



Return Bids to:
Natural Resources Canada
Bid Receiving

See herein for bid submission instructions

Request for Proposal (RFP)

Proposal To: Natural Resources Canada

We hereby offer to sell to His Majesty the King in right of Canada, in accordance with the terms and conditions set out herein, referred to herein or attached hereto, the goods, services, and construction listed herein and on any attached sheets at the price(s) set out therefor.

Comments

Issuing Office
Natural Resources Canada
Finance and Procurement Management Branch
580 Booth Street
Ottawa, ON K1A 0E4

Title Impact of hydrogen on steel casing and tubing	
Solicitation No. NRCan- 5000081939	Date June 14, 2024
Requisition Reference No. 181202	
Solicitation Closes At 2 p.m. Eastern Daylight Savings Time (EDT) On July 15, 2024	
Address Enquiries to: mathieu.cousineau@nrca-nrcan.gc.ca	
Telephone No. 343-541-6107	
Destination – of Goods and Services: CanmetMATERIALS Natural Resources Canada 183 Longwood Road South Hamilton, ON L8P 0A5	
Security: THERE ARE NO SECURITY REQUIREMENTS ASSOCIATED WITH THIS REQUIREMENT.	
Vendor/Firm Name and Address Telephone No.: Email – Courriel :	
Name and Title of person authorized to sign on behalf of Vendor/Firm (type or print) <hr/>	
Signature	Date

**TABLE OF CONTENTS**

PART 1 - GENERAL INFORMATION	4
1.1 INTRODUCTION	4
1.2 SUMMARY	4
1.3 DEBRIEFINGS	4
PART 2 - BIDDER INSTRUCTIONS.....	5
2.1 STANDARD INSTRUCTIONS, CLAUSES AND CONDITIONS	5
2.2 SUBMISSION OF BIDS	6
2.3 FORMER PUBLIC SERVANT	7
2.4 ENQUIRIES - BID SOLICITATION	8
2.5 APPLICABLE LAWS	8
2.6 IMPROVEMENT OF REQUIREMENT DURING SOLICITATION PERIOD	8
2.7 BASIS FOR CANADA'S OWNERSHIP OF INTELLECTUAL PROPERTY	8
2.8 BID CHALLENGE AND RECOURSE MECHANISMS	9
PART 3 - BID PREPARATION INSTRUCTIONS	10
3.1 BID PREPARATION INSTRUCTIONS.....	10
PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION	12
4.1 EVALUATION PROCEDURES	12
4.2 BASIS OF SELECTION	12
PART 5 - CERTIFICATIONS AND ADDITIONAL INFORMATION.....	13
5.1 CERTIFICATIONS REQUIRED WITH THE BID	13
5.2 CERTIFICATIONS PRECEDENT TO CONTRACT AWARD AND ADDITIONAL INFORMATION.....	14
PART 6 - SECURITY, FINANCIAL AND OTHER REQUIREMENTS	16
6.1 SECURITY REQUIREMENTS	16
PART 7 - RESULTING CONTRACT CLAUSES	17
7.1 STATEMENT OF WORK	17
7.2 STANDARD CLAUSES AND CONDITIONS	17
7.3 SECURITY REQUIREMENTS	17
7.4 TERM OF CONTRACT.....	17
7.5 AUTHORITIES.....	18
7.6 PROACTIVE DISCLOSURE OF CONTRACTS WITH FORMER PUBLIC SERVANTS.....	19
7.7 PAYMENT.....	19
7.8 INVOICING INSTRUCTIONS.....	19
7.9 CERTIFICATIONS AND ADDITIONAL INFORMATION	20
7.10 APPLICABLE LAWS	20
7.11 PRIORITY OF DOCUMENTS.....	20
7.12 INSURANCE - NO SPECIFIC REQUIREMENT	20
7.13 DISPUTE RESOLUTION	20
ANNEX "A" - STATEMENT OF WORK.....	21
ANNEX "B" - BASIS OF PAYMENT	25
APPENDIX "1" - EVALUATION CRITERIA	26
APPENDIX "2" - FINANCIAL BID PRESENTATION SHEET	28



The Articles contained in this document are mandatory in their entirety, unless otherwise indicated. Acceptance of these Articles, in their entirety, as they appear in this document, is a Mandatory requirement of this RFP.

Suppliers submitting a proposal containing statements implying that their proposal is conditional on modification of these clauses or containing terms and conditions that purport to supersede these clauses or derogate from them will be considered non-responsive.

Bidders with concerns regarding the provisions of the Bid Solicitation document (including the Resulting Contract Clauses) should raise such concerns in accordance with the Enquiries provision of this RFP.

By signing its bid, the bidder confirms that they have read the entire bid solicitation including the documents incorporated by reference into the bid solicitation and certifies that:

1. The Bidder considers itself and its proposed resources able to meet all the mandatory requirements described in the bid solicitation;
2. This bid is valid for the period requested in the bid solicitation;
3. All the information provided in the bid is complete, true and accurate; and
4. If the Bidder is awarded a contract, it will accept all the terms and conditions set out in the resulting contract clauses included in the bid solicitation.



PART 1 - GENERAL INFORMATION

1.1 Introduction

The bid solicitation is divided into seven parts plus attachments and annexes, as follows:

- Part 1 General Information: provides a general description of the requirement;
- Part 2 Bidder Instructions: provides the instructions, clauses and conditions applicable to the bid solicitation;
- Part 3 Bid Preparation Instructions: provides Bidders with instructions on how to prepare their bid;
- Part 4 Evaluation Procedures and Basis of Selection: indicates how the evaluation will be conducted, the evaluation criteria that must be addressed in the bid, and the basis of selection;
- Part 5 Certifications and Additional Information: includes the certifications and additional information to be provided;
- Part 6 Security, Financial and Other Requirements: includes specific requirements that must be addressed by Bidders; and
- Part 7 Resulting Contract Clauses: includes the clauses and conditions that will apply to any resulting contract.

