

## MABC Mining Innovation Challenge: Reducing Water Use

*Mining operations use a significant quantity of water through the mining, mineral processing (flotation, CIP, others), and tailings process. This water needs to be sourced, stored, and treated. The ability to use less water per unit of product will allow operations to keep clean water clean. The MABC Mining Innovation Challenge: Reducing Water Use is looking for modified operating practices or new solutions that achieve the same mineral recovery with less water use intensity on a consumption basis.*

*For this Challenge, water consumption is defined as water that is permanently removed, by evaporation, entrainment (in product or waste) or other losses and not returned to the water environment or a third party.*

### Program Guide

#### 1. Introduction

Water is a critical resource for the mining industry as it plays an important role from the mill through processing to tailings. With a predicted global shortfall of 40% by 2030<sup>1</sup>, the availability of clean water presents itself as a major social and economic risk to the mining industry. In this context, reducing water use and improving water use are among the top priorities for the industry as it continues to adopt and implement responsible practices within its operations. Mining is crucial to the global low-carbon transition, with minerals and metals needed to deploy wind, solar, and geothermal power, and energy storage<sup>2</sup>.

In alignment with the emphasis on responsible operations and efficiency across mining globally, there is an opportunity for BC's mining industry to strengthen its environmental performance by embracing innovation and a commitment to continuous improvement. It will allow the industry to set an example for others to follow and also ensure value creation, support better returns on investment,

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<sup>1</sup> World Economic Forum

<sup>2</sup> Minerals for Climate Action: The Mineral Intensity of the Clean Energy Transition (The World Bank)

and continue its contribution to BC communities - while producing the metals and minerals needed for the global transition to a low carbon economy.

To accelerate the pace of innovation, there is a need to facilitate greater collaboration between the mining industry, and the tech and cleantech ecosystem. One of the best ways to promote engagement between the industry and the technology ecosystems is by sourcing solutions through an Innovation Challenge. The Challenge development process identified the mining industry's need to reduce water use intensity and requests a transformational outcome that can be delivered through technological solutions currently under development or available but unknown to the industry. The Challenge will provide innovators and entrepreneurs an opportunity to showcase their technologies, including potentially piloting their solution at a BC mine, and connect with leading stakeholders in the mining industry.

## 2. Mining in BC

Mining is integral to BC's economy, supporting 35,000 jobs, \$7.4 billion in GDP, and 24% of the province's exports while generating \$1.1 billion in direct payments to the government. Mining in BC is primarily a "homegrown" sector, with most of the major mines operated by BC-based or Canadian companies. Over time, this has led to BC becoming a leading global centre of mining excellence. BC mining companies have a long history of adopting innovative mining methods and creating new technologies that are used the world over. Today, innovation and the adoption of advanced technologies are increasingly necessary for mining companies to remain competitive.

Recognizing the important role mining plays in BC, the provincial government formed the Mining Jobs Task Force (MJTF) in 2018 to identify actions that would improve the sector's competitiveness, support job creation and socio-economic development, promote innovation and environmental best practices, and advance economic reconciliation with Indigenous peoples. The Task Force recommended the development of a Mining Innovation Roadmap. The Roadmap was released in March 2021 and offers a pathway for British Columbia to become Canada's leader in mining innovation, commercialization and adoption of step-change innovation to attract investment, create new jobs, and position BC mining for the future.

### 3. Mining Innovation Challenge: Reducing Water Use - Background

The Ministry of Energy, Mines and Low Carbon Innovation (EMLI) funded the Roadmap's development. One of the activities to support the roadmap's implementation is the Mining Innovation Challenge: Reducing Water Use. The objective of the Challenge is to identify an innovative solution for reducing water use intensity in mining operations. It is expected that the solution identified through this Challenge process will deliver a material improvement in the environmental performance of the mining industry. There may also be an opportunity for piloting the chosen solution.

The Challenge is being launched by the Mining Association of BC (MABC) in partnership with Foresight Canada as the Challenge Coordinator. This Challenge is being conducted with support from the Government of British Columbia, Natural Resources Canada, Newcrest Mining, Teck Resources, Natural Resources Canada, and PricewaterhouseCoopers Canada, as well as ecosystem partners Global Mining Guidelines Group and the Bradshaw Research Initiative in Minerals and Mining (BRIMM) at the University of British Columbia.

