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The Articles contains 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.



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: includes the certifications to be provided;
- Part 6 Security 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, and the Security Requirements Checklist.

The Appendixes include the Evaluation Criteria and the Financial Proposal Form.

1.2 Summary

By means of the RFP, Natural Resources Canada (NRCan) is seeking proposals from bidders to develop a comprehensive, energy system-wide, cross-sectoral understanding of the potential (or lack thereof) for existing commercial electric end-use technology to reduce or eliminate the use of fossil fuels using a common set of assumptions and a harmonized dataset, within a utility-style potential study framework.

"There are security requirements associated with this requirement. For additional information, consult Part 6 - Security, Financial and Other Requirements, and Part 7 - Resulting Contract Clauses. For more information on personnel and organization security screening or security clauses, bidders should refer to the [Industrial Security Program \(ISP\)](http://ssi-iss.tpssc-pwgsc.gc.ca/index-eng.html) of Public Works and Government Services Canada (<http://ssi-iss.tpssc-pwgsc.gc.ca/index-eng.html>) website".

1.3 Trade Agreements

The requirement is subject to the provisions of the World Trade Organization Agreement on Government Procurement (WTO-AGP), the North American Free Trade Agreement (NAFTA), the Canada-Chile Free Trade Agreement (CCFTA), the Canadian Free Trade Agreement (CFTA), the Canada-Peru Free Trade Agreement (CPFTA), the Canada-Columbia Free Trade Agreement (CCoFTA), the Canada-Panama Free Trade Agreement (CPanFTA), the Canada-Honduras Free Trade Agreement (CHFTA), the Canada-Korea Free Trade Agreement (CKFTA) and the Canada-European Union Comprehensive Economic and Trade Agreement (CETA).



1.4 Debriefings

Bidders may request a debriefing on the results of the bid solicitation process. Bidders should make the request to the Contracting Authority within 15 working days from receipt of the results of the bid solicitation process. The debriefing may be in writing, by telephone or in person.



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 (2019-03-04) Standard Instructions - Goods or Services - Competitive Requirements, are incorporated by reference into and form part of the bid solicitation with the modifications to the text below. If there is a conflict between the provisions of 2003 and this document, this document prevails.

In the complete text content (except Section 3 – Integrity Provisions – Bid):

DELETE: Public Works and Government Services Canada (PWGSC)

INSERT: Natural Resources Canada (NRCan)

In Section 2 – Procurement Business Number:

DELETE: “Suppliers are required to”

INSERT: “It is suggested that suppliers”

In Section 5.4 – Submission of Bids:

DELETE: sixty (60) days

INSERT: one hundred and twenty (120) days

In Section 8.1 – Transmission by Facsimile:

DELETE: 819-997-9776

INSERT: Bids not accepted by fax

In Section 20.2 – Further Information:

DELETE: in its entirety, not applicable

2.2 Submission of Bids

It is the Bidders responsibility to ensure that proposals are delivered to the following location, by the time and date indicated on page 1 of this RFP document:

Natural Resources Canada
Bid Receiving Unit – Loading Dock Access
588 Booth Street, Room 108
Ottawa, Ontario K1A 0Y7
Attention: **Daniel Burley**

It is requested that the Bidder’s name, return address, Request for Proposal Number, and Bid Closing Date appear legibly on the outside of the envelope containing the Bidder’s proposal. Failure to do so may result in bids being misdirected. **NRCan will not assume responsibility for proposals directed to any other location.**



The onus is on the Bidder to ensure that the proposal is delivered to the location above. Not complying with the above 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.

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

2.3 Enquiries - Bid Solicitation

All enquiries must be submitted in writing to the Contracting Authority no later than 8 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.

2.4 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.

2.5 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 15 days before the bid closing date. Canada will have the right to accept or reject any or all suggestions.



PART 3 - BID PREPARATION INSTRUCTIONS

3.1 Bid Preparation Instructions

NRCan will accept your bids in one of the following formats:

ELECTRONIC STORAGE MEDIA:

Since NRCan is working towards a greener environment by eliminating all hard copy file folders, we prefer to have all bids on a USB. If you wish to submit in this format, please provide the following:

Section I: Technical Bid – 1 copy

NOTE: 1 USB will contain: 1 Technical, sole Financial Bid, Certifications and signed first page (Original)

Section II: Financial Bid - 1 copy (included with original Technical Bid – **saved separately**).

Section III: Certifications and Insurance - Proof of Availability Prior to Contract Award – 1 copy (included with original Technical Bid and sole Financial Bid – **saved separately**)

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

NOTE: WHEN SUBMITTING A BID TO THIS SOLICITATION AND YOU USE A COURIER SERVICE, YOU ARE ADVISED TO WRITE THE BID SOLICITATION NUMBER, CLOSING DATE AND TIME ON THE FRONT OF THE COURIER PACKAGE; NOT JUST ON THE ENVELOPES WITHIN THE COURIER PACKAGE IN ORDER TO AVOID ANY UNCERTAINTY FROM OUR BID RECEIPT UNIT WHEN RECEIVING BIDS WITHOUT ANY INDICATION WHAT THEY ARE FOR.

No payment shall be made for costs incurred by the Bidder in the preparation and submission of a proposal in response to this RFP.

To assist Canada in reaching its objectives, bidders are encouraged to:

- i. use paper containing fibre certified as originating from a sustainably-managed forest and/or containing minimum 30% recycled content; and
- ii. use an environmentally-preferable format including black and white printing instead of colour printing, printing double sided/duplex, using staples or clips instead of cerlox, duotangs or binders.
- iii. use a numbering system that corresponds to the bid solicitation.

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 must demonstrate their capability and describe their approach in a thorough, concise and clear manner for successfully carrying out the work as described in the Annex "A" – Statement of Work".