The Annexes include the Statement of Work, the Basis of Payment any other annexes.

1.2 Summary

By means of the RFP, Natural Resources Canada (NRCan) is seeking proposals from bidders to study the impact of hydrogen on steel casing and tubing materials for hydrogen production by in-situ gasification and hydrogen storage in geological formations.

- 1.2.1** This bid solicitation allows bidders to use the CPC Connect service provided by Canada Post Corporation to transmit their bid electronically. Bidders must refer to Part 2 entitled Bidder Instructions, and Part 3 entitled Bid Preparation Instructions, of the bid solicitation, for further information.

1.3 Debriefings

Bidders may request a debriefing on the results of the bid solicitation process. Bidders should make the request to the Contracting Authority within fifteen (15) working days from receipt of the results of the bid solicitation process. The debriefing will be done in writing, by email.



PART 2 - BIDDER INSTRUCTIONS

2.1 Standard Instructions, Clauses and Conditions

All instructions, clauses and conditions identified in the bid solicitation by number, date and title are set out in the [Standard Acquisition Clauses and Conditions Manual](https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual) (<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>) issued by Public Works and Government Services Canada.

Bidders who submit a bid agree to be bound by the instructions, clauses and conditions of the bid solicitation and accept the clauses and conditions of the resulting contract.

The [2003](#) (2023-06-08) Standard Instructions - Goods or Services - Competitive Requirements, are incorporated by reference into and form part of the bid solicitation.

- **In the complete text content (except Section 1 and 3)**
Delete: Public Works and Government Services Canada” and “PWGSC”
Insert: “Natural Resources Canada.” and “NRCan”
- **At 02 Procurement Business Number:**
Delete: “Suppliers are required to”
Insert: “It is suggested that suppliers”
- **At 08 Transmission by facsimile or by Canada Post Corporation's (CPC) Connect service, article 1:**
Delete: in its entirety
- **At 08 Transmission by facsimile or by Canada Post Corporation's (CPC) Connect service, article 2a:**
Delete: : The only acceptable email address to use with CPC Connect for responses to bid solicitations issued by PWGSC headquarters is: [tpsgc.pareceptiondessaoumissions-
apbidReceiving.pwgsc@tpsgc-pwgsc.gc.ca](mailto:tpsgc.pareceptiondessaoumissions-
apbidReceiving.pwgsc@tpsgc-pwgsc.gc.ca). or, if applicable, the email address identified in the bid solicitation.
Insert: The only acceptable email address to use with CPC Connect for responses to bid solicitation issued by NRCan is: procurement-appvisionnement@NRCan-RNCan.gc.ca
- **At 08, Transmission by facsimile or by Canada Post Corporation's (CPC) Connect service, article 2b:**
Delete: “six business days”
Insert: “five business days”
- **At 20, Further information, article 2b:**
Delete: in its entirety

Subsection 5.4 of [2003](#), Standard Instructions - Goods or Services - Competitive Requirements, is amended as follows:

Delete: 60 days

Insert: 180 days



2.2 Submission of Bids

Bidders must submit all proposals using the Canada Post Canada (CPC) Connect service. Given the current constraints on NRCan's networks, the electronic mail system has a limit of 1GB per single message received and a limit of 20GB per conversation.

Bids must be submitted no later than the date and time indicated on page 1 of the bid solicitation.

Only bids submitted using CPC Connect service will be accepted.

At least five (5) business days before the bid solicitation closing date, it is necessary for the Bidder to send an email requesting to open CPC Connect conversation to the following address:

procurement-approvisionnement@NRCan-RNCan.gc.ca

Note 1: Bids will not be accepted if e-mailed directly to this address. This e-mail address is to be used to open CPC Connect conversation, as detailed in the Standard Instructions [2003 \(article 08, paragraph 2\)](#), or to send bids through CPC Connect message if the bidder is using its own licensing agreement for CPC Connect.

Note 2: Send as early as possible in order to ensure a response, Requests to open a CPC Connect conversation received after that time may not be answered.

IMPORTANT: It is requested that you write the bid solicitation number in "Subject" of the email:

NRCan-5000081939 - Impact of Hydrogen on Steel Casing and Tubing

NRCan will not assume responsibility for proposals directed to any other location.

The onus is on the Bidder to ensure that the bid is submitted correctly using CPC Connect service. Not complying with the instructions may result in NRCan's inability to ascertain reception date and/or to consider the bid prior to contract award. Therefore, NRCan reserves the right to reject any proposal not complying with these instructions.

Due to the nature of the bid solicitation, bids transmitted by email, mail or facsimile to NRCan will not be accepted.



2.3 Former Public Servant

Contracts awarded to former public servants (FPS) in receipt of a pension or of a lump sum payment must bear the closest public scrutiny and reflect fairness in the spending of public funds. In order to comply with Treasury Board policies and directives on contracts awarded to FPS, bidders must provide the information required below before contract award. If the answer to the questions and, as applicable the information required have not been received by the time the evaluation of bids is completed, Canada will inform the Bidder of a time frame within which to provide the information. Failure to comply with Canada's request and meet the requirement within the prescribed time frame will render the bid non-responsive.

Definitions

For the purposes of this clause, "former public servant" is any former member of a department as defined in the [Financial Administration Act](#), R.S., 1985, c. F-11, a former member of the Canadian Armed Forces or a former member of the Royal Canadian Mounted Police. A former public servant may be:

- a) an individual;
- b) an individual who has incorporated;
- c) a partnership made of former public servants; or
- d) a sole proprietorship or entity where the affected individual has a controlling or major interest in the entity.

