ADVANCE CONTRACT AWARD NOTICE (ACAN)

NRCan- 5000078945

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

Conducting theoretical modeling simulations on addressing corrosion and materials technology challenges under supercritical CO2 pipeline transportation and permanent storage

The Department of Natural Resources Canada (NRCan) has a requirement to provide fundamental theoretical modeling simulations service (particularly ab initio molecular dynamics modeling simulation) to clarify the physical and chemical properties of supercritical CO2 (s-CO2) streams with different aggressive impurities and predict how the s-CO2 steams interact with the pipeline steels with various microstructures and defects. This service shall support an NRCan research group to fill fundamental knowledge gaps on the development of national s-CO2 transportation and storage standards.

The work will involve the following:

(1) conducting comprehensive literature review on the influence of NOx impurity on the corrosion under high pressure s-CO2 transportation and storage conditions and previous theoretical modeling works (e.g., DFT and MD calculation) in the s-CO2 environments.

(2) performing theoretical modeling simulations to figure out the physical and chemical properties of s-CO2 with typical impurities (including H2O, O2, NOx and their mixtures). In this contract, the s-CO2 transportation and storage condition (45 °C and 8-15 MPa) must be considered in the simulations to clarify the roles of impurities in terms of altering the properties of s-CO2 and the variation of s-CO2 properties with pressure.

(3) modeling and predicting the interaction of the s-CO2 streams with various combinations of H2O, O2, and NOx impurities with X65 pipeline steel. In this task, the dynamic adsorption, and reactions of the s-CO2 streams on X65 steel surface must be simulated and predicted under a typical condition of 45 °C and 10 MPa.

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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:

More than ten (10) years of experience on atomistic modeling simulations associated with exploring process chemical mechanisms. The interested supplier must demonstrate this by providing related projects and/or scientific publications completed in the past 15 years from the closing date as reference in section #11, in addition to its statement of capabilities.

Knowledge and understanding of:

Must have knowledge of molecular calculation and simulations, and comprehensive understanding of the chemical and physical properties of CO2, especially those of high-pressure supercritical CO2.

4. Applicability of the trade agreement(s) to the procurement Justification for the Pre-Identified Supplier

The supplier mentioned in section 13 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.

5. 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, **University of Alberta**, is the only one able to meet all the criteria identified in paragraph 3 above.

6. Ownership of Intellectual Property

Canada intends to retain ownership of any Foreground Intellectual Property arising out of the proposed contract on the basis that the main purpose of the contract is to generate knowledge and information for public dissemination.

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7. Period of the proposed contract or delivery date

The proposed contract is for a period of 1 year from date of contract award.

8. Cost estimate of the proposed contract

The estimated value of the contract, including option(s), is $70,000.00 (GST/HST extra).

9. Name and address of the pre-identified supplier:

University of Alberta
Department of Chemical and Materials Engineering.
9211-116 Street NW.
Edmonton, Alberta, Canada T6G 1H9

10. 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.

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

The closing date and time for accepting statements of capabilities is **January 23, 2024.**

12. Inquiries and submission of statements of capabilities are to be directed to:

Procurement Authority:	Nadine Gudbranson
Address:	580 Booth Street. Ottawa, ON. K2K 2S2
Telephone:	(343) 543-7068
E-mail:	nadine.gudbranson@nrcan-rncan.gc.ca