or recovery for costs, expenses, or damages incurred whatsoever or howsoever arising out of or relating to this EOI Stage or any EOI prepared in response to it, whether such right or claim arises in contract, negligence or otherwise.
- l) ERA takes no responsibility for the accuracy of the information supplied during this EOI Stage process by ERA or ERA Parties.

1 Introduction

1.1 Background

There is an emerging consensus that hydrogen will have a key role to play in reducing greenhouse gas (GHG) emissions across the economy and for hard-to-abate sectors in particular. As a clean energy carrier and/or feedstock, hydrogen produces no GHG emissions when it is consumed. Furthermore, its similar attributes to conventional gaseous hydrocarbon fuels make hydrogen a favorable candidate for decarbonization of a variety of economic activities if it can be produced and delivered in a low carbon manner. Hydrogen presents significant opportunities to grow a new value-added product sector in Alberta, to support low emissions transportation, to expand exports, to provide low-carbon energy and chemical inputs to Alberta's existing industries, and to attract new investment and innovation to the province. Support for new hydrogen technologies across the entire value chain and the full Technology Readiness Level (TRL) spectrum will be critical to advancing the hydrogen economy across Alberta.

1.2 ABOUT HCOE, ERA, and NRCan

The Government of Alberta, via its Alberta Natural Gas Strategy and Alberta Hydrogen Roadmap, has committed to providing funding supports to hydrogen in the province. A major component of this support is via The Hydrogen Centre of Excellence (HCOE), funded by a \$50M contribution from the Government of Alberta and operated by Alberta Innovates. Alberta Innovates is Alberta's full-service innovation engine, solving some of the biggest industry challenges.

The HCOE programs and funding are complemented by ongoing investments from the Technology and Innovation for Emissions Reduction (TIER) fund through Emissions Reduction Alberta (ERA). ERA is a registered tradename of the Climate Change and Emissions Management (CCEMC) Corporation. For more than 13 years, ERA has invested revenues from the carbon price paid by large industrial emitters to accelerate the development and adoption of innovative clean technology solutions. Since inception in 2009, ERA has committed to over 260 projects worth over \$7.3 billion that are helping reduce greenhouse gas (GHG) emissions, create competitive industries, and lead to new business opportunities in Alberta. These projects, which are typically at TRL stages 7-9, are estimated to deliver cumulative GHG reductions of more than 40 million tonnes CO₂e by 2030.

ERA and Alberta Innovates are close partners in Alberta's innovation ecosystem and are committed to maximizing the impact of their combined investments in the hydrogen space and beyond.

Natural Resource Canada's (NRCan) Office of Energy Research and Development (OERD) regularly collaborates with Alberta Innovates and ERA through a "Trusted Partnership", which enables the sharing of information and leveraging of respective funding processes. By leading the Government of Canada's efforts in delivering energy research, development, and demonstration (RD&D) funding, OERD accelerates efforts in energy innovation and cleantech programming. With a focus on influencing the pace and direction of energy system transformation, OERD targets the most impactful technologies to maximize environmental and economic outcomes. Its flagship Energy Innovation Program (EIP) advances clean energy technologies that will help Canada meet its climate change targets, while supporting the

transition to a low-carbon economy. It funds RD&D projects, and other related scientific activities and will provide funding agreements for select projects under HCOE Competition 2.

1.3 Competition Details

HCOE, ERA, and NRCan are collaborating to provide a one-window approach for applicants to access funding for projects featuring development, prototyping, piloting, scale-up, and demonstration of innovative hydrogen technologies in two parallel funding Competitions. Via submission of a single proposal, applicants will be considered for either HCOE/NRCan or ERA funding in separate but parallel funding Competitions (the “Competitions.”). In general, proposals are invited for development and demonstration of technology solutions across the hydrogen value chain from production to end use, including critical infrastructure and enablers for the hydrogen economy.

Funds disbursed via the Competitions will be directed towards developing projects that support the objectives of the Alberta Natural Gas Strategy, the Alberta Hydrogen Roadmap, the HCOE targets, and the shared mandates of Alberta Innovates and Emissions Reduction Alberta to:

- develop and deploy world-class clean hydrogen technologies,
- strengthen Alberta’s environmental, social, and corporate governance credentials and spur economic growth,
- deliver meaningful environmental and economic outcomes for Albertans,
- build a sustainable and self-sufficient clean hydrogen economy in Alberta, and
- increase Alberta’s innovation capacity and develop a technically skilled hydrogen workforce.

As funding partners, HCOE, ERA, and NRCan will collaborate to reduce innovation risk for proponents, accelerate commercial adoption of emerging technologies, reduce barriers to entry for new market participants, enable collaboration beyond individual organizations, and facilitate access to highly qualified personnel (HQP) while developing additional skills and knowledge in the hydrogen innovation ecosystem.

The two Competitions are primarily differentiated by the Technology Readiness Level (TRL) at the **start** of the proposed project. Lower-TRL projects (TRL 3-6) will be funded by HCOE and NRCan, while higher-TRL projects (TRL 7-9) will be funded by ERA. A total of \$50 million Canadian dollars (CAD) in funding is available between the two Competitions:

Low-TRL Competition: HCOE Advancing Hydrogen Competition 2 **\$20-25M**

The HCOE Advancing Hydrogen Competition 2 is the second technology Competition offered through HCOE, building on the results of the first HCOE Advancing Hydrogen Competition. In this Competition, \$20 to \$25M will be made available over 24 months to support projects with starting Technology Readiness Levels of 3 (bench-scale proof-of-concept) through 6 (small field pilot). The Low-TRL Competition will be administered by Alberta Innovates via the HCOE with funding support from NRCan. Successful proposals in this stream may be required to sign two separate agreements; one with Alberta Innovates and one with Natural Resources Canada.