"lump sum payment period" means the period measured in weeks of salary, for which payment has been made to facilitate the transition to retirement or to other employment as a result of the implementation of various programs to reduce the size of the Public Service. The lump sum payment period does not include the period of severance pay, which is measured in a like manner.

"pension" means a pension or annual allowance paid under the [Public Service Superannuation Act](#) (PSSA), R.S., 1985, c. P-36, and any increases paid pursuant to the [Supplementary Retirement Benefits Act](#), R.S., 1985, c. S-24 as it affects the PSSA. It does not include pensions payable pursuant to the [Canadian Forces Superannuation Act](#), R.S., 1985, c. C-17, the [Defence Services Pension Continuation Act](#), 1970, c. D-3, the [Royal Canadian Mounted Police Pension Continuation Act](#), 1970, c. R-10, and the [Royal Canadian Mounted Police Superannuation Act](#), R.S., 1985, c. R-11, the [Members of Parliament Retiring Allowances Act](#), R.S. 1985, c. M-5, and that portion of pension payable to the [Canada Pension Plan Act](#), R.S., 1985, c. C-8.

Former Public Servant in Receipt of a Pension

As per the above definitions, is the Bidder a FPS in receipt of a pension? **Yes** **No**

If so, the Bidder must provide the following information, for all FPSs in receipt of a pension, as applicable:

- a) name of former public servant;
- b) date of termination of employment or retirement from the Public Service.

By providing this information, Bidders agree that the successful Bidder's status, with respect to being a former public servant in receipt of a pension, will be reported on departmental websites as part of the published proactive disclosure reports in accordance with [Contracting Policy Notice: 2019-01](#) and the [Guidelines on the Proactive Disclosure of Contracts](#).

Work Force Adjustment Directive

Is the Bidder a FPS who received a lump sum payment pursuant to the terms of the Work Force Adjustment Directive? **Yes** **No**

If so, the Bidder must provide the following information:

- a) name of former public servant;
- b) conditions of the lump sum payment incentive;



- c) date of termination of employment;
- d) amount of lump sum payment;
- e) rate of pay on which lump sum payment is based;
- f) period of lump sum payment including start date, end date and number of weeks;
- g) number and amount (professional fees) of other contracts subject to the restrictions of a work force adjustment program.

2.4 Enquiries - Bid Solicitation

All enquiries must be submitted in writing to the Contracting Authority no later than five (5) calendar days before the bid closing date. Enquiries received after that time may not be answered.

Bidders should reference as accurately as possible the numbered item of the bid solicitation to which the enquiry relates. Care should be taken by Bidders to explain each question in sufficient detail in order to enable Canada to provide an accurate answer. Technical enquiries that are of a proprietary nature must be clearly marked "proprietary" at each relevant item. Items identified as "proprietary" will be treated as such except where Canada determines that the enquiry is not of a proprietary nature. Canada may edit the question(s) or may request that the Bidder do so, so that the proprietary nature of the question(s) is eliminated and the enquiry can be answered to all Bidders. Enquiries not submitted in a form that can be distributed to all Bidders may not be answered by Canada.

2.5 Applicable Laws

Any resulting contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in Ontario.

Bidders may, at their discretion, substitute the applicable laws of a Canadian province or territory of their choice without affecting the validity of their bid, by deleting the name of the Canadian province or territory specified and inserting the name of the Canadian province or territory of their choice. If no change is made, it acknowledges that the applicable laws specified are acceptable to the Bidders.

2.6 Improvement of Requirement During Solicitation Period

Should bidders consider that the specifications or Statement of Work contained in the bid solicitation could be improved technically or technologically, bidders are invited to make suggestions, in writing, to the Contracting Authority named in the bid solicitation. Bidders must clearly outline the suggested improvement as well as the reason for the suggestion. Suggestions that do not restrict the level of competition nor favour a particular bidder will be given consideration provided they are submitted to the Contracting Authority at least five (5) calendar days before the bid closing date. Canada will have the right to accept or reject any or all suggestions.

2.7 Basis for Canada's Ownership of Intellectual Property

Natural Resources Canada has determined that any intellectual property rights arising from the performance of the Work under the resulting contract will belong to Canada, on the following reasons: as set out in the [Policy on Title to Intellectual Property Arising Under Crown Procurement Contracts](#)

1. Where the main purpose of the Crown Procurement Contract, or the deliverables contracted for, is:

To generate knowledge and information for public dissemination.



2.8 Bid Challenge and Recourse Mechanisms

- (a) Several mechanisms are available to potential suppliers to challenge aspects of the procurement process up to and including contract award.
- (b) Canada encourages suppliers to first bring their concerns to the attention of the Contracting Authority. Canada's [Buy and Sell](#) website, under the heading "[Bid Challenge and Recourse Mechanisms](#)" contains information on potential complaint bodies such as:
- Office of the Procurement Ombudsman (OPO)
 - Canadian International Trade Tribunal (CITT)
- (c) Suppliers should note that there are **strict deadlines** for filing complaints, and the time periods vary depending on the complaint body in question. Suppliers should therefore act quickly when they want to challenge any aspect of the procurement process.



PART 3 - BID PREPARATION INSTRUCTIONS

3.1 Bid Preparation Instructions

- The Bidder must submit its bid electronically, Canada requests that the Bidder submits its bid in accordance with section 08 of the 2003 standard instructions. The CPC Connect system has a limit of 1GB per single message posted and a limit of 20GB per conversation.

Canada requests that the Bidder submits its bid in separately saved documents as follows:

- Section I: Technical Bid (**1 electronic copy**)
- Section II: Financial Bid (**1 electronic copy**) ***in a separate file and document**
- Section III: Certifications (**1 electronic copy**)
- Section IV: Additional Information (**1 electronic copy**)

If the Bidder is simultaneously providing copies of its bid using multiple acceptable delivery methods, and if there is a discrepancy between the wording of any of these copies and the electronic copy provided through CPC Connect service, the wording of the electronic copy provided through CPC Connect service will have priority over the wording of the other copies.

