Alberta Innovates
Energy and Environment Solutions

Call for Expressions of Interest

Next Generation Energy Storage Technologies

Accelerating the Deployment of Intermittent Renewable Electricity in Alberta

Deadline for EOI Submission:
January 29, 2015, 4:30 PM MST (UTC-7h)

1 Introduction

Alberta Innovates -- Energy and Environment Solutions (AI-EES) is the lead agency advancing energy and environmental technology innovation in Alberta. AI-EES serves as a catalyst for the development of innovative, integrated ways to convert Alberta's natural resources into market-ready, environmentally responsible energy and the sustainable management of Alberta's water resources. www.ai-ees.ca

1.1 Background

Alberta has strong wind and solar energy resources. Developing these resources offers a great opportunity to reduce provincial greenhouse gas emissions and provide long-term sustainable energy. However, solar and wind energy are intermittent by nature, and the most promising resources in Alberta are largely concentrated in certain regions of the province. This creates challenges for increasing the deployment of renewable energy to augment fossil fuel production and consumption in a significant way. This initiative is designed to help enable broader utilization of intermittent renewable energy by developing energy storage technologies well-suited for Alberta's interconnected electric system.

1.2 Objective

The objective of this call for proposals is to identify the most promising energy storage solutions for integration of intermittent renewable electricity, and develop those technologies toward grid-scale deployment in Alberta.

1.3 Focus

This call for proposals is seeking technology solutions with the greatest potential to offer economically-viable bulk energy storage on Alberta's interconnected electricity grid. The call is not limited to particular technology types, but is focussed on technologies with the following characteristics:

- **High round-trip efficiency**: including electricity stored and all other energy inputs
- **Scalability**: ability to offer storage at the multi-MW scale
- **High storage capacity**: ability to store multiple hours of energy
- **High cycle life**: long lifetime with minimal performance degradation
- **Low cost**: including capital operating costs

1.4 Scope

The scope of this call for proposals includes projects of the following types:

- Lab- and bench-scale proof-of-concept demonstration
- Prototype development and testing
- Small-scale field pilot and demonstration
- Feasibility analysis, front-end engineering design (FEED), and pre-FEED studies

2 Terms of Funding

2.1 Total Funds Available

The total funding available for projects supported through this call for proposals is up to $2 million Canadian Dollars (CAD), subject to the discretion of AI-EES and availability of funds.

2.2 Cost Sharing

The maximum AI-EES contribution to any project in this call will be $250,000 CAD over the life of the project, and will support no more than seventy five percent (75%) of the project's eligible expenses. AI-EES will only match contributions to the project's eligible expenses. AI-EES will not match tax incentives associated with the project (e.g. Canadian SR&ED credits), revenue from sales of the project's end-products (e.g. from offtake agreement), or in kind contributions. Greater financial leverage is preferred.

Note: Applicants must justify the amount of funding requested. AI-EES may choose at its sole discretion to award project funding for less than the requested amount.

2.3 Eligible Expenses

Category	Eligible Expenses
Personnel – Project team	• Time spent by personnel working directly on project tasks included in the scope of work, including internal staff, consultants, sub-contractors, students, technicians, and support staff.
Travel[1]	• Travel undertaken directly related to project activities, including: ○ Personnel transportation ○ Presentations or discussions with project with stakeholders ○ Information dissemination purposes
Capital Assets/Equipment	• Equipment and capital assets required for completion of the project, excluding non-depreciating assets (e.g. land purchase).
Supplies	• Materials and supplies directly required for completion of the project.
Communication, Dissemination	• Communicating to knowledge partners, funders, etc. • Cost of publishing project results and learnings, if appropriate

[1] **Note**: Travel will be reimbursed based on current Government of Alberta travel and subsistence policies

2.4 Project Term

The maximum length for projects funded under this call for proposals is **two** (2) years.

2.5 Eligibility

Expressions of interest will be accepted from qualified researchers, technology developers, and project developers within academic institutions, R&D organizations, private industry (including consulting

organizations and industry associations), government centres (federal, provincial, municipal), and not-for-profit organizations.

2.6 Project Initiation

Projects may commence at any time after the date on which the Applicant is notified that the project has been approved by the AI-EES Board of Directors. However, no disbursements will be made prior to the execution of a contribution agreement. Project costs incurred prior to receiving approval notification will not be considered eligible project costs. Furthermore, project costs incurred prior to execution of the contribution agreement will not be reimbursed by AI-EES in the event that an agreement is not executed.

2.7 Project Location

Proposals will be accepted from anywhere globally. However, applicants must demonstrate that the technology is applicable and well-suited for grid-scale energy storage on Alberta's interconnected electric system. In addition, applicants must demonstrate how the technology will be transferred to Alberta during or after the project and how it will be implemented for the benefit of Alberta.