Bidders must respond to government bid solicitations in an honest, fair and comprehensive manner, accurately reflect their capacity to satisfy the requirements stipulated in the bid or contract documents, and submit bids and enter into contracts only if they will fulfill all obligations of the contract.

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 and may result in a loss of points. 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.

It is the responsibility of the Bidder to obtain clarification of the requirements contained in the RFP, if necessary, prior to submitting a proposal. The Bidder must provide sufficient details in its proposal to substantiate compliance with what is required; all professional experience must be fully documented and substantiated in the proposal(s).

In the event of a proposal submitted through contractual joint venture, the proposal shall either be signed by all members of the joint venture or a statement shall be provided to the effect that the signatory represents all parties of the joint venture. (All members of the joint venture shall be jointly and severally or solidarity liable for the performance of any resulting contract awarded as a result of a joint venture.)

Section II: Financial Bid

Bidders must submit their financial bid in accordance with the Financial Proposal Form in Appendix "2". The total amount of Applicable Taxes must be shown separately.

Section III: Certifications

Bidders must submit the certifications as per Part 5.

3.2 Exchange Rate Fluctuation

C3011T (2013-11-06), Exchange Rate Fluctuation



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 and financial evaluation criteria.
- (b) An evaluation team composed of representatives of Canada will evaluate the bids.

4.1.1 Technical Evaluation

Mandatory and point rated technical evaluation criteria are included in Appendix "1" - Evaluation Criteria.

4.1.2 Financial Evaluation

Mandatory financial evaluation criteria is included in Appendix "1" – Evaluation Criteria.

4.2 Basis of Selection

4.2.1 Highest Rated Within Budget

To be declared responsive, a bid must:

- a. comply with all the requirements of the bid solicitation;
 - b. meet all mandatory technical evaluation criteria; and
 - c. comply with mandatory financial criteria
2. Bids not meeting (a) or (b) or (c) will be declared non-responsive. The responsive bid with the highest number of points will be recommended for award of a contract, provided that the total evaluated price does not exceed the budget available for this requirement.



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. 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 Declaration of Convicted Offences

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 Bidder must provide with its bid the required documentation, as applicable, to be given further consideration in the procurement process.

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 – List of Names

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 Bidder must provide with its bid the required documentation, as applicable, to be given further consideration in the procurement process.

- Bidders who are incorporated, including those bidding as a joint venture, must provide a complete list of names of all individuals who are currently directors of the Bidder or, in the case of a private company, the owners of the company.
- Bidders bidding as sole proprietorship, as well as those bidding as a joint venture, must provide the name of the owner(s).
- Bidders bidding as partnerships do not need to provide lists of names.

Name of Bidder: _____

OR

Name of each member of the joint venture:



Member 1: _____
 Member 2: _____
 Member 3: _____
 Member 4: _____

Identification of the administrators/owners:

SURNAME	NAME	TITLE

5.2.2 Federal Contractors Program for Employment Equity - Bid Certification

By submitting a bid, the Bidder certifies that the Bidder, and any of the Bidder's members if the Bidder is a Joint Venture, is not named on the Federal Contractors Program (FCP) for employment equity "[FCP Limited Eligibility to Bid](http://www.labour.gc.ca/eng/standards_equity/eq/emp/fcp/list/inelig.shtml)" list (http://www.labour.gc.ca/eng/standards_equity/eq/emp/fcp/list/inelig.shtml) available from [Employment and Social Development Canada \(ESDC\) - Labour's](#) website.

Canada will have the right to declare a bid non-responsive if the Bidder, or any member of the Bidder if the Bidder is a Joint Venture, appears on the "[FCP Limited Eligibility to Bid](#)" list at the time of contract award.

5.2.3 Status and Availability of Resources

The Bidder certifies that, should it be awarded a contract as a result of the bid solicitation, every individual proposed in its bid will be available to perform the Work as required by Canada's representatives and at the time specified in the bid solicitation or agreed to with Canada's representatives. If for reasons beyond its control, the Bidder is unable to provide the services of an individual named in its bid, the Bidder may propose a substitute with similar qualifications and experience. The Bidder must advise the Contracting Authority of the reason for the substitution and provide the name, qualifications and experience of the proposed replacement. For the purposes of this clause, only the following reasons will be considered as beyond the control of the Bidder: death, sickness, maternity and parental leave, retirement, resignation, dismissal for cause or termination of an agreement for default.

If the Bidder has proposed any individual who is not an employee of the Bidder, the Bidder certifies that it has the permission from that individual to propose his/her services in relation to the Work to be performed and to submit his/her résumé to Canada. The Bidder must, upon request from the Contracting Authority, provide a written confirmation, signed by the individual, of the permission given to the Bidder and of his/her availability.

5.2.4 Education and Experience



The Bidder certifies that all the information provided in the résumés and supporting material submitted with its bid, particularly the information pertaining to education, achievements, experience and work history, has been verified by the Bidder to be true and accurate. Furthermore, the Bidder warrants that every individual proposed by the Bidder for the requirement is capable of performing the Work described in the resulting contract.

5.2.5 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 FPSs, 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: 2012-2](#) 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.

Professional fees	Amount
_____	_____
_____	_____

For all contracts awarded during the lump sum payment period, the total amount of fees that may be paid to a FPS who received a lump sum payment is \$5,000, including Applicable Taxes.

5.2.6 Aboriginal Designation

Who is eligible?

- a) An Aboriginal business, which can be:
 - i. a band as defined by the Indian Act
 - ii. a sole proprietorship
 - iii. a limited company
 - iv. a co-operative
 - v. a partnership
 - vi. a not-for-profit organization



in which Aboriginal persons have at least 51 percent ownership and control,

OR

- b. A joint venture consisting of two or more Aboriginal businesses or an Aboriginal business and a non-Aboriginal business(es), provided that the Aboriginal business(es) has at least 51 percent ownership and control of the joint venture.