Prices must appear in the financial bid only. No prices must be indicated in any other section of the bid.

In April 2006, Canada issued a policy directing federal departments and agencies to take the necessary steps to incorporate environmental considerations into the procurement process [Policy on Green Procurement](https://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=32573) (<https://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=32573>). To assist Canada in reaching its objectives, bidders should:

- 1) Include all environmental certification(s) relevant to your organization (e.g., ISO 14001, Leadership in Energy and Environmental Design (LEED), Carbon Disclosure Project, etc.)
- 2) Include all environmental certification(s) or Environmental Product Declaration(s) (EPD) specific to your product/service (e.g., Forest Stewardship Council (FSC), ENERGYSTAR, etc.)

Section I: Technical Bid

In their technical bid, Bidders should demonstrate their understanding of the requirements contained in the bid solicitation and explain how they will meet these requirements. Bidders should demonstrate their capability in a thorough, concise and clear manner for carrying out the work.

The technical bid should address clearly and in sufficient depth the points that are subject to the evaluation criteria against which the bid will be evaluated. Simply repeating the statement contained in the bid solicitation is not sufficient. In order to facilitate the evaluation of the bid, Canada requests that Bidders address and present topics in the order of the evaluation criteria under the same headings. To avoid duplication, Bidders may refer to different sections of their bids by identifying the specific paragraph and page number where the subject topic has already been addressed.

Section II: Financial Bid

- 3.1.1 Bidders must submit their financial bid in accordance with the Financial Bid Presentation Sheet in Appendix B.

Section III: Certifications

Bidders must submit the certifications and additional information required under Part 5.

**Section IV: Additional Information**

In Section IV of their bid, bidders should provide:

1. the 1st page of this RFP signed with their legal name;
2. the name of the contact person (provide also this person's mailing address, phone numbers and email address) authorized by the Bidder to enter into communications with Canada with regards to their bid, and any contract that may result from their bid.



PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION

4.1 Evaluation Procedures

- (a) Bids will be assessed in accordance with the entire requirement of the bid solicitation including the technical evaluation criteria.
- (b) An evaluation team composed of representatives of Canada will evaluate the bids.

4.1.1 Technical Evaluation

Mandatory evaluation criteria are included in Appendix 1 – Evaluation Criteria.

4.2 Basis of Selection

4.2.1 Mandatory Technical Criteria

A bid must comply with the requirements of the bid solicitation and meet all mandatory technical evaluation criteria to be declared responsive. The responsive bid with the lowest evaluated price will be recommended for award of a contract.



PART 5 – CERTIFICATIONS AND ADDITIONAL INFORMATION

Bidders must provide the required certifications and additional information to be awarded a contract.

The certifications provided by Bidders to Canada are subject to verification by Canada at all times. Unless specified otherwise, Canada will declare a bid non-responsive, or will declare a contractor in default if any certification made by the Bidder is found to be untrue, whether made knowingly or unknowingly, during the bid evaluation period or during the contract period.

The Contracting Authority will have the right to ask for additional information to verify the Bidder's certifications. Failure to comply and to cooperate with any request or requirement imposed by the Contracting Authority will render the bid non-responsive or constitute a default under the Contract.

5.1 Certifications Required with the Bid

Bidders must submit the following duly completed certifications as part of their bid.

5.1.1 Integrity Provisions - Declaration of Convicted Offences

In accordance with the Integrity Provisions of the Standard Instructions, all bidders must provide with their bid, **if applicable**, the Integrity declaration form available on the [Forms for the Integrity Regime](http://www.tpsgc-pwgsc.gc.ca/ci-if/declaration-eng.html) website (<http://www.tpsgc-pwgsc.gc.ca/ci-if/declaration-eng.html>), to be given further consideration in the procurement process.

5.1.2 Additional Certifications Required with the Bid

5.1.2.1 Indigenous Designation

Who is eligible?

An Indigenous business can be:

- a band as defined by the Indian Act
- a sole proprietorship
- a limited company
- a co-operative
- a partnership
- a not-for-profit organization

in which Indigenous persons have at least 51% ownership and control.

An Indigenous business can also be a joint venture consisting of 2 or more Indigenous businesses or an Indigenous business and a non-Indigenous business, provided that the Indigenous business or businesses have at least 51% ownership and control of the joint venture.

In instances where 1 or more Indigenous businesses, as defined under the rules of PSIB, are involved in a contract with 1 or more non-Indigenous businesses or individual contractors, 33% of the total monetary value of the work contracted for must be performed by Indigenous businesses.

The bidder must certify in its submitted bid that it is an Indigenous business, or a joint venture constituted as described above.

Our Company is NOT an Indigenous Firm

Our Company is an Indigenous Firm, as identified above.



5.2 Certifications Precedent to Contract Award and Additional Information

The certifications and additional information listed below should be submitted with the bid but may be submitted afterwards. If any of these required certifications or additional information is not completed and submitted as requested, the Contracting Authority will inform the Bidder of a time frame within which to provide the information. Failure to provide the certifications or the additional information listed below within the time frame specified will render the bid non-responsive.

5.2.1 Integrity Provisions – Required Documentation

In accordance with the [Ineligibility and Suspension Policy \(http://www.tpsgc-pwgsc.gc.ca/ci-if/politique-policy-eng.html\)](http://www.tpsgc-pwgsc.gc.ca/ci-if/politique-policy-eng.html), the Contractor must provide with its bid the required documentation, as applicable, to be given further consideration in the procurement process.