High-TRL Competition: ERA Accelerating Hydrogen Call for Proposals

\$25M

The ERA Accelerating Hydrogen Challenge will provide up to twenty-five million dollars (\$25M) to support projects with starting Technology Readiness Levels of 7 (pre-commercial pilot) through 9 (first commercial deployment). This Competition will be open only to higher-TRL projects and will be administered by Emissions Reduction Alberta; it is intended to add to ERA's existing portfolio of hydrogen investments while complementing the outcomes of HCOE.

Proposal intake, adjudication, and funding disbursement for each Competition will be handled separately by the associated funding organization ("Administrator").

The Technology Readiness Level (TRL) definitions used in this program are summarized in the table below.

Technology Readiness Level at Project Start	Description	Competition Eligibility
1-2	Fundamental research and concept development. <i>At this level, development activities are primarily done in the lab and range from fundamental research to proof of concept in a lab setting. Theory and scientific principles are focused on knowledge and application to define the concept. Analytical tools are developed.</i>	Ineligible
3-4	Proof of concept and prototyping <i>At this level, the basic technological components are validated and subsequently integrated for testing in a simulated environment. Component and/or system prototypes are developed and tested at bench-top scale and specifications are developed to inform further scale-up and development.</i>	HCOE/NRCan
5-6	Early piloting <i>At this level, the solution is ready to be field tested in a simulated environment and/or an operational environment. Projects in this category include scale up of prototypes to representative pilot scale and subsequent in-field testing of pilot units with input from potential end-users.</i>	HCOE/NRCan
7-8	Full-scale piloting and demonstration <i>At this level, the technology or innovation is approaching the final commercial product and representative systems have been built. Projects in this category include demonstration of near- or fully-commercial scale systems in an operational environment.</i>	ERA
9	Near-commercial and first commercial deployments <i>At this stage, the technology is ready for first-of-kind commercial deployment. Projects in this category will involve design, construction, and operation of the technology in its final commercial form, with the intent to operate the technology for its full commercial life.</i>	ERA
10+	Fully commercial <i>At this stage, the technology is ready for uptake by the market and requires no further technical de-risking.</i>	Ineligible

TRLs at the start and end of the project must be clearly stated and justified by applicants in their proposals. The Administrators, working jointly, will evaluate the accuracy of the stated project TRL and, in their sole discretion, will triage applications into the appropriate Competition at two key decision points:

- 1) Following initial submission of Expressions of Interest (EOIs), the Administrators will perform an initial sorting of projects by TRL. These groupings will be used in the EOI review and shortlisting process.
- 2) At the point where some EOIs are shortlisted to provide Full Project Proposals (FPPs), the Administrators will re-verify the TRL of projects and will invite an FPP to the appropriate Competition.

Applicants will be required to comply with the conditions, criteria, and other guidelines relevant to the Competition to which they are assigned. As such, re-categorization from one Competition to another may require adjustments to project timelines, funding requests, and eligibility of expenses and contributions. Although these issues can be managed without necessarily disqualifying a proposal, it is probable that recategorization could adversely impact the likelihood of success in the merit review process. It is therefore preferable for the appropriate Competition to be selected from the outset. Applicants are strongly encouraged to contact the Administrators for advice regarding which Competition is most appropriate for their project.

A proposal for a given project may only be submitted to one of the two Competitions. Proposals that are identified as duplicates between the two Competitions, at the discretion of the Administrators, will be evaluated only in one Competition, following the same triage policy as described above. However, there is no limitation on the number of distinct proposals submitted by any applicant and applicants may elect to submit different proposals to different Competitions as appropriate. Due to the overlap in program timelines, it is not advisable to submit proposals for different stages of the same project to different Competitions. Furthermore, applicants may not receive funding for related initiatives from both Competitions, but unrelated proposal scopes from the same proponent are acceptable between Competitions. The following examples are provided for illustrative purposes:

- A. A technology is currently at TRL 3 but anticipates completing activities up to and including TRL 6 in the project. *The project would fall under HCOE.*
- B. A technology is currently at TRL 3 but anticipates completing activities up to and including TRL 7 in the project. *The project would fall under HCOE.*
 - a. In this situation, if two proposals were submitted (one for advancement from TRL 3-6 and the second for the TRL 7 component), the second proposal would be disqualified.
- C. A technology is currently at TRL 7 but an ancillary component requires development from TRL 4 in order for the entire system to achieve TRL 8 by the end of the project scope. *The project would be evaluated under the ERA competition, but could be redirected to HCOE if the Administrators determined the main focus to be the TRL 4 component.*

- a. In this situation, if two proposals were submitted (one for the ancillary component and one for the primary technology), both proposals would be considered for funding (the former by HCOE and the latter by ERA) but no more than one could advance.
- D. A project self-categorizes as aligning with HCOE but is assessed to be starting at TRL 7. *The proposal would be evaluated in the ERA competition, and would be permitted to adjust the funding request/timelines accordingly if shortlisted.*
- E. A project self-categorizes as aligning with the ERA competition but is assessed to be starting at TRL 5. *The proposal would be evaluated in the HCOE competition, and the funding request/schedule would be revised down if necessary.*
- F. An applicant has two unrelated technologies, one starting at TRL 4 and one starting at TRL 8. They submit a separate proposal for each technology. *Both proposals would be considered and both could be funded.*
- G. An applicant self-declares their project to be starting at TRL 6 but aims to achieve TRL 9 by project completion. *If the Administrators determine the main focus of the project to be the TRL 7+ components, the proposal would be considered for funding in the ERA competition.*