When an Aboriginal business has six or more full-time employees at the date of submitting the bid, at least thirty-three percent of them must be Aboriginal persons, and this ratio must be maintained throughout the duration of the contract.

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

- Our Company is NOT an Aboriginal Firm, as identified above.
- Our Company is an Aboriginal Firm, as identified above.



PART 6 - SECURITY REQUIREMENTS

6.1 Security Requirements

1. At Bid Solicitation Closing, the following conditions must be met:
 - (a) the Bidder must hold a valid organization security clearance as indicated in Part 7 - Resulting Contract Clauses;
 - (b) the Bidder's proposed individuals requiring access to classified or protected information, assets or sensitive work site(s) must meet the security requirements as indicated in Part 7 - Resulting Contract Clauses;
 - (c) the Bidder must provide the name of all individuals who will require access to classified or protected information, assets or sensitive work sites;
2. Bidders are reminded to obtain the required security clearance promptly. Any delay in the award of a contract to allow the successful Bidder to obtain the required clearance will be at the entire discretion of the Contracting Authority.
3. For additional information on security requirements, Bidders should refer to the [Industrial Security Program \(ISP\)](http://ssi-iss.tpsgc-pwgsc.gc.ca/index-eng.html) of Public Works and Government Services Canada (<http://ssi-iss.tpsgc-pwgsc.gc.ca/index-eng.html>) website.



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*)

7.2 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

[2035 \(2018-06-21\)](#), General Conditions - Higher Complexity - Services, apply to and form part of the Contract.

- As applicable, replace references to Public Works and Government Services Canada (PWGSC) with Natural Resources Canada (NRCan).

7.3 Dispute Resolution

Mediation

If a dispute arising from this contract cannot be settled amicably through negotiation, then the parties agree in good faith to submit the dispute to mediation as administered by the Arbitration and Mediation Institute of Canada Inc. (AMIC). The parties acknowledge receipt of the rules of AMIC. The cost of mediation shall be borne equally by the parties.

Arbitration

If the parties cannot resolve the dispute through mediation within sixty (60) days, the parties agree to submit the dispute to arbitration pursuant to the Commercial Arbitration Act (Canada). The party requesting such arbitration shall do so by written notice to the other party/parties. The cost of the arbitration and fees of the arbitrator shall be borne equally by the parties. The arbitration shall take place in the city where the contractor carries on business before a single arbitrator to be chosen jointly by the parties. If the parties cannot agree on the choice of arbitrator within thirty (30) days of written notice to submit the dispute to arbitration, each party will choose a representative who will select the arbitrator.

The parties may determine the procedure to be followed by the arbitrator in conducting the proceedings, or may ask the arbitrator to do so. The arbitrator shall issue a written award within thirty (30) days of hearing the parties. The award may be entered in any court having jurisdiction and enforced as a judgment of that court.

Meaning of "Dispute"

The parties agree that the word "dispute" in this clause refers to a dispute of fact or of law, other than a dispute of public law.

The parties understand that the Procurement Ombudsman appointed pursuant to Subsection 22.1(1) of the *Department of Public Works and Government Services Act* will, on request or consent of the parties to participate in an alternative dispute resolution process to resolve any dispute between the parties respecting the interpretation or application of a term and condition of this contract and their consent to bear the cost of



such process, provide to the parties a proposal for an alternative dispute resolution process to resolve their dispute. The Office of the Procurement Ombudsman may be contacted by telephone at 1-866-734-5169 or by e-mail at boa.opo@boa.opo.gc.ca.

7.4 Security Requirements

7.4.1 The following security requirements (*SRCL and related clauses provided by ISP*) apply and form part of the Contract.

SECURITY REQUIREMENT FOR CANADIAN SUPPLIER: PWGSC FILE No. 159350

1. The Contractor/Offeror must, at all times during the performance of the Contract/Standing Offer, hold a valid Designated Organization Screening (DOS) with approved Document Safeguarding at the level of PROTECTED B, issued by the Contract Security Program (CSP), Public Works and Government Services Canada (PWGSC).
2. The Contractor/Offeror personnel requiring access to PROTECTED information, assets or site(s) must EACH hold a valid RELIABILITY STATUS, granted or approved by the CSP, PWGSC.
3. The Contractor MUST NOT utilize its Information Technology systems to electronically process, produce or store PROTECTED information until the CSP, PWGSC has issued written approval. After approval has been granted or approved, these tasks may be performed at the level of PROTECTED B.
4. Subcontracts which contain security requirements are NOT to be awarded without the prior written permission of the CSP, PWGSC.
5. The Contractor/Offeror must comply with the provisions of the:
 - (a) Security Requirements Check List and security guide (if applicable), attached at Annex "C";
 - (b) Industrial Security Manual (Latest Edition)

7.4.2 The Company Security Officer (CSO) must ensure through the [Industrial Security Program \(ISP\)](#) that the Contractor and individual(s) hold a valid security clearance at the required level.

7.5 Term of Contract

7.5.1 Period of the Contract

The period of the Contract is from date of Contract award to February 28, 2021. Inclusive

7.6 Authorities

7.6.1 Contracting Authority

The Contracting Authority for the Contract is:

Name: **Daniel Burley**
Title: Procurement Specialist
Organization: Natural Resources Canada
Address: 580 Booth Street, 5th Floor, Room 5-D4-2
Ottawa, Ontario, K1A 0E4



Telephone: (343) 543-7809
E-mail address: Daniel.Burley@canada.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.

7.6.2 Project Authority (to be provided at contract award)

The Project Authority for the Contract is:

Name:
Title:
Organization:
Address:
Telephone:
Facsimile:
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.

