

**Invitation for an  
Expression of Interest  
Carbon Capture & Storage Demonstration Initiatives  
In Alberta**

July 2007

## 1. Part A – Purpose, Vision, Guiding Principles

### 1.1 Purpose

Alberta has one of the largest supplies of hydrocarbons in the world. Today, our energy and industrial sectors are facing their greatest challenges and opportunities. Alberta must reduce CO<sub>2</sub> emissions, maintain production from its maturing conventional oil and gas fields, develop new technologies to recover non-conventional oil and gas and produce more hydrogen for fuel cells and upgrading heavy oil. The best solution is to capture and use or geologically store CO<sub>2</sub> emissions from Large Final Emitters (LFEs).

Alberta has significant geological storage capacity and world-class CCS expertise. A concerted and coordinated effort is needed to develop suites of CCS technologies for evolving our fossil energy systems and infrastructure, from “developing” to “commercially attractive”, within 15 years. This was identified as a fundamental building block for action in Alberta's 2002 **Climate Change plan**. Through discussions with stakeholders to support the development of a **renewed Climate Change plan**, it is clear that the role of CCS is even greater. It not only provides an opportunity area for significant greenhouse gas emission reductions, but CCS is emerging as a key underpinning of a broader focus on clean and sustainable energy development.

The Alberta Energy Research Institute (AERI) focus is on supporting the development of key CCS technologies that would enable industry to capture its high-value CO<sub>2</sub> emissions and either use it either for enhanced energy production or geological storage, including better understanding CO<sub>2</sub> storage mechanisms, more reservoir characterization and modelling, ways to improve sweep efficiency, using CO<sub>2</sub> to maintain gas-over-bitumen reservoir pressure, better well design and near-wellbore injection processes and CO<sub>2</sub> storage in low-permeability reservoirs, heavy oil reservoirs, reservoirs less than 800 m in depth and saline aquifers.

### 1.2 Vision

**“Alberta is a leader in novel CO<sub>2</sub> capture, transportation and storage technologies which reduce the anthropogenic greenhouse gases emitted into the atmosphere and use the injected CO<sub>2</sub> to increase oil and gas recovery”.**

*AERI 2007-2012 Strategic Business Plan: Leading in Clean Energy Innovation*

In 2006, the Canadian CO<sub>2</sub> Capture and Storage technology roadmap<sup>1</sup> identified carbon capture and storage (CCS) as a key technological solution to the global climate change challenge. It stated, “*CCS is strategically important to Canada for several reasons. First and foremost, Canada is endowed with an abundance of fossil fuels... around which a very strong set of industry sectors already exist. Second, CCS is not simply about*

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<sup>1</sup> [http://www.nrcan.gc.ca/es/etb/cetc/combustion/co2trm/htmldocs/ccstrm\\_doc\\_e.html](http://www.nrcan.gc.ca/es/etb/cetc/combustion/co2trm/htmldocs/ccstrm_doc_e.html)

*enabling the use of existing energy reserves. It is also about increasing reserves through enhanced oil, natural gas and coal bed methane recovery. Third, reducing CO<sub>2</sub> emissions is a critical federal policy... Finally, Canadian researchers and energy industries are already recognized internationally".*

Recognizing this, the Government of Alberta, through AERI, is committed to supporting selected CCS initiatives in Alberta. In order to improve both the profitability and sustainability of Alberta's oil and gas operations, AERI considers it critical for industry, government, and research organizations to take a collaborative approach to accelerating CCS innovation.

AERI invites expressions of interest (EOI) from the private sector for a new initiative titled: "**Carbon Capture and Storage Demonstration Initiatives in Alberta**". Since the Alberta Department of Energy, under its Innovative Energy Technologies Program (<http://www.energy.gov.ab.ca/2858.asp>) provides royalty adjustments to CO<sub>2</sub> enhanced recovery pilot projects, such initiatives have been excluded.

Interested parties are invited to submit proposals, summarizing their investment interest and preferred participation model. The EOI should focus on specific projects, at specific sites, leading to **largescale demonstration** of novel CCS technologies and applications.

After an evaluation and selection process and subject to funds available, AERI would consider providing a portion of the eligible costs for CCS feasibility demonstration initiatives in Alberta, which may include the following:

- Geological and engineering assessments of CO<sub>2</sub> storage in depleted oil and gas reservoirs, deep saline aquifers, deep coal seams, underground coal gasification etc.;
- CCS opportunities in the Industrial Heartland, Fort McMurray, power corridors and other locations;
- The technical and economic barriers facing largescale CCS deployment in Alberta;
- Site-specific Front End Engineering Design studies for CO<sub>2</sub> capture and/or storage;
- Linking large stationary sources to geological storage sites.

### 1.3 AERI Program Goal

The 2012 goal is to support the development of key technologies that will enable a 25% reduction in greenhouse gas emissions per unit of energy produced. Technologies will be developed to use the captured carbon dioxide to increase oil and gas recovery and store in deep saline aquifers. The focus of this Expression of Interest is on CO<sub>2</sub> capture and/or storage.