The first part of this Program Guide is common to both Competitions, while subsequent parts provide specific details on each Competition. The table below summarizes the key attributes of each Competition:

Competition	HCOE Advancing Hydrogen Competition 2	ERA Accelerating Hydrogen Call for Proposals
Administrator	Alberta Hydrogen Centre of Excellence (Alberta Innovates)	Emissions Reduction Alberta
Project Technology Readiness Level	TRL 3-6 at project start	TRL 7-9 at project start
Total Funding Available	\$20-25 Million	Up to \$25 Million
Minimum Program Funding	\$200,000	\$500,000
Maximum Program Funding	\$2,000,000	\$5,000,000 (up to \$7,000,000 considered by exception only)
Maximum Funding Match Ratio	50% - can match against public or private dollars. 75% - for post-secondary institutes or Indigenous-led organizations	50% match against private dollars only (e.g. proponent, industry, investor)
Stacking Rules	Can stack with public funds up to 100%	Can stack with public funds, subject to funding ratio
Latest Project Completion Date	March 31, 2026 (no extensions possible)	March 31, 2027 (up to 1 year extension possible with permission)

The program timelines are summarized below. The initial stage of proposal intake follows the same timelines for each Competition. Following the initial stage of evaluation, some applications that are well-aligned with the program mandate and criteria will be invited to submit more detailed proposals for a second stage of evaluation. Application to the second stage will be by invitation only. Timelines for the second stage and final funding approval vary by Competition and will be confirmed at the time of invitation for shortlisted applicants.

Competition	HCOE Advancing Hydrogen Competition 2	ERA Accelerating Hydrogen Call for Proposals
Program Launch	August 1, 2023	
Intake Submission Deadline	Tuesday September 26, 2023, 5:00 PM MDT	
Shortlist Decision Notification	November 8, 2023	
Full Proposal Launch	November 8, 2023	
Full proposal Submission Deadline	December 15, 2024, 5:00 PM MST	January 11, 2024, 5:00 PM MST
Funding Notification	January 29, 2024	March 2024

This program guide primarily provides information about the initial stage of intake and evaluation. Information specific to the second stage of each Competition will be made available to shortlisted applicants at the time of invitation to the second stage.

Note: Key details including evaluation criteria, eligibility standards, and deadlines may vary between Competitions. Applicants are encouraged to closely review the guidelines for their selected Competition. In the event of discrepancies between the details provided in this Guide and other materials related to the programs, or the Competition-specific Guides, the latter shall govern.

1.4 Eligibility And Merit Criteria

The criteria and eligibility for each Competition are summarized in their respective guides. While efforts have been made to harmonize these criteria between Competitions, notable differences remain. Applicants must ensure their proposal is well-aligned with the eligibility and merit criteria for the applicable Competition.

Alberta Innovates, Natural Resources Canada, and Emissions Reduction Alberta will only fund Applicants who have met all eligibility criteria relevant for each Competition. Meeting the eligibility criteria does not guarantee access to funding, and all funding decisions will be made by Alberta Innovates, Natural Resources Canada, or Emissions Reduction Alberta at their sole discretion.

All applicants must be in good financial standing with Emissions Reduction Alberta, Alberta Innovates (and its subsidiaries InnoTech Alberta and C-FER Technologies), and Natural Resources Canada.

Collaboration with other project partners (e.g. industry, SME, research and development organizations, post-secondary institutes, municipalities, Indigenous communities, not-for-profit labs, government research labs, etc.) is highly encouraged and projects that demonstrate end user engagement and formal partnerships will receive additional consideration for funding. These partnerships can offer significant benefits, including the attraction and training of highly skilled workers, increasing Alberta's innovation capacity, engagement of local communities, leveraging complementary resources and expanding the potential for market adoption of the innovative technology solution.

Projects will need to demonstrate innovative solutions and next generation technologies, and the scope of work should include elements of technology advancement and de-risking rather than deployment of commercially available solutions. The presence of commercially available components in a project does not disqualify it from funding, as long as the primary focus of the funded scope of work is advancing novel technology.

Funding will be provided for projects with well-defined objectives, milestones, deliverables and timelines. Applicants must clearly delineate the scope of the project for which funding is being requested and the resulting benefits associated with that scope of work. Projects must incorporate sufficient operational time for the technologies being developed to generate performance data and learnings.

1.5 How To Apply

Applications will only be accepted via the application portal, which can be found at the Alberta Innovates' [online application portal](#).

The same application portal and application template will be used for both Competitions for the intake stage. Please ensure you clearly and consistently indicate your selected Competition in both your proposal and the online portal.

1.6 Points Of Contact and Applicant Support

Alberta Innovates, Natural Resources Canada, and Emissions Reduction Alberta are committed to the fairness and accessibility of the applications process. All applicants are welcome to contact the program Administrators for guidance with prospective proposals, including but not limited to discussions relating to program fit, Competition alignment, and the intake/evaluation process.

Following submission, the Administrators will only correspond in writing and provide copies of the Application to the person named in the application form as the one authorized to speak for the Applicant.

Applicants may contact either Administrator organization for support. Support requests may be referred to the most appropriate organization, as determined by the Administrators.