7.6.3 Contractor's Representative (to be provided at contract award)

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

7.7 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: 2012-2](#) of the Treasury Board Secretariat of Canada.

7.8 Payment

7.8.1 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 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.



Milestone Payments

Canada will make milestone payments in accordance with the Schedule of Milestones detailed in the Contract and the payment provisions of the Contract if:

- a. an accurate and complete claim for payment, and any other document required by the Contract have been submitted in accordance with the invoicing instructions provided in the Contract;
- b. all work associated with the milestone and as applicable any deliverable required has been completed and accepted by Canada.

7.9 Invoicing Instructions

Invoices shall be submitted using **one of the following methods:**

<p><u>E-mail:</u></p> <p>nrcan.invoiceimaging-servicedimageriedesfactures.nrcan@canada.ca</p> <p>Note: Attach "PDF" file. No other formats will be accepted</p>
OR
<p><u>Fax:</u></p> <p>Local NCR region: 613-947-0987 Toll-free: 1-877-947-0987</p> <p>Note: Use highest quality settings available.</p>

Please do not submit invoices using more than one method as this will not expedite payment.

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

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

7.10 Certifications

7.10.1 Compliance

The continuous compliance with the certifications provided by the Contractor in its bid and the ongoing cooperation in providing additional information are conditions of the Contract. Certifications are subject to verification by Canada during the entire period of the Contract. If the Contractor does not comply with any certification, fails to provide the additional information, or if it is determined that any certification made by the Contractor in its bid is untrue, whether made knowingly or unknowingly, Canada has the right, pursuant to the default provision of the Contract, to terminate the Contract for default.

7.11 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.*)



7.12 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 general conditions 2035 (2019-06-21), Higher Complexity – Services;
- (d) Annex A, Statement of Work;
- (e) Annex B, Basis of Payment;
- (f) Annex C, Security Requirements Check List;
- (g) the Contractor's bid dated _____, (*insert date of bid*)

7.13 Foreign Nationals (Canadian Contractor)

SACC *Manual* clause A2000C (2006-06-16) Foreign Nationals (Canadian Contractor)

7.14 Insurance

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.

7.15 Contract Administration

The parties understand that the Procurement Ombudsman appointed pursuant to Subsection 22.1(1) of the *Department of Public Works and Government Services Act* will review a complaint filed by [*the supplier or the contractor or the name of the entity awarded this contract*] respecting administration of this contract if the requirements of Subsection 22.2(1) of the *Department of Public Works and Government Services Act* and Sections 15 and 16 of the *Procurement Ombudsman Regulations* have been met, and the interpretation and application of the terms and conditions and the scope of the work of this contract are not in dispute. The Office of the Procurement Ombudsman may be contacted by telephone at 1-866-734-5169 or by e-mail at boa.opo@boa.opo.gc.ca.



ANNEX “A” - STATEMENT OF WORK

Statement of Work (SOW)

SW.1.0 TITLE

Canadian Electrification Potential Study

SW.2.0 BACKGROUND

The Office of Energy Research and Development (OERD) and the Electricity Resources Branch (ERB) in Natural Resources Canada’s (NRCan) conduct activities related to meeting Canada’s climate change objectives through policy development and program delivery. Programming support covers research, development, demonstration, and deployment. It is important to ensuring these programs represent both an efficient and effective means of meeting our GHG targets while limiting the impacts on Canadians and the Canadian economy.

A key component of meeting Canada’s climate change goals will be leveraging and building on our existing clean electricity resources. A large-scale consultation on Canada’s energy future, Generation Energy, identified switching to cleaner power as a key priority for Canadians. The Pan-Canadian Framework on Clean Growth and Climate Change echoes the importance of this low-carbon strategy. On Dec. 7, 2018, Canada’s First Ministers met and agreed to lead a discussion on a Clean Electric Future for Canada. A recent report from the IEA noted that the future appears to be increasingly electric, but many uncertainties still must be resolved. The challenge will be to do so in a cost-effective way and weigh this approach against alternatives. The objective should be to pursue the most cost effective opportunities to electrify energy end uses where it represents a lower cost pathway to reducing greenhouse gas emissions than simply improving energy efficiency.

NRCan funds research into technologies across the energy system, including research into non-electric end-use, cleaner fossil fuels, renewable fuels (including hydrogen), and carbon capture, usage, and sequestration (CCUS); research into end-use electrification both competes with and complements these technology areas. On these topics, there is close collaboration between OERD, ERB, and the Office of Energy Efficiency (OEE). This is critical to shifting technologies from technical viability to economic viability, and eventually deployment. For OERD, this means balancing R&D investments so they are both 1) targeted at the most promising pathways, and 2) effectively diversified in the case of technological uncertainty. For the OEE and ERB, this means ensuring their programs are deploying technologies that are the most cost-effective based on consistent economic assumptions relative to alternatives. Furthermore, it is critical that NRCan as a whole have a cross-sectoral, consistent, and comprehensive understanding of the viability, or lack thereof, for electric technologies as a means of meeting emissions targets. With these needs in mind, NRCan is initiating a project meant to indicate the overall viability of existing electric end-use technologies as a replacement for end-uses which currently rely on carbon-emitting fuel sources.

NRCan hopes to address these needs by conducting a bottom-up study which quantifies the technical and economic potential of (carbon-emitting to electric) fuel-switching technologies. The study aims to develop both a snapshot of this potential today and a projection of the potential out to 2030, 2040 and 2050. This is meant to inform strategic guidance on the need to pursue both electric and non-electric energy research and development to enable deep decarbonisation scenarios. The goal is not to create a range of specific scenarios, but to create a tool and reference scenario on which sensitivity analysis can be conducted and new data can be inputted.