2.8 Contribution Agreement

Successful Proponents will have ninety (90) days after receiving notice of funding approval to enter into a contribution agreement with AI-EES. The contribution agreement will address the project scope, work plan, milestones, deliverables, performance targets, payment schedule, reporting requirements, budget and schedule, and any other appropriate aspects of the project.

3 Submission Process

This call for proposals is a two-stage process involving an expression of interest (EOI) stage, and a full project proposal (FPP) stage. The instructions provided in this document relate to the EOI stage. Applicants whose EOIs are rated highly, determined to be of sufficient quality, and are well aligned with this call for proposals will be invited to submit a full project proposal. Further information regarding FPP submission will be made available at the time the shortlist invitations are made. Applicants whose proposals are not short-listed for FPP invitation will be notified when the EOI review process is completed.

3.1 Call for Proposals Schedule

The following timelines are anticipated for the call for proposals process:

Action	By Whom	Date
EOI Submission Deadline	Applicants	January 29, 2015
EOI Short List Notification	AI-EES	February 26, 2015
FPP Submission Deadline	Applicants	April 9, 2015
FPP Funding Approval	AI-EES	May 26, 2015

3.2 Submission Deadline

The deadline for submission of EOIs in response to this call for proposals is **Thursday, January 29, 2015, at 4:30:00 PM Mountain Standard Time (UTC-7h)**. Late submissions will not be accepted.

3.3 Submission Standards and Content

Applicants must use the EOI application form provided on the AI-EES website at www.ai-ees.ca to complete their submission. The finalized EOI application must be no more than eight (8) letter-sized pages in length, including all text, graphics, tables, title page, and signatures (including all portions of the original template). **Extra pages will not be considered by the evaluation team**. The document must use a minimum 12-point font, 1.0 line spacing, and 2.54 cm (1") margins.

Applicants must provide all of the information requested in the application form, including general project information, a response to each of the evaluation criteria, and complete budget and financing information. Applications may be screened out if incomplete information is provided.

Note: Each evaluation criterion has been assigned a relative weighting. Applicants are encouraged to provide the most content and effort toward the highest-weighted criteria.

3.4 Submitting the Application

Completed applications must be sent electronically in the original Word format (without signature) to Mark Summers at mark.summers@albertainnovates.ca. In addition, a printed hard copy of the completed application must be signed by an appropriate authorized representative and mailed to the address provided in the application form.

4 Evaluation

4.1 Evaluation Criteria

EOIs will be evaluated based on the following criteria.

Criterion	Description	Criteria Weighting
Project Opportunity	The strength of the proposed opportunity, including: • Overall project objectives and expected outcomes • Scope of work for the project • Expected advancement over the course of the project • Anticipated next steps after project completion • How the technology will be implemented in Alberta, including anticipated timelines	25%
Energy Storage Technology	The strength of the technology for energy storage, including: • The scientific basis for the technology • Round-trip efficiency • Scalability • Power and storage capacity • Cycle life • Expected capital and operating cost • Ramping and charge/discharge characteristics	25%
Suitability for Alberta	How well suited the technology is for deployment in Alberta, including: • Compatibility with Alberta's existing electric grid infrastructure • Compatibility with Alberta's market-based electricity system • Compatibility with Alberta's year-round climate • Siting requirements (e.g. geographic or locational constraints)	25%
Project Team	How well suited and how committed the project team is to carry out the proposed work and further advance toward commercial implementation in Alberta	15%
Project Budget and Financing	The strength of the project budget and financing, including: • How well developed and realistic the budget is • How well justified the funding request to AI-EES is • Committed and applied for funding from the applicant, project partners, and other sources	10%

4.2 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 submission. Only high-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.).

5 Intellectual Property

Intellectual property will be addressed through the contribution agreement negotiated between AI-EES and the successful Applicant, and will be specific to the circumstances of each project. However, a few general principles apply:

- Background IP (patents, copyright, software) and third-party technology remains with its original owner(s).
- AI-EES retains unlimited rights to the project research results, that is, the technical data, reports, analysis, discussion, and analysis of the reports. These results will normally be made publicly available at the conclusion of a confidentiality period.
- Project technology (based on patent disclosures) developed as a part of the co-funded activities will be owned by the applicant and project partners (in accordance with intellectual property arrangements made between the applicant and any project partners).

6 Confidentiality

AI-EES is committed to keeping application details confidential and is subject to the protection and disclosure provisions of the Freedom of Information and Protection of Privacy (FOIP) Act. External experts participating as reviewers must sign a confidentiality agreement.

Personal information is collected pursuant to Section 33(c) of the Freedom of Information and Protection of Privacy Act as it relates directly to and is necessary for the call for proposals. Should you have any questions about the collection of this information, you may contact Alice Barr, Director, Strategic Planning and Operations, Alberta Innovates – Energy and Environment Solutions (AI-EES), Suite 2540, 801 6th Avenue, SW, Calgary, Alberta, Canada T2P 3W2 (403)297-8650.