HCOE Advancing Hydrogen Competition 2

David Van Den Assem

Director, Clean Technology
Director, Hydrogen Centre of Excellence
Alberta Innovates

Email: David.vandenassem@albertainnovates.ca

ERA Accelerating Hydrogen Call for Proposals

Email: applications@eralberta.ca

ONLINE APPLICATION PORTAL TECHNICAL SUPPORT

Email: GMSSupport@albertainnovates.ca

1.7 Document Scope

The remainder of this document provides guidance specific to the ERA Accelerating Hydrogen Call for Proposals. Information about the parallel Hydrogen Centre of Excellence Competition 2 administered by Alberta Innovates can be found in the HCOE Competition 2 Guide, available on the online portal.

This Call for Proposals (“Call”) is inviting project proposals to be considered for ERA funding in a competitive process. Proposals will be accepted and evaluated in two stages: the Expression of Interest (“EOI”) stage and the Full Project Proposal (“FPP”) stage. Applicants that are successful in both stages will proceed to Contribution Agreement development and project execution. These guidelines provide information about the EOI stage for only. Information specific to the FPP stage, including details regarding preparation and evaluation of FPPs, will be made available to shortlisted EOI applicants at the time of invitation to the FPP stage.

A description of ERA’s overall funding process can be found on the ERA website at <https://eralberta.ca/apply-for-funding/>.

Note: Applicants who have questions about the EOI process or who wish to discuss their potential submission with ERA are invited to email applications@eralberta.ca. Inquiries will be directed to appropriate personnel within ERA.

2 Call for Proposals Scope

2.1 Background and Context

As noted in Section 1, clean hydrogen has the potential to be an important element of a future low-emissions economy. Eliminating GHG emissions associated with hydrogen production can have near-term benefits in reducing emissions from Alberta's petrochemical and fertilizer sectors, and further scale-up of clean hydrogen production can enable it to serve entirely new uses in industry, transport, power, and more. However, establishing a robust hydrogen economy will require more than new sources of production. In order to realize the potential of clean hydrogen, commercialization and scale-up of technology solutions across the value chain will be needed including new approaches to hydrogen transportation, storage, delivery, and end-use.

As a result of significant prior investments by Emissions Reduction Alberta, Alberta Innovates, and other partners in Alberta's innovation ecosystem, there now exist a range of hydrogen technologies that are ready to take the next step towards full commercialization. This Call is intended to fill a key gap by accelerating scale-up and deployment of near-commercial solutions that will be critical to smoothing the pathway towards more widespread use of hydrogen. Alongside the Hydrogen Centre of Excellence - Competition 2, which is focused on earlier-stage hydrogen innovation, ERA's Accelerating Hydrogen Challenge is intended to provide critically-timed support to demonstrate and deploy world-leading hydrogen technologies in Alberta to increase their pace towards full commercialization.

By investing in this area, ERA aims to grow and strengthen Alberta's hydrogen ecosystem by enhancing innovation capacity, scaling up near-commercial technologies, and developing a network of collaborative projects with the potential to catalyze future developments. Alberta has a unique opportunity to not only maintain competitiveness with other jurisdictions that are pursuing hydrogen but to seize a leadership role in this rapidly-growing area by building on our existing hydrogen and energy sector expertise. Hydrogen technologies are expected to attract significant investment in the coming years. By supporting leading hydrogen solutions, ERA can help to attract world-leading solutions to Alberta along with the associated investment dollars, capital, and economic/environmental benefits.

ERA's proposed investments in this area are designed to align with other major policy initiatives, including the Government of Alberta's Emissions Reduction and Energy Development Plan, which states the continued need to invest in developing and commercializing clean technology and overcoming barriers to advance these technologies into market. The Plan also calls out the need to invest in clean hydrogen for use across sectors, including transportation, heat and power generation and other industrial uses, and to supply other national and international markets. Alberta's Hydrogen Roadmap, released in 2021, outlines seven policy pillars to ensure hydrogen is integrated into Alberta's energy systems while also positioning Alberta to be a global supplier-of-choice in clean hydrogen exports. The Government of Canada also released the Hydrogen Strategy for Canada in 2020, recognizing that Alberta produces the majority of Canada's natural gas, noting

that Alberta is well-positioned to be a leader in clean hydrogen production. The Accelerating Hydrogen Challenge aligns with the outcomes of these policies while building on ERA's previous \$60 million investments and contributing to becoming a global leader in hydrogen production, transport, use, and export.

2.2 Call Focus and Technology Areas

ERA's Accelerating Hydrogen Call for Proposals is seeking technology demonstration and first-of-kind commercial projects that will meaningfully advance the hydrogen economy in Alberta. Proposals are invited for technology solutions in all areas of the hydrogen value chain, including hydrogen production, transportation, storage, end use, and enablers.

Example Technology Areas

This Call is not technology prescriptive. The following list provides a non-exhaustive set of example technologies that ERA believes could represent compelling opportunities in this Call:

- 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
- 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

Out of Scope Technologies and Projects

Opportunities that are **out of scope** for this Call include:

- Commercially-available hydrogen passenger/recreation vehicles (e.g., cars, vans, pick-up trucks, motorcycles, etc.) – such vehicles may be part of an ERA-funded project but costs for light-duty vehicles are not eligible for ERA matching.
- Projects with a primary focus managing the byproducts from clean hydrogen production such as carbon black, salts, feedstock residuals, etc.
- Commercial and residential hydrogen appliances.
- Conventional carbon capture on existing hydrogen production facilities.
- Facilities whose primary purpose is manufacturing, testing, or certification of hydrogen technologies (these are supported via other Hydrogen Centre of Excellence programming.)