Sourcing innovation through the Challenge will benefit BC's mining industry, as it will allow it to collaborate with innovators and identify potential solutions from experts who may not regularly work alongside the mining sector. Rapid adoption of innovation will ensure that BC's mining industry continues to play a leadership role in providing the minerals and metals the world needs to transition to a low carbon future, operate sustainably and safely, and advance economic reconciliation with Indigenous peoples. This will also enable BC mining to attract more investment, create and protect local jobs, and reach its potential as a leading mining jurisdiction.

#### 3.1 Need for the Challenge

The mining industry uses a large quantity of water through the mill, mineral processing, and tailings processes. This water needs to be sourced, stored and treated.

In light of the increasing physical and material risks associated with water, there is a need to identify innovative solutions that can help the industry improve water use. While this will improve the environmental performance of the industry, it will also enable it to share its learning with other sectors reliant on water. The challenge specifically seeks technology solutions that can help BC's

mining industry reduce the intensity of water use in its operations. The scope of this Challenge does not include opportunities related to existing “business as usual” technologies or technologies that do not provide economic, environmental, and public benefits.

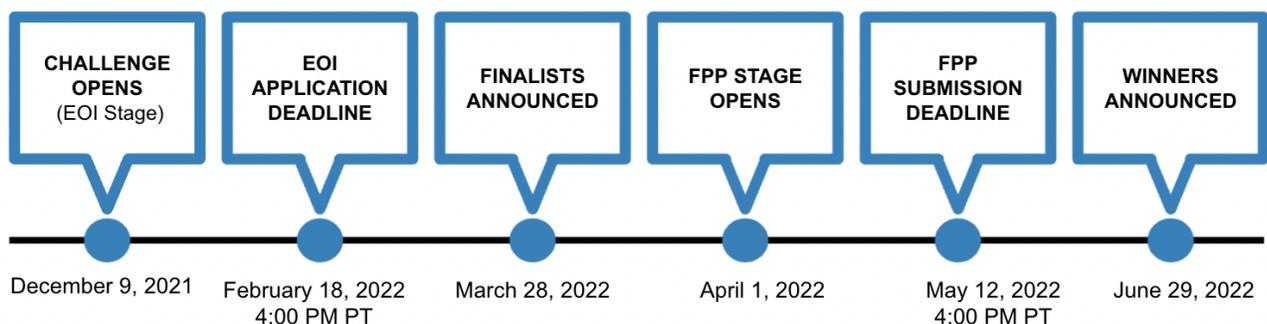
#### 4. General Information

- 4.1. **Prize:** The MABC Mining Innovation Challenge: Reducing Water Use prize will be a single award of \$150,000 and the potential opportunity to pilot their innovation at a BC mine. The award will be made at the sole discretion of MABC.
- 4.2. **Application process:** All proposals submitted in this Challenge will be evaluated through a competitive two-stage judging process: the Expression of Interest (EOI) stage and the Full Project Proposal (FPP) stage. Details about the stages can be found in Section 5 of this document.

All proposals submitted to this Challenge must demonstrate a clear and justifiable value addition to the mining industry.

#### 4.3. Challenge Timeline

The expected timeline of the challenge is as follows:



#### 4.4. Eligibility

- This Challenge is open to all categories of applicants and project collaborators, including technology developers, academic institutions, research laboratories, small and medium-sized enterprises (SME), and multinational enterprises.
- The applicant is an incorporated entity either in Canada or in the country where they are headquartered.
- The proposed solution must be unique and align with the Challenge topic.
- The proposed solution must be between Technology Readiness Level (TRL) 6 (pilot phase) and TRL 9 (first-of-a-kind commercial implementation stage). Read more about [Technology Readiness Levels](#).

#### 5. Terms and Conditions

##### 5.1. Stage 1: Registration and Expression of Interest (EOI) submission

In order to participate, applicants must register on the [Challenge website](#). Once registered, applicants must use the submission template provided to enter relevant information about their proposed solution. All EOIs must be in English, and must adhere to the requirements specified in the various sections of the online form (including the requisite letters/attachments to support the submission). EOIs not respecting the requirements may be rejected.