SW.3.0 OBJECTIVES

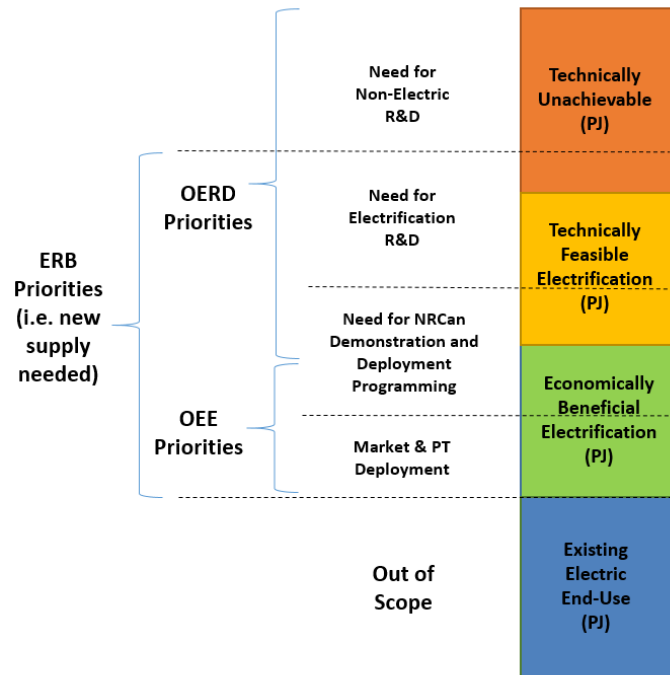
The objective of this project is to develop a comprehensive, energy system-wide with provincial perspectives, cross-sectoral techno-economic understanding of the potential (or lack thereof) for existing commercial electric end-use technology mitigate GHGs emissions from carbon-emitting end-uses. The study will do this using a common set of assumptions and a harmonized dataset, within a utility-style potential study framework. NRCan also requires an appropriate and accessible database and tool (if agreed upon, could be Excel-based), to enable analysis following the completion of the project. This tool will help ensure NRCan only prioritizes the electrification pathways that provide net benefits to Canadians. The following is some key questions in different areas that NRCan hopes can be answered using the outputs of this study.

To be clear, the consultant should not answers these questions directly, but should conduct the analysis with them in mind. The goal of the study is to collate data which can be used by NRCan to conduct analysis

Written analysis by the consultant should be limited to data commentary (i.e. methodology of collection and analytics, technology overviews, descriptions of dynamics of scenarios under task 5 and 6).

Primary Objectives

- To what extent is electrification a cost-effective climate change mitigation strategy compared to alternatives using existing technologies, assuming a zero-carbon electricity supply?
- How should research, development, demonstration and deployment (RDD&D) funding be prioritized between electric and non-electric technologies?
- Using existing technologies, how might electricity demand change and what are the potential effects on load shape under electrification scenarios?
- What changes might we expect in the electricity system between now and 2050, through technological innovation?



PJ: Peta Joules

Energy Demand



- What is the total primary energy demand of end-uses reliant on carbon-emitting fuels?
- How much could total primary energy consumption be reduced as a result of electrifying end uses using current technology? (ignoring economic or technical viability at the grid level)
- How much of total primary energy demand cannot be electrified using existing commercially viable technology?
- What is the total amount of additional electricity production which would be required to electrify all carbon-emitting end-uses with current technology by 2020, 2030, 2040 and 2050?
- What are the GHG emissions associated with different end-uses?

A key output of the study should resemble the diagram, and will be used to consider priorities for R&D funding and potentially other federal programs.

PT means "Provinces and Territories"

Cost-effectiveness

- How far are commercially available fuel-switching technologies from economic viability? What is the sensitivity of this to different assumptions?
- Which fuel-switching technologies are cost-effective, and to what extent?
- Which fuel-switching technologies are sufficiently close to cost-effectiveness that this could be impacted by R&D investment? Technology demonstration? Deployment programs?
- Which fuel-switching technologies have sufficiently **low** cost-effectiveness that this technology is unlikely to be viable regardless of additional R&D investment?
- What impacts might demand response on energy efficiency initiatives have on these fuel-switching technologies?
- What is the sensitivity of cost-effectiveness to changes in economic assumptions (e.g. price of electricity, carbon price, discount rate)?
- How does viability change under different costs tests in the California Standard Practice Manual?
- How does cost-effectiveness change when assuming early replacement of the baseline technology versus replacement on burnout?
- How cost-effective are partial electrification technologies (e.g. dual-fuel ASHPs) and what are their advantages against alternatives?

Grid Considerations

- What is the potential capacity demand (i.e. in kilowatts) associated with deploying all technically viable fuel switching technologies, by 2020, 2030, 2040, to 2050 and beyond?
- What are the potential impacts on load profile including consideration of diurnal and seasonal impacts?
- How controllable and dispatchable are the loads of different fuel/feedstock-switching measures? E.g., using aggregated electric resistance loads to provide frequency control or other grid ancillary services.
- To what extent can dual-fuel technologies (i.e. electric plus natural gas) decrease carbon-emissions while maintaining their flexibility advantage?
- Could these technologies provide benefits to the electricity system? If so, how should electricity markets evolve to take advantage of these resources?

High-level Policy questions



- To what extent can electrification be relied upon as a low-carbon pathway?
 - In which Canadian sectors will electrification have significant impact and can be relied upon as a low-carbon pathway?
 - In which Canadian provinces and/or regions and/or sectors will electrification be most applicable as a low-carbon pathway?
 - Are our programs appropriately targeted at the most viable existing opportunities in electrification?
 - Are our investments properly balanced across electric and non-electric technologies?
- How do the results of this study compare to existing reports projecting low-carbon pathways for Canada which rely heavily on electrification (e.g. Deep Decarbonization, Trottier Energy Futures)?
- How do these questions change when looking at different provinces versus Canada as a whole? Do these questions change when looking at rural vs. urban?
- If high-efficiency technologies were to achieve the same costs as their baseline technologies, how would these answers change?
- Given adoption rates and capital stock turnover of fuel switching technologies, what is the most cost effective or otherwise optimal pace of electrification from now until 2050?