Guiding Principles for Strong Opportunities

This Call is seeking technologies that have significant potential to enhance the role of hydrogen in Alberta's overall pathway to a low-emissions economy. Applicants must clearly justify how ERA funding will result in scale-up, de-risking, and advancement of the hydrogen ecosystem as a whole, rather than providing a one-time benefit. All projects must include partnerships and consortium members along multiple areas of the hydrogen value chain and should demonstrate additional strategic value beyond ERA's existing portfolio of hydrogen projects.

All proposed solutions must be compatible with long-term net-zero goals. Applicants must clearly explain how the proposed project contributes to and aligns with their organizational plans to achieve net-zero emissions.

Projects funded in this Call will be expected to share knowledge that can inform the broader hydrogen ecosystem, such as operational performance, delivery cost information, and public education activities. Preference will be given to projects with strong knowledge sharing and engagement plans.

Alignment with other ERA Funding Opportunities

ERA's [Technology Roadmap](#) and [Business Plan](#) identify several interrelated focus areas for upcoming funding opportunity areas that complement this Call for Proposals. These technology areas are summarized below:

Program	Technology Focus	Tentative Timelines
Reshaping Energy Systems	<ul style="list-style-type: none"> Solutions for enabling the shift to cleaner energy via improvements to <i>midstream energy infrastructure</i>, systems integration, and smart energy demand. Production of energy is ineligible. Some energy end-uses are ineligible, depending on integration with energy systems. 	Intake Closed
Accelerating Hydrogen (This Call)	<ul style="list-style-type: none"> Solutions specifically related to hydrogen, including production, storage, transport, and end-use. 	Launch summer 2023
Fuels of the Future*	<ul style="list-style-type: none"> Solutions for <i>production</i> of clean energy carriers, focused on the <i>upstream</i> portion of energy systems. Hydrogen not eligible. 	Tentatively launching early 2024

*Future funding opportunities are not yet confirmed and are subject to availability of funds and the approval of ERA’s Board of Directors. ERA may, at its sole discretion, elect to modify any attribute of the planned programs or cancel them entirely.

Technologies that, in ERA’s sole determination, are better-aligned with other upcoming programs may be declined in the Accelerating Hydrogen Challenge. Given the close relationships between these funding areas and the high likelihood of certain technologies being relevant to more than one area, ERA encourages applicants to contact applications@eralbrta.ca to discuss their technology alignment.

2.3 Project Structure

Funding made available through this Call is provided for completion of projects with well-defined objectives, milestones, deliverables, and timelines. Applicants must clearly delineate the scope of the project for which ERA funding is being requested and the benefits associated with that scope of work. Any related work completed concurrently or before the project term but outside the scope of the project may be discussed in the proposal but should be clearly indicated as such. All projects must incorporate sufficient operational time to generate performance data and learnings.

ERA is seeking projects that involve piloting, demonstration, or first-of-kind implementation of novel technology (e.g., devices, equipment, systems, processes, or practices). Standalone pre-construction projects (e.g., FEED study, detailed engineering) are not eligible for funding in this Call, but may be eligible in HCOE Competition 2. Projects may include late-stage pre-construction work as the initial stage of a technology demonstration/implementation, as long as the project is at an advanced state of readiness and can be completed within the project term described below.

Projects or portions thereof that have received ERA funding are not eligible to receive further ERA funding for the same development. However, applicants may request support for a new phase of development that builds on and sufficiently advances a previously funded project.

2.4 Stage of Development and Novelty

EOIs are invited for projects that will advance technology to the stages of field pilot, demonstration, or first-of-kind commercial implementation by project completion, as described below:

- **Field Pilot:** At this stage, the solution is ready to be field tested in an operational environment. Projects in this category include in-field testing of pilot/prototype units.
- **Demonstration:** At this stage of development, the technology or innovation is approaching the final commercial product and representative systems have been built. Projects in this category include demonstration of near- or full-commercial-scale systems in an operational environment.
- **First-of-Kind Implementation:** At this stage, the technology is ready for first-of-kind commercial deployment. Projects in this category will involve design, construction, and operation of the technology in its final commercial form, with the intent to operate the technology for its full commercial life.

In addition to the above requirement, ERA's Accelerating Hydrogen Challenge is only open to projects starting at a technology readiness level (TRL) of 7 or greater. Thus, all projects submitted to this Call must have previously completed, at minimum, some Field Testing/Pilot activities as described above. Opportunities that are assessed by ERA and Alberta Innovates to begin at TRL 6 or below will be referred to the parallel HCOE Competition 2 for consideration. For more information, please refer to Section 1.

Applicants must demonstrate how the proposed technology or application thereof is an innovative solution for emissions reduction in Alberta. This may include elements such as first-of-kind demonstration of novel technological solutions, innovative adaptation of solutions that have been implemented outside of Alberta or in a different industry, or novel configurations of leading commercial technology for a new operational environment. In general, projects should include elements of technological advancement and de-risking rather than deployment of commercially available solutions. The presence of commercially available components in a project does not disqualify it from funding, as long as the primary focus of the ERA-funded scope of work is advancing novel technology.

This Call is only open to new developments that are additional to business-as-usual activities. For clarity, prior announcement or development of a project does not preclude it from receiving funding, but applicants must justify how ERA funding will lead to activities and developments that are additional to the business-as-usual case.

Note: It is incumbent upon applicants to justify how their project qualifies as a novel opportunity.

In the context of this Call, novelty can be demonstrated through elements such as:

- a) the additionality of the potential project outcomes relative to a reasonable future baseline condition;
- b) the extent to which the technology has been previously implemented/tested in Alberta;
- c) the incremental strategic value of the project relative to current/past investments in [ERA's portfolio](#); and
- d) the degree of technology/regulatory risk associated with the proposed project.

