

Natural Gas Decarbonization ARCTIC Challenge FAQ

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The Challenge Competition

What is the application deadline?

Applications will be received by Foresight up to January 15, 2018, 11:59 PM Pacific Time.

Who is eligible to participate in the Challenge?

Any organization is eligible to participate in the program so long as there are demonstrable benefits to developing and commercializing the innovation in Western Canada.

Innovators applying to participate do not require a current working relationship with COSIA or any company in the energy sector.

What Technology Readiness Levels are relevant?

This Challenge will focus on advancing solutions/technologies at all Technology Readiness Levels ("TRL"). Partial solution submissions are encouraged and welcome. Through the ARCTIC program and its multiple stages the technology will be de-risked as it advances in maturity.. This program references the Build in Canada Innovation Program definition of TRL:

<https://buyandsell.gc.ca/initiatives-and-programs/build-in-canada-innovation-program-bcip/program-specifics/technology-readiness-levels>.

What is the Evaluation Process?

Projects will be evaluated through four stage gates:

- Stage Gate 1: Completeness.
Applications received by Foresight will be reviewed for completeness and their ability to provide relevant information to a technical reviewer.

- **Stage Gate 2: Technical Review.**
Based on a review of submitted information, technical reviewers will assess the fit of the proposed technical solution against their ability to meet the criteria identified in the Challenge Application Package. Selected Applicants will be invited to Stage 3.
- **Stage Gate 3: Presentations.**
Presentations to the selection team will be invited in mid-February, 2018. These presentations will be via videoconference or in person in the Foresight or COSIA Offices. Stage 3 participants will receive more details on the specific elements their presentations need to address based on the feedback of reviewers and whether any additional supporting documents may be needed.
- **Stage Gate 4: Shortlist Due Diligence.**
Shortlisted applicants will be provided with supplementary questions and information requests to assist with the final selection committee decision. The focus of this stage of evaluation will be on the business and the project requirements.

A decision of the Selection Committee is anticipated in 2018Q1.

Where will the selection process meetings be in January, and what meetings will be needed?

There will be a selection committee that will consist of individuals from COSIA and Foresight ARCTIC. We may also utilize the skillsets of NRC IRAP. Meetings of the selection committee will occur as necessary to review the proposals and finalise the 2-5 sprint participants. The presentation meetings from the individual companies would be scheduled either online or in person, with the location to be determined.

Will there be feedback on submissions?

Participants interested in receiving feedback on their submission will have an opportunity for a debrief meeting with Foresight at the conclusion of the selection process.

Proposal Submission

What is the reference carbon tax for this submission?

For submissions to this Challenge, a carbon tax does not need to be incorporated into any calculations.

Participation

What support do innovators receive for participation?

The total funding available for projects supported through this call for proposals is up to **\$500,000** Canadian Dollars (CAD), subject to the discretion of Foresight Cleantech Accelerator Centre/ARCTIC and COSIA, and the availability of funds. **\$500,000** is the total, combined amount of funding for both Phases and is split out amongst companies that are chosen to participate in the Sprint and Field Trial. Typically, funding is split evenly between the Sprint and Field Trial.

The Challenge “Sprint” Phase is designed to involve 2 to 5 proponents in advancing proposed solutions. Given the significance of this Challenge, more technologies may be selected to go forward to the Sprint Phase. The per project costs can go up or down based on the final number of projects in the sprint. The maximum contribution includes provision for lab space and overheads, marketing, a lab manager, equipment, materials, accelerator mentoring and cash. The winner(s) of the Challenge Sprint will be invited to undertake the next step in the development of the innovation/field trial (or equivalent). Only one company proceeds to the Field Trial phase. The maximum contribution from ARCTIC and COSIA to this phase includes support for a test site, test support, equipment, materials and cash.

‘In Kind’ contributions from candidates includes time of key project staff or other resources required to complete the Challenge Stage.

How will Intellectual Property be treated?

Background Intellectual property of an applicant will remain the property of the applicant. Phase 3 does not anticipate the development of any new intellectual property by applicants. Applicants participation in Phase 4 will be governed by an agreement with the industry partners that will address intellectual property development in the Phase 4 Field Trial.

What is the overall Challenge program timeline?

The ARCTIC Program is designed to operate in 4 Phases of critical activity over a 18-24 month timeframe to produce relevant field trials that will validate solutions to resource sector defined challenges.

Phase 1: Challenge Definition (3 months) (Completed)

In conjunction with resource sector partners and ARCTIC participants, Foresight CAC defines a resource sector identified challenge in order to focus innovators on the most promising market

opportunities. A broad community of innovators with the potential to provide solutions to the challenge is identified in this Phase.

Phase 2: Innovator Selection (3 months) (Underway)

Foresight CAC and the ARCTIC participants implement the Launch Plan for each Challenge and invite potential solution providers to respond. A panel made up of industry, investors, and selected experts will select 2 to 5 solutions from the pool of innovators that responded to the Challenge for a six to nine-month development sprint.

Phase 3: Challenge Sprint (6 to 9 months)

This Challenge Sprint will be sponsored by resource sector industry partners and will leverage the Foresight Accelerator and its mentorship program to further advance the development of proposed solutions through:

- testing in a laboratory or other environment.
- the use of lab space, business and technical expertise.
- moving participating innovators to a point where they can seek first funding.