SW.4.0 PROJECT REQUIREMENTS

SW.4.1 Tasks, Deliverables, Milestones and Schedule

The final deliverables will be:

1. **A Final Report**, in Word and PDF formats.
2. **An appropriate database and analytical tool (as agreed upon, may be Excel based)**, which, at minimum:
 - a. Can be used by any government employee using programs within the Microsoft Office suite, NRCan employees' primary data management and analysis tools are Microsoft Access, Excel, and Power BI. The consultant shall not propose a platform which requires the purchase or licensing of a specific piece of software by NRCan.
 - b. Catalogs a list of the assumptions for all carbon-emitting and electric end-uses analyzed in the report and that can be inputted and outputted in .csv format,
 - c. Enables NRCan to change assumptions and indefinitely add new technologies and baselines after the project has been completed
 - d. Provides Electrification Potential study results as both a snapshot of current opportunity and presents potential adoption and capital stock turnover over time based on optimizing for various parameters (e.g. lower energy demand, lower emissions, lowest costs etc.)
 - e. Enables NRCan to conduct sensitivity analysis on the study results and ability run new analyses
3. **A Slide Deck**, in PPT and PDF formats, outlining the results.

Task 1 – Kickoff Meeting

The first task will be a kickoff meeting where the project will be discussed as a whole, and key objectives and requirements will be clarified. The consultant will be asked to join a meeting (ideally in-person) with key NRCan



stakeholders and technology experts from CanmetENERGY. Please note any travel costs must be incorporated into the total contract cost and listed explicitly. The proposal should state which staff will attend this meeting in-person or via teleconference. The meeting will be used to discuss the project as whole and provide an opportunity for the consultant to introduce the overall project plan, ask for clarifications, and answer questions from key NRCan stakeholders.

Regular 30 minute check-ins by teleconference will be scheduled during this meeting. Longer, potentially in-person check-ins should be associated with the delivery of tasks 4 and 5. The consultant should recommend meeting frequency and overall time commitment in their proposal.

Deliverables:

- Meeting Agenda – delivered via-email, in .docx format, by forty-eight (48) hours before the meeting takes place.
- Meeting Minutes – delivered via e-mail, in .docx format, within one week of the kickoff meeting.

Task 2 – Project Plan

Before the actual compilation of data commences, NRCan would like to validate the planned approach for the completion of Tasks 3-5. This meeting should occur two (2) weeks following the kickoff meeting. This will be an opportunity for the consultant to make any key revisions based on the comments received by the kickoff meeting.

The consultant's approach for conducting the economic assessment should also be articulated at this stage. This includes assumptions related to fuel prices (current and estimates around future pricing), discount rates and carbon tax implications, among other metrics necessary for conducting cost-benefit analysis according to the California Standard Practice Manual.

NRCan does not currently have a preference for what assumptions are used for the "reference" data, and will be relying on the consultant to present options and tradeoffs of different approaches. Limited effort should be expended on calculated "realistic" long-term supply costs, as these questions will be addressed through sensitivity analyses of the "reference" assumptions agreed upon at this stage.

Options for deliverables could include briefing materials clearly outlining the character of assumptions, inputs, and outputs, or a simplified version of the database and analysis tool (could potentially be an Excel file) to be delivered in task 5 and 7.

- Deliverables:
 - Briefing materials or simplified examples of study outputs, presented via teleconference.
 - Briefing materials on preliminary plan for economic assumptions
 - Meeting Minutes – delivered via e-mail within one week of the kickoff meeting.

Task 3 – Develop Catalog of Baseline Carbon-emitting End-uses

The consultant should recommend an approach to create a breakdown of carbon-emitting end-uses in Canada which will act as the baseline technologies associated with each of the electric end-uses developed in Task 4. This breakdown should be provided in the proposed database (potentially Excel) and indicate how many GJs of energy are associated with each end-use, and the total and GHG/GJ impact associated with each end-use.



Total energy use should also be calculated and agreed upon methodology described. **All data should be broken down on a province-by-province basis - a regional breakdown (e.g. Prairies, Atlantic Canada) is not sufficient.**

It is expected this task will be completed by collating existing studies and data, and any data gaps will be filled using educated assumptions developed and clearly documented by the consultant. The consultant should identify key data sources they expect to use during this task, articulate key expected gaps, and speak to potential strategies for filling these gaps using educated assumptions. If the consultant believes NRCan may be able to acquire or have access to information that would be useful during this stage, they should identify this in the proposal, and whether it is cost-effective to include it within the project budget, or if it would be a value add if additional funds are available. Similarly, any primary data collection conducted by the consultant should have a limited level of effort associated with it or high value relative to effort (i.e. cost data application across many contexts); this also applies to Task 4 as well. NRCan understands data quality will range across provinces and end-uses and only asks that data quality is clearly identified and assumptions clearly documented. The consultant should propose an approach to catalog data quality either within this task or as part of the draft and final report.

It should be noted that NRCan will be able to deploy some junior-level resources to assist the consultant with basic research tasks; the consultant can speak to this in their proposal as a way to boost value but should not rely on this for project execution.