All applicants, regardless of their status under the policy, must have the following information at the time to participate in a procurement process:

- Suppliers that are corporate entities, including those bidding as joint ventures, must provide a complete list of the names of all current directors or, for a privately owned corporation, the names of the owners of the corporation;
- Suppliers bidding as sole proprietors, including sole proprietors bidding as joint ventures, must provide a complete list of the names of all owners;
- Suppliers that are a partnership do not need to provide a list of names.

Supplier’s Legal Name: _____

OR

Name of each member of the joint venture:

Member 1: _____

Member 2: _____

Member 3: _____

Member 4: _____

Organizational Structure:

- corporate entity (shareholders) - provide the names of the current Board of directors
- privately owned corporation - provide a list of the owner’s names
- sole proprietor - provide a list of the owner’s names

LIST OF NAMES

LAST NAME	FIRST NAME	TITLE



--	--	--

5.2.2 Additional Certifications Precedent to Contract Award

5.2.2.1 Status and Availability of Resources

SACC Manual clause [A3005T](#) (2010-08-16) Status and Availability of Resources

5.2.2.2 Education and Experience

SACC Manual clause [A3010T](#) (2010-08-16) Education and Experience

5.2.2.3 Former Public servant

<p>Former Public Servants</p> <p>See the Article in Part 2 of the bid solicitation entitled Former Public Servant for a definition of "Former Public Servant".</p>	<p>Is the Bidder a FPS in receipt of a pension as defined in the bid solicitation?</p> <p>Yes <input type="checkbox"/> No <input type="checkbox"/> If yes, provide the information required by the Article in Part 2 entitled "Former Public Servant"</p>
	<p>Is the Bidder a FPS who received a lump sum payment under the terms of the Work Force Adjustment Directive?</p> <p>Yes <input type="checkbox"/> No <input type="checkbox"/> If yes, provide the information required by the Article in Part 2 entitled "Former Public Servant"</p>

SIGNATURE for CERTIFICATION

The Contractor certifies having read and understood the information included in the present document and acknowledges receipt.

Name

Date

Signature of Authorized Representative



PART 6 – SECURITY, FINANCIAL AND OTHER REQUIREMENTS

6.1 Security Requirements

There are no security requirements associated with this procurement.



PART 7 - RESULTING CONTRACT CLAUSES

The following clauses and conditions apply to and form part of any contract resulting from the bid solicitation.

7.1 Statement of Work

The Contractor must perform the Work in accordance with the Statement of Work at Annex "A" and the Contractor's technical bid entitled _____, dated _____. (*to be completed at contract award*)

7.1.1 Optional Services

The Contractor grants to Canada the irrevocable option to acquire the goods, services or both described in the statement of work under the same conditions and at the prices and/or rates stated in the Contract. The option may only be exercised by the Contracting Authority and will be evidenced, for administrative purposes only, through a contract amendment.

The Contracting Authority may exercise the option at any time before the expiry of the Contract by sending a written notice to the Contractor.

7.2 Standard Clauses and Conditions

All clauses and conditions identified in the Contract by number, date and title are set out in the [Standard Acquisition Clauses and Conditions Manual](https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual) (<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>) issued by Public Works and Government Services Canada.

7.2.1 General Conditions

[2010B](#) (2022-12-01), General Conditions - Medium Complexity – Professional Services, apply to and form part of the Contract. [If applicable, replace references to Public Works and Government Services Canada (PWGSC) with Natural Resources Canada (NRCan)]

7.2.2 Supplemental General Conditions

The following clauses apply to and form part of this contract:

[4007](#) (2022-12-01), Canada to Own Intellectual Property Rights in Foreground Information apply to and form part of the Contract

[4013](#) (2022-06-20), Compliance with on-site measures, standing orders, policies, and rules apply to and form part of the Contract

7.3 Security Requirements

There is no security requirement applicable to the Contract.

7.4 Term of Contract

7.4.1 Period of the Contract

The period of the Contract is from date of Contract to March 31, 2025 inclusive.

7.4.2 Option to Extend the Contract

The Contractor grants to Canada the irrevocable option to extend the term of the Contract by up to **two (2)** additional **one (1)** year period(s) under the same conditions. The Contractor agrees that, during the



extended period of the Contract, it will be paid in accordance with the applicable provisions as set out in the Basis of Payment.

Canada may exercise this option at any time by sending a written notice to the Contractor at least 30 calendar days before the expiry date of the Contract. The option may only be exercised by the Contracting Authority, and will be evidenced for administrative purposes only, through a contract amendment.

7.4.3 Comprehensive Land Claims Agreements (CLCAs)

The Contract is not subject to any Comprehensive Land Claims Agreements.

7.5 Authorities

7.5.1 Contracting Authority

The Contracting Authority for the Contract is:

Name: Mathieu Cousineau
 Title: Procurement Officer
 Organization: Natural Resources Canada, Procurement Services Unit
 Address: 580 Booth Street, Ottawa, Ontario, K1A 0E4
 Telephone: 343-541-6107
 E-mail address: mathieu.cousineau@nrcan-rncan.gc.ca

The Contracting Authority is responsible for the management of the Contract and any changes to the Contract must be authorized in writing by the Contracting Authority. The Contractor must not perform work in excess of or outside the scope of the Contract based on verbal or written requests or instructions from anybody other than the Contracting Authority.

7.5.2 Project Authority

The Project Authority for the Contract is: [\(to be filled out at contract award\)](#)

Name:
 Title:
 Organization:
 Address:
 Telephone:
 E-mail address:

The Project Authority is the representative of the department or agency for whom the Work is being carried out under the Contract and is responsible for all matters concerning the technical content of the Work under the Contract. Technical matters may be discussed with the Project Authority; however, the Project Authority has no authority to authorize changes to the scope of the Work. Changes to the scope of the Work can only be made through a contract amendment issued by the Contracting Authority.