### 1.4 Organization and Guiding Principles

The program is managed by AERI research managers, under the direction of the AERI Board of Directors. The process would be as follows:

- Interested parties are invited to submit Expression of Interest (EOI) proposals to AERI, using the guidelines in Section 2.1.
- The proposals will be screened by an Evaluation Committee and selected applicants will be invited to submit full applications, using the procedure and forms available at [http://www.aeri.ab.ca/sec/fun\\_opp/app\\_pro\\_001\\_1.cfm](http://www.aeri.ab.ca/sec/fun_opp/app_pro_001_1.cfm).
- The full applications would then be reviewed by the Evaluation Committee, who would make recommendations to the AERI Board of Directors. Final funding decisions would be made by the AERI Board of Directors.
- A government-industry cost-sharing formula would be developed for each selected project.

### **1.5 Intellectual Property (IP) Principles.**

- Background IP remains with its original owner(s).
- IP developed as part of the co-funded activities (“new IP”) would be owned by the private sector participants, with an obligation to commercialize the technology in Alberta within a specified period.
- If new IP is not commercialized within the specified period, it would be made available to other Alberta users under normal commercial licensing terms.

### **1.6 Confidentiality**

AERI is committed to keeping application details confidential. However, as a government entity, AERI is subject to the protection and disclosure provisions of the Freedom of Information and Protection of Privacy (FOIP) Act. Applicants’ rights as a third party are protected under the provisions of the protection of privacy sections of this Act. AERI is prohibited from disclosing personal or business information where disclosure would be harmful to an applicant’s business interests or would be an unreasonable invasion of personal privacy [*FOIP Act s. 15 and s. 16*].

Government of Alberta employees are required to take an oath that limits them from discussing any information gained during their employment with government. In addition, the Government of Alberta Employee Code of Ethics stresses that any information an employee receives in the course of their employment must remain confidential.

External experts that are asked to review a proposal sign a confidentiality form.

## 2. Part B - Guidelines for Submission of Expressions of Interest

Expressions of interest are invited from operating companies, process developers and licensors and other organizations wishing to participate in the AERI CCS program. The program could be of particular interest to companies planning future expansions and wishing to be early adopters of new CCS technologies.

The following steps and deadlines are envisioned:

- Expressions of Interest, using the guidelines in Section 2.1: **September 1, 2007.**
- Review of expressions of interest and follow up discussions with prospective applicants: **September 15, 2007.**
- Request for submission of full applications: **September 30, 2007.**
- Submission of formal proposals: **October 30, 2007.**
- Due diligence evaluation process, decision and informing applicants on funding decision: **December 15, 2007.**

### 2.1 Guidelines for Submission of Expressions of Interest

- **Length:** There is no length restriction but the initial Expressions of Interest are generally not expected to exceed *five (5) pages in length*. More details can be provided as appendices, if required.
- **Format:** Submissions are to be made electronically as a word document or PDF format. AERI will maintain the confidentiality of the material submitted. Facsimile or digital proposals will be accepted, in Word or PDF format. However, three signed original must also be sent. All materials and copies must be received by AERI by 4:30 pm, Alberta Time, September 1, 2007.
- The following **headings and topics** listed below are presented as a general guideline for the preparation of the EOI project description and represent some of the criteria that will be used to evaluate the submissions.
  - **Title of the proposed project:**
  - **Name, Address and Affiliation of the Principal Applicant(s):**
  - **Contact Information: Project Leader and key team members**
  - **Description of Interest:**
    - **Technology:** What is the main purpose of the proposed technology?
    - **Features and Benefits:** What are its key features and benefits?
    - **Competitive Analysis:** Is the technology innovative and superior to other proven or commercial CCS technologies? Please explain why.

- **Technical Viability & Readiness:** Is the technology sound from a technical perspective? What is its current stage of development? Is the technology commercially viable?
- **Economic Benefits:** Quantitatively estimate the economic benefits and impact, if the technology is used to its maximum potential in Alberta.
- **Environmental and Climate Change Benefits:** Quantitatively estimate the environmental and GHG-reduction benefits and impact, if the technology is used to its maximum potential in Alberta.
- **Project Deliverables and Schedule:** Identify key project milestones and key deliverables (other than a final report).
- **Total Budget:** What is the total (multi-year) budget for the proposed initiative? How much funding are you requesting from AERI?
- **Partners:** What restrictions, if any, are there to the participation of other private or public sector organizations?
- **Synergies:** Are there any synergies or improvements expected if optimally linked with other technologies?
- **Participation Model:** What is the participation model and criteria by which you would describe your preferred involvement?
- **Demonstration Site:** Is there an existing site with suitable infrastructure and support services or will the project require a new site?

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***Please submit letters of expression of interest to:***

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