One technology/solution will be selected for field trial and an industry showcase event delivered with a marketing partner.

Phase 4: Field Trial Preparation (12 months)

Following the Challenge Sprint, one solution could be selected for field-testing, or for the next appropriate level of development. The field trial phase will focus on getting the technology field trial-ready, including equipment specification requirements.

What role will past references play in the evaluation process?

We will use as much help as we can in evaluations of proposals. If there are references in the proposals, we would take advantage of talking to those references.

Are partnerships between potential solution providers actively encouraged?

Yes, we are looking for a complete solution that hits the objectives of the proposal.

Q - Will there be an FAQ update following the webinar?

A – Yes.

Can you clarify the financial information that would need to be provided to determine the amount of financing that is provided?

The amount of financing information that is included in the proposal does not determine the amount of financing that is received. The amount that each company receives will be made as close to equal as it can be, depending on the number of companies that go into the sprint. The information in the proposal is for evaluating the financial viability. We expect companies to have enough cash flow to see them through the Challenge.

Can earlier stage technology development activities occur outside of Canada or do they need to take place in Western Canada?

Western Economic Diversification, with a goal of economic development for Western Canada, provides funding for this Challenge. Ideally, the more activities in proposals that take place in Western Canada the better. Activity conducted outside of Western Canada is considered on a case by case basis. Sprint participants that are outside Western Canada typically have a fair amount of activities that are performed outside Western Canada during the Sprint Phase. By the time the proponent arrives at the Field Trial Phase, the proponent company must commit to a presence in Western Canada.

How is Intellectual Property managed?

At the Sprint Phase intellectual property belongs to the innovator. No proprietary information is exchanged during the Sprint Phase. Foresight will act to prevent the exchange of proprietary information during the Sprint Phase. At the Field Trial phase COSIA members become involved and at that point a discussion between the innovator and COSIA members will occur on how Intellectual Property will be handled.

What if my technology is out of scope for this Challenge?

Out of scope solutions or technologies for this Challenge are still of interest to COSIA but not within this Challenge framework. Feel free to communicate those technologies and solutions that are out of scope for this Challenge directly to COSIA.

Will COSIA invest in the commercialized winning technology at end of process?

This program is designed to help build the trust needed for a commercial relationship to develop.

The Challenge Sponsors and the ARCTIC Program

What is ARCTIC?

The Advanced Resource Clean Technology Innovation Centre (ARCTIC) was established by Foresight in early 2015 to fulfill the need for a demand-pull approach to innovation targeting both specific environmental, operational and environmental challenges and potential sources of innovation from across Canada and marrying them to drive performance improvements and accelerate the commercialization of new technologies.

ARCTIC models a new approach for industry/innovator collaboration.

The ARCTIC program is funded with support from BC Innovation Council (BCIC), Western Economic Diversification (WD) and Canada's National Research Council's Industrial Research Assistance Program (NRC/IRAP). In this Challenge, the ARCTIC program is working with COSIA to search for remote sensing technologies that target one of the forestry sector's challenges – forest inventory management.

Where can I learn more about ARCTIC?

The website for ARCTIC is <http://arctic.foresightcac.com> where more information about the program and Open Challenges is available.

Who is the Foresight Cleantech Accelerator Centre?

Foresight is a catalyst and connector, providing Canadian and international innovators with access to resources, expertise, talent and partners to mature and implement innovative solutions quickly. Advanced Resource Clean Technology Innovation Centre is a Foresight program designed to fulfill the need for a demand-pull approach while identifying both specific environmental, operational and environmental challenges in the resource sector and potential sources of innovation from across Canada, and connecting them to drive performance improvements and accelerate the commercialization of new technologies. The ARCTIC program is funded with support from the British Columbia Innovation Council ("BCIC") and Western Economic Diversification ("WD"). In this Challenge, the ARCTIC program is working with COSIA to search for alternative hot water production methods with lower GHG emissions.

Foresight is located in Surrey, British Columbia, Canada.

Who is COSIA?

Canada's Oil Sands Innovation Alliance (COSIA) is an alliance of oil sands producers focused on

accelerating the pace of improvement in environmental performance in Canada's oil sands through collaborative action and innovation. COSIA brings together leading thinkers from industry, government, academia and the wider public to improve measurement, accountability and environmental performance in the oil sands in four priority areas. These four Environmental Priority Areas (EPAs) are tailings, water, land, and greenhouse gases (GHG).

COSIA's GHG EPA is looking for innovative and sustainable solutions to significantly reduce GHGs at oil sands mining and in situ (in place) operations without environmental burden shifting (causing negative environmental impacts in other areas). Its aspiration is to "Produce our oil with lower GHG emissions than other sources of oil."

Who is Alberta Innovates?

Alberta Innovates is a provincially-funded Corporation with a mandate to deliver 21st century solutions for the most compelling challenges facing Albertans. We do this by building on our province's research and technology development strengths in the core sectors of health, environment, energy, food and fibre and platforms such as artificial intelligence, nanotechnology, and omics. We are working with our partners to diversify Alberta's economy, improve our environmental performance and enhance our well-being through research and innovation.

For more information on this program, please visit www.albertainnovates.ca.

Additional Background

Where can I learn more about COSIA's Priorities?

COSIA has posted a number of its open Challenges on its website: <http://www.cosia.ca>.