7.5.3 Contractor's Representative [\(to be filled out at contract award\)](#)

Name:
 Title:
 Organization:
 Address:
 Telephone:
 E-mail address:



7.6 Proactive Disclosure of Contracts with Former Public Servants

By providing information on its status, with respect to being a former public servant in receipt of a [Public Service Superannuation Act](#) (PSSA) pension, the Contractor has agreed that this information will be reported on departmental websites as part of the published proactive disclosure reports, in accordance with [Contracting Policy Notice: 2019-01](#) of the Treasury Board Secretariat of Canada.

7.7 Payment

7.7.1 Basis of Payment - Firm Price

In consideration of the Contractor satisfactorily completing all of its obligations under the Contract, the Contractor will be paid a firm price as specified in in **Annex B** for a cost of \$ _____ (*insert the amount at contract award*). Customs duties are included and Applicable Taxes are extra.

Canada will not pay the Contractor for any design changes, modifications or interpretations of the Work, unless they have been approved, in writing, by the Contracting Authority before their incorporation into the Work.

7.7.2 Method of Payment

Single Payment

Canada will pay the Contractor upon completion and delivery of the Work in accordance with the payment provisions of the Contract if:

- a. an accurate and complete invoice and any other documents required by the Contract have been submitted in accordance with the invoicing instructions provided in the Contract;
- b. all such documents have been verified by Canada;
- c. the Work delivered has been accepted by Canada.

7.7.3 Time Verification

SACC *Manual* clause [C0711C](#) (2008-05-12), Time verification

7.8 Invoicing Instructions

Invoices shall be submitted using **the following method**:

E-mail:

Invoicing-Facturation@nrcan-rncan.gc.ca

Note: Attach "PDF" file. No other formats will be accepted

Invoices and all documents relating to a contract must be submitted on the Contractor's own form and shall bear the Contract number: _____

Invoicing Instructions to suppliers: <http://www.nrcan.gc.ca/procurement/3485>



7.9 Certifications and Additional Information

7.9.1 Compliance

Unless specified otherwise, the continuous compliance with the certifications provided by the Contractor in its bid or precedent to contract award, and the ongoing cooperation in providing additional information are conditions of the Contract and failure to comply will constitute the Contractor in default. Certifications are subject to verification by Canada during the entire period of the Contract.

7.10 Applicable Laws

The Contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in _____ (*insert the name of the province or territory as specified by the Bidder in its bid, if applicable*).

7.11 Priority of Documents

If there is a discrepancy between the wording of any documents that appear on the list, the wording of the document that first appears on the list has priority over the wording of any document that subsequently appears on the list.

- (a) the Articles of Agreement;
- (b) the supplemental general conditions [4007](#) (2022-12-01), Canada to Own Intellectual Property Rights in Foreground Information, [4013](#) (2022-06-20), Compliance with on-site measures, standing orders, policies, and rules;
- (c) the general conditions [2010B](#) (2022-12-01), Medium Complexity – Professional Services
- (d) Annex A, Statement of Work;
- (e) Annex B, Basis of Payment;
- (h) the Contractor's bid dated _____.

7.12 Insurance - No Specific Requirement

The Contractor is responsible for deciding if insurance coverage is necessary to fulfill its obligation under the Contract and to ensure compliance with any applicable law. Any insurance acquired or maintained by the Contractor is at its own expense and for its own benefit and protection. It does not release the Contractor from or reduce its liability under the Contract.

7.13 Dispute Resolution

- (a) The parties agree to maintain open and honest communication about the Work throughout and after the performance of the contract.
- (b) The parties agree to consult and co-operate with each other in the furtherance of the contract and promptly notify the other party or parties and attempt to resolve problems or differences that may arise.
- (c) If the parties cannot resolve a dispute through consultation and cooperation, the parties agree to consult a neutral third party offering alternative dispute resolution services to attempt to address the dispute.
- (d) Options of alternative dispute resolution services can be found on Canada's Buy and Sell website under the heading "[Dispute Resolution](#)".



ANNEX "A" - STATEMENT OF WORK

SW.1.0 TITLE

Impact of hydrogen on steel casing and tubing for hydrogen production by in-situ gasification and hydrogen storage in geological formations

SW.2.0 BACKGROUND

During the last decades, the interest in hydrogen as clean energy sources has been continuously growing. There are many processes for hydrogen production, i.e., hydrocarbon reforming and pyrolysis, hydrogen production from biomass, and water splitting and photo-electrolysis processes. [1-3] An emerging technology to produce low-cost hydrogen is through in-situ gasification of oil sands from depleted and abandoned oil wells. [4] In-situ gasification of oil sands is energy efficient and eco-friendly due to the unique hydrogen separation technologies which leave acid gases, heavy metals and sulfur compounds in the reservoirs. Production of hydrogen in-situ from oil wells involves high temperatures and pressures in environments containing various corrosive species such as steam, carbon dioxide, hydrogen sulfide, and oxygen, which tend to make steels susceptible to hydrogen-induced damage. [4-9] With hydrogen production processes, the concentration of hydrogen in the produced gas streams will be relatively high exceeding 20% in the gas mixture and eventually nearly 100% in the separated gas stream. The existing hydrogen material research for the oil/gas industry has been predominantly performed on pipeline steels with hydrogen exposure under transmission line conditions, i.e., ambient temperature, relatively low hydrogen content, and negligible contaminants. [10-12] There is a need to carry out research on material challenges experienced in hydrogen production to ensure that metal materials (casing, tubing, and connections) are able to handle the higher concentration of hydrogen under elevated temperature and pressure conditions. In addition, studies have shown potential for underground hydrogen storage in saline aquifers, depleted gas reservoirs, and salt caverns.[13, 14] However, there is little knowledge regarding the impact of hydrogen on the performance of the casing steel materials that would be used to deliver hydrogen underground.