As such, ERA funding will not be provided to address only a financial barrier or for projects whose focus is implementation of business-as-usual technology.

2.5 Project Location

All projects supported through this Call must demonstrate a clear and justified value proposition for reducing GHG emissions or enabling the transition to a net-zero economy in Alberta. Technology solutions can originate from anywhere globally but must be demonstrated or implemented in Alberta during the project. Projects that involve demonstration or implementation of a technology at multiple Alberta sites are eligible for funding under this Call.

2.6 Eligible Applicants

This Call is open to all categories of lead applicant, including innovators, technology developers, Indigenous communities, industrial facility owners/operators, industrial associations, small and medium-sized enterprises (SMEs), research and development (R&D) organizations, universities, municipalities, not-for-profit organizations, government research labs, and individuals. Applicants are not required to be located in Alberta, but all applicants must demonstrate a clear value proposition for the province.

Collaboration between multiple organizations is eligible and encouraged for this opportunity. Collaboration between partners can often represent a strong value proposition by demonstrating opportunities for technology validation, commercialization, and sharing of results.

Applicants are encouraged to partner with Alberta's post-secondary and research institutions, Indigenous communities, and municipalities where appropriate. These partnerships can offer significant benefits, including the attraction and training of highly skilled workers, increasing Alberta's innovation capacity, engagement of local communities, and leveraging complementary resources.

Note: There are no restrictions on the number of EOIs that can be submitted by any applicant. However, applicants are encouraged to be selective, bringing forward only the most promising and highest quality applications. ERA reserves the right to limit funding to any individual organization to ensure diversity of funding recipients, and may ask applicants to identify the highest priority projects for their organization.

2.7 Project Initiation and Term

Successful applicants will be required to commence work on the proposed project (engineering design, equipment procurement, construction, etc.) **within 120 days** of ERA funding approval, currently planned for March 2024. Applicants must clearly demonstrate in their proposal that the project is sufficiently advanced to initiate work within 120 days of funding approval. However, successful applicants may request a delayed start date of up to twelve (12) months after funding approval to allow for alignment with facility operations, scheduled facility turnarounds, and/or regulatory processes. Such requests will be at ERA's sole discretion to accept or decline.

The maximum length for projects funded under this Call is **three (3) years** from initiation, plus **one (1) year** additional for operational time where applicable. For clarity, all construction and commissioning activities must be completed within a three-year period, but up to one year of post-commissioning operational time must be incorporated in the project term where applicable to generate performance data and learnings for inclusion in final reporting and knowledge sharing activities.

3 Terms of Funding

3.1 Total Funds Available

The total funding available for projects supported through this Call is up to **\$25 million** Canadian Dollars (\$CAD), subject to the discretion of ERA and the availability of funds.

Please note that ERA's funding allocation is separate from the \$20-25 million allocated to HCOE Competition 2.

3.2 Funding Per Project

The minimum funding request to ERA for any one project is **\$0.5 million CAD** and the maximum is **\$7 million CAD**.

Note: Applicants must justify the amount of funding requested. ERA may choose at its sole discretion to award project funding for less than the requested amount. For this Call, ERA anticipates funding most projects at no more than \$5 million in order to optimize the total funding available. Projects will only be awarded the full \$7 million maximum funding amount in exceptional cases where strong justification and a compelling value proposition is provided.

3.3 Fund Matching

ERA requires its funding to be matched on a minimum 1:1 basis with funding from the applicant and/or project partners toward eligible expenses. In other words, for every dollar that ERA provides to a project, there must be at least one dollar from the applicant and/or partners. As such, the maximum ERA contribution to a single project will be no more than 50% of the project's eligible expenses.

ERA will not match other federal, provincial, or international government funds provided directly for the proposed project. However, the inclusion of other government funds does not disqualify a project from eligibility. ERA does not have a formal "stacking" limit alongside other government funds as long as the requested ERA contribution is matched at least 1:1 by contributions from the lead applicant and partners.

The following examples are provided for illustrative purposes:

- **Example 1** – A project has a total cost of \$8 million in eligible expenses. If the applicant and partners contribute \$4 million, ERA could contribute up to \$4 million.
- **Example 2** – A project has a total cost of \$50 million in eligible expenses. If the applicant and partners contribute \$43 million, ERA could contribute up to \$7 million.

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- **Example 3** – A project has a total cost of \$9 million in eligible expenses. If the proponent and partners contribute \$3 million and another government funding agency contributes \$3 million, ERA could contribute up to \$3 million.

Please note that ERA will not match future revenue associated with the outcomes of the project, including for example: offset/performance credits associated with the project; tax incentives associated with the project, such as Canadian SR&ED credits; and revenue from sale of the project's outputs or products. However, the presence of such revenue sources does not disqualify a project from eligibility and may be noted in the proposal to improve the risk profile of the proposed financing plan and technology commercialization strategy.

3.4 Contribution Agreement

Successful applicants will be required to enter into a contribution agreement ("Contribution Agreement") with ERA. The Contribution Agreement will address without limitation the terms of funding, maximum ERA funding for the project, project scope, work plan, milestones, deliverables, performance targets, payment schedule, and reporting requirements.

3.5 Funding Disbursement

ERA's funding will be disbursed on a milestone completion basis after eligible expenses have been incurred toward specified tasks over the course of the project term. ERA's contribution to each milestone will be at the same ratio of ERA's funding toward the total project budget. For example, if ERA is contributing 25% of the total eligible project costs, ERA will pay 25% of the eligible expenses incurred at each milestone. The milestone completion and payment schedule will be outlined in the Contribution Agreement.

