

TITLE: HYDROGEN METABOLISM IN THE DEEP BIOSPHERE**1. Advance Contract Award Notice (ACAN)**

An ACAN is a public notice indicating to the supplier community that a department or agency intends to award a contract for goods, services or construction to a pre-identified supplier, thereby allowing other suppliers to signal their interest in bidding, by submitting a statement of capabilities. If no supplier submits a statement of capabilities that meets the requirements set out in the ACAN, on or before the closing date stated in the ACAN, the contracting officer may then proceed with the award to the pre-identified supplier.

2. Definition of the requirement

The Department of Natural Resources Canada (NRCan) has a requirement to conduct a study of hydrogen (H₂) metabolism by microbial populations in the context of hydrogen (H₂) storage in suitable geological formations. In particular, the interest is in understanding the governing fundamentals of H₂ metabolism in different reservoir types. Ultimately, the results should help guide the design and regulation of hydrogen (H₂) storage in geological formations (e.g. updating CSA [Canadian Standards Association] Z341). The initiative will provide insight to both policymakers and industry concerning the risks and requirements for the safe storage of H₂ across Canada.

The work will involve the following:

- i. How much is currently known about hydrogen (H₂) metabolism in oil reservoirs and salt caverns;
- ii. What enzymes for potential hydrogen (H₂) oxidation (i.e., hydrogenases) are present in these formations;
- iii. Are hydrogen-oxidizing populations viable and potentially active in proposed hydrogen (H₂) storage sites in Canada

3. Criteria for assessment of the Statement of Capabilities (Minimum Essential Requirements)

Any interested supplier must demonstrate by way of a statement of capabilities that it meets the following requirements:

- **Experience:** The Bidder's proposed resource MUST have a minimum of ten (10) years of experience conducting research related to subsurface microbiomes, 16S rRNA gene sequencing, metagenome sequencing, gene expression analysis, microbial studies in geological formations and hydrocarbon reservoirs demonstrated by providing ten (10)* scientific publications.

*Experience must be within the last twenty (20) years.

- **Knowledge and understanding:** The Bidder's proposed resource MUST have the experience and scientific background to contribute to the project advancement and publishing scientific papers. More specifically, they must have a proven track record in publishing high-quality peer-reviewed articles in the field of geomicrobiology, subsurface microbiomes, 16S rRNA gene sequencing, metagenome sequencing, gene expression analysis in geological formations.

The Bidder MUST have the facility to do genomic screening, 16S rRNA gene sequencing, design and plan analysis setting for microcosm incubations in order to estimate H₂ loss through omics-based assessments of the genes that are active during different parts of microcosm incubations, including especially any H₂ losses that take place. This will isolate the genes responsible, enabling more targeted future genomic screening of prospective storage sites demonstrated* by providing a description of their facility **OR** by providing a copy of published research findings using their facility.

- **Academic qualifications:** The Bidder's proposed resource **MUST** have a Doctor of Philosophy (Ph.D.) degree in microbiology or biology, life sciences, or genomic studies, demonstrated by providing proof of education* (copy of the degree).

*The list of recognized organizations can be found on the Canadian Information Centre for International Credentials website: <http://www.cicic.ca/2/home.canada>;

4. Applicability of the trade agreement(s) to the procurement

This procurement is subject to the following trade agreement(s) :

- Canadian Free Trade Agreement (CFTA)
- Canada-Chile Free Trade Agreement (CCFTA)
- Canada-Colombia Free Trade Agreement
- Canada-Honduras Free Trade Agreement
- Canada-Korea Free Trade Agreement
- Canada-Panama Free Trade Agreement

5. Justification for the Pre-Identified Supplier

The supplier mentioned in section 10 below is the only known supplier that meets the mandatory criteria set out in section 3 above.

Should Canada receive a statement of capabilities from a supplier that contains sufficient information to indicate that it meets the requirements set forth in this ACAN, a competitive process will be triggered with a technical and financial evaluation methodology of the bids proposed by the potential bidders.

6. Government Contracts Regulations Exception(s)

The following exception(s) to the *Government Contracts Regulations* is (are) invoked for this procurement under subsection:

6(d) - only one person is capable of performing the work).

The identified supplier, the University of Calgary, is the only one able to meet all of the criteria identified in paragraph 3 above.

7. Exclusions and/or Limited Tendering Reasons

The following exclusion(s) and/or limited tendering reasons are invoked under the:

- Canadian Free Trade Agreement (CFTA) – Article: 513.1(b) (iii);
- Canada-Chile Free Trade Agreement (CCFTA) – Article(s) Kbis-09 (b), Article Kbis-09 (c)

- Canada-Colombia Free Trade Agreement – Article(s): 1409 (b) (iii);
- Canada-Honduras Free Trade Agreement – Article(s): 17.11 2 (b) (iii)
- Canada-Korea Free Trade Agreement – Article 14.3, Under the Revised GPA - Article XIII, 1 (b) (iii);
- Canada-Panama Free Trade Agreement – Article(s) 16.10 (b) (iii)

8. Ownership of Intellectual Property

- Ownership of any Foreground Intellectual Property arising out of the proposed contract will vest in the Contractor.

9. Period of the proposed contract or delivery date

- The proposed period of contract is from the date of contract award to March 31, 2023, inclusive of three additional one-year option periods.

10. Cost estimate of the proposed contract

The estimated value of the contract including options is \$140,000.00 (GST/HST extra).

11. Name and address of the pre-identified supplier

Department of Biology, University of Calgary
Address: 5th floor, EEEL building,
750 Campus Drive NW, University of Calgary
Calgary Alberta T2N 1N4

12. Suppliers' right to submit a statement of capabilities

Suppliers who consider themselves fully qualified and available to provide the goods, services or construction services described in the ACAN may submit a statement of capabilities in writing to the contact person identified in this notice on or before the closing date of this notice. The statement of capabilities must clearly demonstrate how the supplier meets the advertised requirements.

13. Closing date for a submission of a statement of capabilities

The closing date and time for accepting statements of capabilities is January 3, 2023 at 16:00 EST.

14. Inquiries and submission of statements of capabilities

Inquiries and statements of capabilities are to be directed to:

Name: Nidhi Nigam
Title: Procurement Specialist
Organization: Natural Resources Canada
Address: 5320 122 St NW
Edmonton, AB, T5H 3S5
Telephone: (587) 337-3877
E-mail address: Nidhi.Nigam@NRCan-RNCan.gc.ca