SW.3.0 OBJECTIVES

The main project objectives include:

1. Investigate the influence of steel casing/tubing material properties such as alloying element, grade, microstructure and surface condition on hydrogen permeation and hydrogen-induced damage
2. Determine the effect of environmental parameters, i.e., temperature, hydrogen partial pressure, impurities, and stress level on hydrogen permeation and hydrogen-induced damage
3. Develop prediction models to estimate the impact of hydrogen on steel casing/tubing materials

SW.4.0 PROJECT REQUIREMENTS

The project is required to understand the impact of hydrogen on steel casing/tubing pipe materials under simulated hydrogen production and storage conditions, i.e., temperatures up to 600°C, hydrogen partial pressures up to 5MPa, and environments containing various corrosive species such as steam, carbon dioxide, hydrogen sulfide, and oxygen.



SW.4.1 Tasks, Deliverables, Milestones and Schedule

Tasks	Description	Deliverables	Time Schedule
#1	<ol style="list-style-type: none"> Literature review in hydrogen effect on steel materials under hydrogen production and underground storage conditions Develop detailed project plan for experimental tests Design test specimens and apparatuses for hydrogen permeation and mechanical tests 	A technical report including literature review, project plan, and designs of test specimens and apparatuses	March 15, 2025
Optional Services #2	Systematic investigation of H permeation into steel tubing/casing materials using both experimental and modelling methods	A technical report and/or scientific paper to summarize up-to-date results from both experimental and simulation studies on H permeation	March 15, 2026
Optional Services #3	Determination of the effect of steel properties such as alloying element, grade, microstructure and surface condition, and environmental conditions including temperature, hydrogen partial pressure, impurity, and stress level on hydrogen cracking/embrittlement of steel casing/tubing materials using both experimental and modelling methods	A technical report and/or scientific paper to summarize up-to-date results and analyses including identified key parameters and prediction models of H effect on steel casing/tubing materials	March 15, 2027

Anything that is created or developed by the Contractor as part of the Work under the Contract in which copyright subsists belongs to Canada. The Contractor must incorporate the copyright symbol and either of the following notices, as appropriate: © His Majesty the King in Right of Canada, as represented by the Minister of Natural Resources, (year). © Sa Majesté le Roi du chef du Canada, représentée par le ministre des Ressources naturelles, (année).

SW.4.2 Reporting Requirements

Regular meetings will be held between the Contractor and CanmetMATERIALS, Hamilton (CMAT) to update project progresses and to ensure that the project is on track and on time. A periodic meeting (virtual or physical at contractor's site) will be scheduled every year to review the research to date and discuss the work in the next year. A year-end report to summarize and analyze the accomplishments corresponding to the tasks/activities will be required for submission by the end of each FY.

SW.4.3 Method and Source of Acceptance

All deliverables and services rendered under any contract are subject to inspection by the Project Authority. The Project Authority shall have the right to reject any deliverables that are not considered satisfactory, or require their correction before payment will be authorized.

SW.4.4 Specifications and Standards

The year-end presentation and report will be prepared and delivered according to CMAT's requirements.

SW.5.1 Contractor's Obligations

The contractor shall,

- return all materials belonging to CMAT upon completion of the Contract;
- submit all written reports in hard copy and electronic Microsoft Office Word or PDF format;



3. attend meeting with stakeholders, if necessary;
4. participate in teleconferences, as needed.

In satisfying the requirements of this agreement, the Recipient is encouraged to comply with the provisions and intent of the NRCan Scientific Integrity Policy (SIP) and to discharge its contractual obligations in support of research, science, or related activities in a manner consistent with all relevant NRCan SIP provisions. For more information on the Scientific Integrity Policy, please visit the NRCan website at:

<https://www.nrcan.gc.ca/scientific-integrity/21665#a20>

SW.5.2 NRCan's Obligations

1. access to a staff member who will be available to coordinate activities
2. provide comments on draft reports, and/or,
3. provide other assistance or support.

SW.5.3 Location of Work, Work Site and Delivery Point

The work is expected to be completed at Contractor's place of business and the deliverables will be delivered to CMAT by emails and mails.

SW.5.4 Language of Work

This work will be conducted in English.

SW.5.5 Publishing Rights

1. Canada and the Contractor agree that it is part of the Contractor's function and policies to disseminate information and to make it available for the purpose of scholarship.
2. The Contractor will provide Canada with a draft copy of any proposed publication for its review at least sixty (60) days before submission for publication or disclosure. Upon Canada's written request, which shall be received by the Contractor within the same sixty (60) day period, the University will, at Canada's discretion:
 - a) delete any Confidential Information of Canada from the proposed publication or disclosure; and
 - b) delay publication, subject to Section 3, up to a maximum of ninety (90) additional days for the purpose of permitting Canada to pursue Intellectual Property protection.
3. Notwithstanding Subsection 2 (b), the Contractor retains the right to have any thesis reviewed and defended without delay for the sole purpose of academic evaluation in accordance with the Contractor's established procedures. The Contractor will, in consultation with the student and Canada, determine if such a publication delay as set forth in Subsection 2 (b) will be provided. Canada may request that a thesis defence be held in camera and that the members of the thesis examination board, including the external examiner(s), be required to sign a non-disclosure agreement. Selection of the thesis examination board will be in Contractor's sole discretion.

References

- [1] Iulianelli, A., Ribeirinha, P., Mendes, A., Basile, A. (2014). Methanol Steam Reforming for Hydrogen Generation via Conventional and Membrane Reactors: A Review. *Renewable and Sustainable Energy Reviews*, 29:355-368.
- [2] Nikolaidis, P., and Poullikkas, A. (2017). A comparative Overview of Hydrogen Production Processes. *Renewable and Sustainable Energy Reviews*, 67:597-611.