Please note that the following fuels are in scope:

- Propane used in all contexts (e.g. including BBQs)
- Oil products in all contexts aside from electricity generation (e.g. all transport fuels including domestic aviation, fuel oil for heating, industrial thermal and non-thermal uses, diesel usage outside of diesel gensets)
- Natural gas in all contexts (e.g. heating and industrial processes, including the heat component of Combined heat and power (CHP)/cogeneration)
- Coal used outside electricity generation (e.g. industry, home heating)

The following energy uses are excluded:

- Fuels used for the generation of electricity in all contexts (e.g. including off-grid communities and the electric production from CHP facilities)
- Transport fuels used for international travel (e.g. international aviation and shipping)
- Bioenergy in all end-uses, which is considered to be carbon-neutral for the purposes of limiting study complexity

Please note that energy use across all economic sectors in Canada are in scope, and end-uses should be broken down accordingly, including provincial/territorial breakdowns:

- Residential
- Commercial (including institutional)
- Industrial (e.g. mining, chemical production, agriculture, oil and gas production)
- Domestic Transport (e.g. including domestic aviation)
- Off-grid (e.g. excluding power generation, including fuel oil for heating)



Treatment of other End-Uses, including CHP

Total primary end-use energy consumption (i.e. excluding thermal power losses in power plants) from electricity and direct use of biomass should be presented alongside the final GJ-from-carbon-emitting fuel figure (also by province), **but a breakdown does not need to be calculated or provided**. It is assumed that the incremental effort associated with this will be immaterial to the project budget, but the consultant should explicitly advise whether or not this will be the case in their approach. The only exception to this is CHP.

For CHP, the heat component is in scope but the electric component is not in terms of overall carbon emitting end-use. However, the analysis must acknowledge that switching from carbon-emitting CHP to a direct electric technology (e.g. heat pumps or electric resistance) may have impacts on electricity production. This loss of electricity production should be cataloged during this task as it will impact the economics of fuel-switching measures with a CHP baseline.

The consultant will be asked to propose an approach to account for this during task 4. Possible approaches may include adding lost electricity production to the final electric consumption of a technology, or creating a separate category of lost electric production for each technology with a CHP baseline. In any case, the consultant must clearly state their preferred approach to address this problem such that the lost electric production can be accounted for in economic analysis. The consultant and NRCan will work together to determine the value of these avoided costs.

The consultant should recommend an approach to address any uncertainties and/or exclusions in their proposal and clarify during the kickoff meeting. NRCan is amenable to changes to this scope so long as objectives can still be met and project budget is unchanged.

Deliverable:

- Deck presented to project team via teleconference outlining results, challenges, and implications for next steps.
- Draft proposed database and analysis tool (may be an Excel file) with assumptions

Task 4 – Catalog of Electric End-uses Technologies

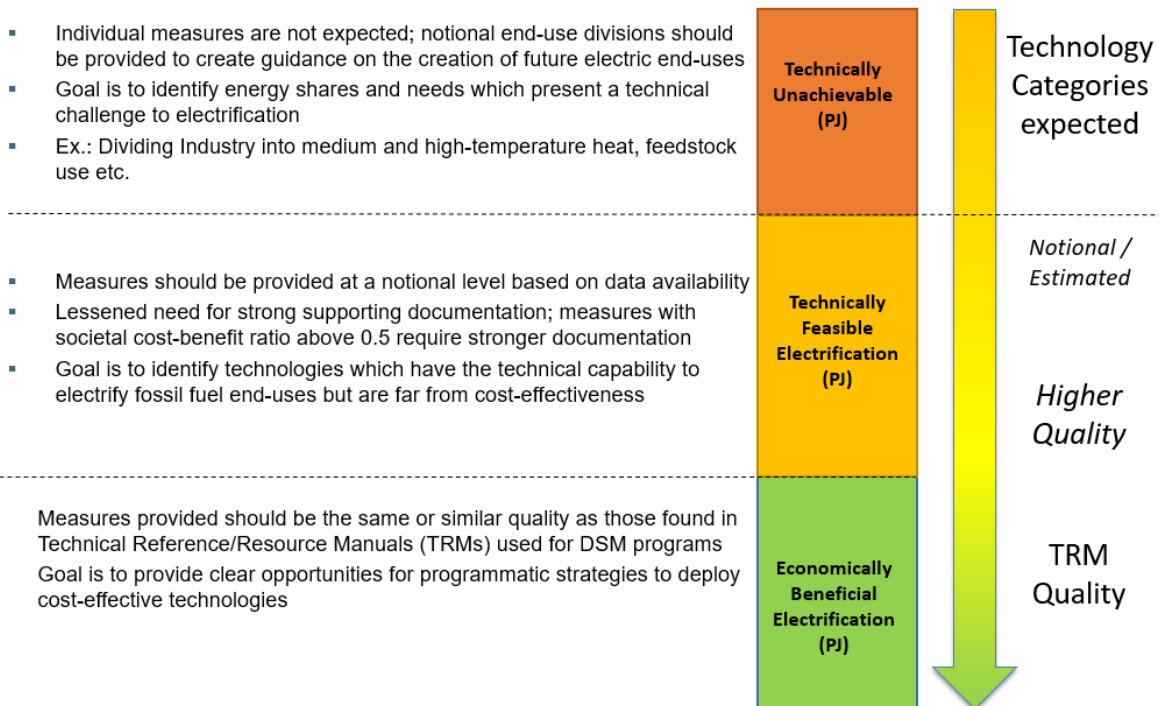
The consultant will conduct desk research to develop technical assumptions for various electric end-uses which are commercially available. These will be used to calculate the potential for end-use electrification in Task 5. The consultant will work with NRCan's CanmetENERGY laboratories in the development of assumptions. It is expected that this task will be a significant portion of the overall level of effort on the project. We require a technical reference/resource manual for all commercially available fuel-switching technologies in an agreed-upon appropriate format, contextualized by qualitative information in the report.