3.6 Eligible Expenses

ERA will only match unencumbered cash or cash-equivalent in-kind contributions toward eligible expenses. For information about eligible expenses and costs, please refer to the ERA *Eligible Expenses and Cost Instructions* document available at <http://eralberta.ca/apply-for-funding>. For clarity, the presence of ineligible expenses does not disqualify a project or limit its ability to recover costs for eligible expenses. All costs (eligible and ineligible) should be included in the proposal to accurately reflect the extent to which ERA's contribution will be leveraged.

ERA will only contribute toward project costs incurred after the date of ERA's FPP submission deadline (tentatively planned for mid January 2024). The FPP submission deadline and cost eligibility date will be confirmed at the time of invitation to the FPP stage. Project-related costs incurred prior to ERA's FPP submission deadline will be considered out of scope, will not be considered eligible project costs, and are not eligible for fund matching from ERA. Furthermore, no disbursements will be made prior to execution of a contribution agreement with ERA, and any

project costs incurred prior to execution of a contribution agreement will not be reimbursed by ERA in the event that an agreement is not executed.

3.7 Outcomes Reporting and Knowledge Sharing

Funding recipients will be required to report on project outcomes, achievements, and lessons learned, including without limitation GHG reductions (actual and projected), job creation, and other environmental, economic, and social benefits. Reporting requirements will include without limitation confidential sharing of data with ERA and preparation of public reports.

All ERA-funded projects with quantifiable GHG emissions benefits will be required to provide ERA with a GHG measurement, monitoring, and verification (MMV) plan for the duration of the project and may be required to provide third-party GHG quantification and reporting upon project completion.

ERA is committed to encouraging widespread knowledge dissemination from funded projects to maximize the benefit of our participation. In addition to written reports, ERA may require recipients to commit to specific activities such as hosting knowledge-sharing workshops, participation in ERA lessons-learned activities, or other knowledge sharing initiatives as determined by ERA on a case-by-case basis.

3.8 Trusted Partner Funding Leverage

ERA is working in partnership with other funding organizations in Alberta and across Canada. In some cases, there may be an opportunity for ERA to share applicants' proposals with trusted partners and explore possibilities to leverage funding available from these organizations.

A complete list of trusted funding partners can be found [on ERA's website](#).

During the submission process, applicants will have the opportunity to give ERA permission to share their submissions with trusted funding partners of ERA, where applicable. Please note that ERA will only share applications for the purposes of exploring further funding and with partners where ERA has a non-disclosure agreement in place. An applicant's preference regarding whether to allow sharing of their application will not influence ERA's assessment of their proposal.

4 Submission Details

4.1 Submission Deadline

The deadline for submission of EOIs in response to this Call is **Tuesday, September 26, 2023 at 5:00 p.m. Mountain Daylight Time (UTC-6h)**. Late submissions will **not** be accepted. Applicants are encouraged to complete their submissions well in advance of the deadline. Furthermore, ERA will not accept partial or incomplete submissions. All submissions must be made via the Alberta Innovates [online application portal](#). Applications that are not fully completed in the portal or are submitted via other means (email, etc.) will not be accepted.

4.2 Funding Process Timelines

The following timelines are anticipated for the full funding process. Note that ERA reserves the right to alter these timelines or cancel the Call.

Action	By Whom	Timing
EOI Submission Deadline	Applicants	September 26, 2023
EOI Shortlist Notification	ERA	Mid November, 2023
FPP Submission Deadline	Applicants	January, 2024
FPP Oral Presentation	Applicants	February 2024
Funding Decision Notification	ERA	March 2024

Further details on FPP stage timelines and process will be shared at the time of invitation to the next stage.

4.3 Submission Content and Standards

EOIs must be submitted using the Alberta Innovates [online application portal](#). Users must create an account and complete all mandatory forms to submit an application.

The online application portal provides fields for entry (and/or attachment) of all required information for submission of a complete EOI. Applicants are encouraged to closely review the prompts, fields, and instructions in the online portal to ensure their proposal includes all required information.

Proposals that do not conform to minimum submission standards, such as those that lack key information or are not written entirely in English, may be rejected from consideration.

The online application portal allows for submission of attachments in addition to the primary text inputs. Attachments should be substantive, concise, and directly relevant to the content in the body of the proposal. Examples include process flow diagrams, Gantt charts, and letters of support from

consortium members. The Administrators reserve the right to truncate excessive or unnecessary attachments (e.g.: sales brochures, scientific papers, engineering reports, etc.).

4.4 Applicant Support and Contact Information

Applicants are welcome to contact ERA at any time throughout the process for support and guidance on completing their application. ERA will answer questions regarding the guidelines, template, application portal, evaluation criteria/process, and technology/project alignment with the Call. ERA will not provide pre-reviews or feedback on proposal content. Before contacting ERA, applicants are encouraged to read the FAQ document available on the Call website and to carefully consult the guidelines and template.

The ERA points of contact for this Call are as follows:

- Assistance with Call guidelines and proposal content: applications@eralberta.ca
- Assistance with online application system and submission: GMSSupport@albertainnovates.ca

Please allow up to one week for responses to email inquiries due to high anticipated volumes. Use of alternate email addresses such as ERA's general information email or media contact email may result in a response to your request being delayed.

5 Evaluation

5.1 Evaluation Criteria

All proposals will be evaluated based on the following criteria. Each of the evaluation criteria below is assigned a relative weighting. Applicants are encouraged to consider these weightings when developing their proposals. The prompts and instructions found in the EOI template provide additional detail on the specific considerations within each criterion.