- [3] Anzelmoa, B., Wilcox, J., and Liguoria, S. (2018). Hydrogen Production via Natural Gas Steam Reforming in a Pd-Au Membrane Reactor. Comparison Between Methane and Natural Gas Steam Reforming Reactions. *Journal of Membrane Science*, 568: 113–120.
- [4] Kapadia, P.R., Kallos, M.S., and Gates, I.D. (2011). Potential for Hydrogen Generation from In Situ Combustion of Athabasca Bitumen. *Fuel*, 90:2254-2265.
- [5] Kapadia, P., Kallos, M.S., and Gates, I.D. (2013a). A New Reaction Model for Aquathermolysis of Athabasca Bitumen. *Canadian Journal of Chemical Engineering*, 91(3):475-482.
- [6] Kapadia, P., Wang, J., Kallos, M.S., and Gates, I.D. (2013b). Practical Process Design for In Situ Gasification of Bitumen. *Applied Energy*, 107:281-296.
- [7] Kapadia, P.R., Kallos, M.S., and Gates, I.D. (2013c). A New Kinetic Model for Pyrolysis of Athabasca Bitumen. *Canadian Journal of Chemical Engineering*, 91(5):889-901.
- [8] Kapadia, P., Wang, J., and Gates, I.D. (2014). On In Situ Hydrogen Sulfide Evolution and Catalytic Scavenging in Steam-based Oil Sands Recovery Processes. *Energy*, 64:1035-1043.
- [9] Kapadia, P.R., Kallos, M.S., and Gates, I.D. (2015). A Review of Pyrolysis, Aquathermolysis, and Oxidation of Athabasca Bitumen. *Fuel Processing Technology*, 131:270-289.
- [10] Elboujdaini, M. (2011). Hydrogen-induced cracking and sulfide stress cracking. Chapter 15 in Uhlig's *Corrosion Handbook*, Third Edition, Edited by R. Winston, 183-194.
- [11] Ohaeri, E., Eduok, U., and Szpunar, J. (2018). Hydrogen related degradation in pipeline steel: a review. *International Journal of Hydrogen Energy*, 43:14584-14617.
- [12] Povov, B.N., Lee, J., and Djukic, M.B. (2018). Chapter 7: Hydrogen permeation and hydrogen-induced cracking. *Handbook of Environmental Degradation of Materials*, Third Edition, Edited by Myer Kutz, William Andrew Publishing, ISBN 9780323524728, p. 133-162.
- [13] Tarkowski, R. (2019). Underground hydrogen storage: Characteristics and prospects. *Renewable and Sustainable Energy Reviews*, 105: 86 - 94
- [14] Muhammed, N. S., Haq, B., Shehri, D. A., Al-Ahmed, A., Rahman, M. M., and Zaman, E. (2022). A review on underground hydrogen storage: Insight into geological sites, influencing factors and future outlook. *Energy Reports*, 8: 461-499



ANNEX "B" - BASIS OF PAYMENT

(Will be completed at contract award)



APPENDIX "1" - EVALUATION CRITERIA

Bidders are advised to address these criteria in the following order and in sufficient depth in their proposals to enable a thorough assessment. NRCan's assessment will be based solely on the information contained within the proposal. NRCan may confirm information or seek clarification from bidders.

Bidders are advised that only listing experience without providing any supporting data to describe responsibilities, duties and relevance to the criteria will not be considered demonstrated for the purpose of this evaluation.

The Bidder should provide complete details as to where, when (month and year) and how (through which activities/ responsibilities) the stated qualifications/experience were obtained. Experience gained during formal education shall not be considered work experience. All criteria for work experience shall be obtained in a legitimate work environment as opposed to an educational setting. Co-op terms are considered work experience provided they are related to the required services.

Bidders are also advised that the month(s) of experience listed for a project whose time frame overlaps that of another referenced project will only be counted once. For example: project one time frame is July 2001 to December 2001; project two time frame is October 2001 to January 2002; the total months of experience for these two project references is seven (7) months.

1. Technical Criteria

1.1 Mandatory Evaluation Criteria

The Mandatory Criteria listed below will be evaluated on a simple pass/fail basis. Proposals which fail to meet the mandatory criteria will be deemed non-responsive.

Criterion ID	Mandatory Criteria	Proposal Page #	Met/ Not Met
M1	The Bidder MUST propose a resource with 120 months research experience in hydrogen-steel interactions. The Bidder should demonstrate the required experience of the resource proposed by providing a résumé. Using the following date format: December 2005 to June 2006 (7 months)		
M2	The Bidder MUST provide proof, certificate or degree, that the proposed resource possesses a Doctor of Philosophy degree on material science and engineering, or corrosion engineering.		
M3	The Bidder MUST provide a minimum of 5 scientific publications demonstrating experience in hydrogen-steel interactions using experimental methodologies within the past 5 years from bid closing date.		
M4	The Bidder MUST provide a minimum of 5 scientific publications demonstrating experience in calculations and simulations to establish thermodynamics of hydrogen absorption and permeation, and to study impact of hydrogen on metallurgical microstructure and mechanical properties of steel within the past 5 years from bid closing date.		



Criterion ID	Mandatory Criteria	Proposal Page #	Met/ Not Met
M5	The Bidder MUST demonstrate that they own a laboratory equipped with material mechanical testing systems, i.e., mechanical test frames and textures, and micro/nano- electrochemical in-situ techniques for research on hydrogen-steel interactions.		



APPENDIX "2" - Financial Bid Presentation Sheet

1. Firm Price

Bidder tendered all-inclusive firm price to perform the work is Canadian funds, applicable taxes excluded. Any Travel and Living Expenses and other miscellaneous expenses must be included in the firm price.

Description	Firm Price (Applicable Taxes Excluded)
Year 1	\$ _____
Year 2 - Option 1	\$ _____
Year 3 - Option 2	\$ _____
Total Firm Price for Financial Proposal Evaluation (Taxes Extra):	\$ _____