The deadline for EOI submission is **4pm PT, February 18, 2022**. All EOIs will be submitted through the Challenge website. Any submissions made after the deadline will not be accepted. Applicants are encouraged to complete their submissions well in advance of the deadline. Partial or incomplete submissions will not be eligible for review. All required content must be uploaded and entered into the [Challenge platform](#) and the submission must be finalized by completing all necessary online steps in order for the EOI to be considered complete before the deadline. Applicants will receive an email confirming receipt of a complete EOI upon submission.

## 5.2. Evaluation Criteria

All eligible and complete submissions will be evaluated on the following criteria:

### 1. Technical Excellence (30%)

Applications will be evaluated on the overall strengths, novelty, and technical feasibility of the technology and its alignment with the objectives of the challenge.

### 2. Innovation (20%)

Applications will be evaluated on the merits of the technology relative to existing/similar solutions currently available. The applications should outline the benefits expected to be delivered by the technology to BC's mining industry (and possibly other sectors).

### 3. Additional Impact (15%)

Applications should highlight the technology's potential impact during/after implementation on job creation, environmental indicators, and any social and economic indicators.

### 4. Resources and Implementation (35%)

Applications will be evaluated on the quality of the project implementation plan, including its viability, the proposed timeline, financing plan, and the capacity of the development team. Any other resources (financial and non-financial) required to advance the technology should be included.

Only the specified information requested in each section of the EOI will be reviewed. Any links to additional material or information submitted outside of the application form will not be considered during the evaluation. All applications will be reviewed by an independent panel of experts. Throughout the competition, fairness and transparency will be ensured by PricewaterhouseCoopers Canada as an independent and impartial observer.

All applicants who submit an EOI through this Challenge will be notified of MABC's decision when the EOI review process is complete. Project-specific feedback will not be provided for unsuccessful applicants at the EOI Stage.

This is a highly competitive process, and not all applications will be shortlisted to enter the final stage. Success at the EOI stage depends on the quality of the application submitted. Only the highest quality applications will be invited to the final stage. In this context, quality means both the quality of the proposed technology relative to the evaluation criteria and the quality of the written proposal including clarity, completeness, and comprehension.

### **5.3. Final Stage: Full Project Proposal (FPP)**

Applicants whose EOIs are well aligned with the objective(s) of the Challenge and score highly on the evaluation criteria will be invited to submit a detailed Full Project Proposal (FPP). Further information regarding FPP submission will be made available when FPP invitations are made.

### **5.4. Confidentiality**

All information provided by the applicants will be used by Foresight, MABC, and the Challenge judges to conduct the Challenge. Confidential information that is collected, used, or disclosed by Foresight will be handled in a manner that recognizes both the right of the individual to have his/her/their confidential information protected and the need of Foresight to collect, use, and disclose such information for the purposes of determining the Challenge winners and ensuring a fair process.

For the purposes of marketing the Challenge and other associated activities, Foresight will request a non-confidential project description from the applicants. As the Challenge Coordinator, Foresight will receive EOIs and FPPs from applicants during this Challenge. Foresight operates under the following jurisdictions:

- The Federal Personal Information Protection and Electronic Documents Act, S.C. 2000, ch.5 (“PIPEDA”);
- British Columbia’s Personal Information Protection Act, S.B.C. 2003, ch. 63 (“PIPA BC”);
- British Columbia’s Freedom of Information and Protection of Privacy Act (“FIPPA BC”);

In the context of this competition, intellectual property (IP) means all the intellectual property rights which are owned by the applicant. These include any intellectual or industrial rights (including a patent, copyright, trademark, design, rights in confidential information) granted under any laws

anywhere in the world. The applicant will retain ownership of their intellectual property. Nothing in this guide assigns, transfers, or affects the intellectual property ownership rights of the applicant not created for the competition.

Applicants must use the data and information provided in this guide for the purpose and duration of the Challenge.

## 6. Contact

If you have any questions regarding this Challenge, please send them to:  
[BCminingchallenge@foresightcac.com](mailto:BCminingchallenge@foresightcac.com)