Criterion	Description	Weight
Innovation Opportunity	Proposals will be evaluated on the strength of the proposed solution and alignment of the opportunity with the Call for proposals, including the novelty of the technology or practice, the competitive advantages relative to existing technologies and practices, the market potential for the solution, the expected technology advancement over the course of the project, and the potential for enhancement of Alberta's hydrogen ecosystem.	35
Implementation Plan	Proposals will be evaluated on the quality and risk profile of the project implementation plan, including achievability of the work plan, the plan to obtain financing for the project, the capacity of the project team, and the strength of support from project partners, where applicable.	25
GHG and Non-GHG Benefits	Proposals will be evaluated on their potential to achieve and/or support GHG reductions in Alberta and on the potential for the project and technology to enable the transition to a low-emissions energy system. Socioeconomic, environmental, and sustainability benefits will also be considered. Evaluation of this criterion will consider near-term direct benefits from implementation of the project as well as longer-term benefits from future commercial implementations (e.g., benefits arising from market rollout.)	40

Note: ERA intends to fund a diverse portfolio representing a range of technology opportunities of various scales and commercial readiness levels. The size of opportunity and potential for widespread GHG and economic benefits will be taken into consideration during project selection. ERA reserves the right to consider optimal portfolio balance and strategic mandate alignment when selecting proposals for funding.

5.2 Eligibility Screening Criteria

In addition to the evaluation criteria described above, projects may be screened out based on one or more of the following factors:

- Insufficient alignment with the Call and/or ERA’s overall mandate:
 - Proposed project is inconsistent with the intent or scope of this Call.
 - Proposed development is assessed to be business as usual.
 - Risk of detrimental side effects (environmental, economic, social, etc.).
- Insufficient Alberta content:
 - Insufficient relevance of the technology or approach to Alberta.
 - Insufficient Alberta activities/sites in proposed project scope.
- Insufficient potential for GHG benefits.
- Failure to meet minimum submission standards:
 - Insufficient information provided.
 - EOI not written in English.
 - EOI not sufficiently readable or comprehensible.
 - EOI does not conform to the submission requirements outlined in the Call guidelines.

5.3 Next Steps

Some applicants whose EOIs are best aligned with ERA’s mandate, the goals of the Call, and the evaluation criteria will be invited to submit a detailed Full Project Proposal (FPP.) Further information regarding FPP submission will be made available at the time FPP invitations are made.

All applicants who submit an EOI in response to this Call will be notified of ERA’s decision via email when the EOI review process is complete. Applicants whose proposals are not accepted may arrange a short debrief phone call with ERA to receive feedback. Information about arranging a debrief phone call will be provided in the notification letter.

5.4 Note on Proposal Quality

This is a highly competitive process, and not all projects will be shortlisted. Success at the EOI stage depends on the quality of the EOI submitted. Only the highest quality EOIs will be invited to submit FPPs. In this regard, “quality” means both the quality of the proposed project relative to the evaluation criteria and the quality of the written proposal (clarity, completeness, etc.)

6 Equity, Diversity, and Inclusion

ERA recognizes that it takes more than funding to achieve our mandate of a sustainable, lower-carbon future. In addition to creating, supporting, and implementing innovative technologies and solutions, people are critical in delivering our desired future. Equity, diversity, and inclusion (EDI) within a diverse workforce will assist in reaching shared outcomes and promoting innovation. ERA's EDI Strategy is being implemented by an internal EDI Committee who are working towards ensuring our funding programs are accessible to all innovation ecosystem applicants, while internally presenting staff with training and professional development opportunities to increase education and awareness. A strong component of this strategy includes how ERA engages with a broad suite of audiences. To inform our EDI efforts and engagement, ERA is gaining an understanding of audiences reached through its suite of communication tools. This includes a set of voluntary EDI questions asked of applicants at the funding intake phase. These questions are located in the ERIMS application portal and are optional to complete. ERA requests that the questions be completed by the individual who will lead the project on behalf of the Lead Applicant. Responses are kept confidential and are not considered in proposal evaluation or adjudication processes.

7 Intellectual Property

Intellectual property will be addressed through a Contribution Agreement between ERA and each successful applicant, and will be specific to the circumstances of each project. However, a few general principles apply:

- Background IP (patents, copyrights, software, etc.) and third-party technology remains with its original owner(s).
- ERA retains rights to project results, including without limitation the technical data, reports, analysis, and discussion.
- Project outcomes, results, and learnings will normally be made publicly available at the conclusion of the project.
- Project technology (based on patent disclosures) developed as a part of the co-funded activities will be owned by the successful applicant and its partners, in accordance with the IP arrangement between project partners. However, successful applicants will be expected to commercialize and/or make the technology available through reasonable commercial terms for the benefit of Alberta.

8 Confidentiality

ERA is subject to the *Freedom of Information and Protection of Privacy Act*, RSA 2000, c.F-25 in the course of performing duties and functions and exercising powers delegated to it. All data and records in the custody or under the control of ERA that are required in the performance of duties or functions or the exercise of powers delegated to ERA are subject to the *Records Management Regulation*, Alberta Regulation 244/2001.

Subject to the requirements described above, ERA is governed by a comprehensive Privacy, Data Security and Confidentiality Policy (the “Policy”). The Policy requires that any and all information concerning the business affairs of ERA and its directors, officers, employees and applicants is to be kept private, secure and confidential. Confidential information that is collected, used or disclosed by ERA will be handled in a manner that recognizes both the right of the individual to have his or her confidential information protected and the need of ERA to collect, use and disclose such information for purposes that are reasonable.

To read the entire Policy, visit <http://eralberta.ca/privacy>.