The following are the minimum data requirements for electric end-use technologies. These data requirements are considered indispensable in order to generate a net present value figure. The consultant may propose adding to or excluding from the list any data they believe is not necessary for this objective:

- Baseline carbon-emitting end-use
- Applicable sectors and subsectors (e.g. industrial and steel manufacturing, etc.)
- Operating hours/year
- Technical assumptions (e.g. EER (energy efficiency ratio), COP (coefficient of performance), capacity)



- Assumptions should be developed for the current baseline efficiency as well as the highest efficiency commercially available
- Expected useful life in years
- Baseline carbon-emitting demand in GJ
- New carbon-emitting demand (e.g. fuel-use after full or partial electrification)
- Max electric demand in kilowatts (kW) and kilowatt hours (kWh)
- New electric demand in kilowatts (kW) and kilowatt hours (kWh)
- GHG reduction assuming a carbon-neutral electricity supply
- Incremental cost in CAD with zero baseline cost (early replacement), 50% baseline cost (mid-life replacement), and 100% baseline cost (replace on burnout)



Please note that the information in the above diagram is notional guidance for the consultant – the consultant should propose a more specific approach to documenting and prioritizing data quality.

In addition, the consultant is asked to propose a simplified approach to cataloging the peak coincidence and/or the ability to modulate the electric measures kW impact through demand response (e.g. Air Source Heat Pumps may have high peak coincidence, but have some level of dispatchability, where dual-fuel heat pumps will have the same potential coincidence but high dispatchability). The consultant is asked to limit the level of effort on this task and propose a simplified approach, but one that could provide useful data to a more detailed follow-on study on this topic.

The consultant should advise on the number of core technologies (e.g. air source heat pump) they plan to catalog, as well as the overall number of permutations they plan across all measures (e.g. air source heat pumps across different sectors, early replacement versus retrofit etc.). This number can be approximate and



revised during project execution. In any case, the consultant should outline their approach to determining level of effort on the developing both core technologies and associated permutations – this will be used during project execution to manage NRCan’s expectations on the number of technologies and permutations changes.

In general, the core electric technologies developed should address the following areas:

- Space and water heating in all sectors outside transport
- Industrial Processes (including but not limited to heat)
- Transport technologies (including all domestic travel)
- Oil and gas industry processes (including electric alternatives in the oil sands)

The following is a list of the “core technologies” to be analyzed identified by NRCan. The consultant should speak to their ability to develop assumptions regarding these technologies or technology areas, as well suggest additional technologies NRCan may not be aware of. Assumptions should be developed such that core technologies have applicability to a wide range of sectors and baseline technologies.

In scope:

- Electric resistance in all sectors
- Air Source Heat Pumps
- Ground Source Heat Pumps
- Water source Heat Pumps
- Solar thermal
- Replacement of instrument gas
- Non-road electric vehicles
- Light Duty electric vehicles
- Short-haul electric planes
- All other electric vehicles, to the extent applicable
- Advanced heating electrotechnologies (e.g. induction, infrared, microwave)

Out of scope

- Any technologies which do not rely on direct use of electrical energy (e.g. electrolysis for hydrogen production in industry)

Key Clarifications

Carbon-emissions from Electricity Supply: For the purposes of this study, it is assumed that all electricity is generated from zero-emissions sources. The potential cost scenarios associated with the need for new supply will be addressed during sensitivity analysis.

Transport Treatment: The consultant should propose a simplified approach for light-duty electric vehicles and any other vehicles which the consultant believes have commercially available electrification potential. Detailed/granular work on electric vehicles potential should be relatively limited, though high-level figures or assumptions should be well-documented.



Partial electrification: Technologies across sectors (e.g. dual-fuel heat pumps) should be assessed to some extent, the consultant should provide recommendations on how to handle these measures when determining the final potential figures.

Energy Efficiency: As noted earlier in this section, assumptions should be developed for both the regulated baseline efficiency of a fuel-switching technology and the highest commercially available efficiency.

Level of Detail: Technologies should be described at a high level in the report appendix, it is expected that each core technology will have a description no longer than 300 words. Any further description of core technologies in different contexts should be limited to 200 words. Assumptions regarding each permutation of the technology should be delivered in the database (could be Excel).

Provincial Specificity: The only strict requirement is that there are different avoided cost assumptions for each province (which can also be properly aggregated for the national result on technical versus economic potential). It is up to the consultant to propose a level of granularity at the technology level that balances the budget available with the range of objectives listed. For technologies whose performance or price is not significantly affected by the jurisdiction – for instance due to a globally determined price or the climate zone having limited impact on performance) - a single national “measure” may be used. That said, there should be at least a notional reflection of the distinctions in technology cost and performance between jurisdictions. For instance, one would expect that most heating/cooling technologies would at least climate zone specific measures, as well as potentially differing incremental costs based on the maturity of the local market, assuming it is a determinant of price, which may or may not be true. In all cases, some form of simplifying assumptions will be necessary, and the consultant should be clear on why it was used.

Technology Readiness Levels: The consultant should focus their efforts on technologies which have met Technology Readiness Level 9, or more specifically, technologies which have been successfully demonstrated at scale and which could be practically procured by an organization with the appropriate financial and organizational resources (regardless of whether this would necessarily constitute a good investment or whether this technology is regularly procured). A key focus should be electric technologies which are functional but largely unused given fuel or capital costs (enabling an assessment of the potential for R&D to have an impact). This likely includes electric resistance in many contexts. The consultant should recognize that there is no direct relationship between the TRL level and the economic viability of a technology, and the study should reflect the complexity of a technology's economic viability depending on the assumptions used.

The consultant is asked to propose how they plan to balance the level of effort on more complex electric technologies. For instance, NRCan is interested in investigating the scalability and economic potential of the Drake's Landing Solar Community (<https://www.NRCan.gc.ca/energy/publications/sciences-technology/buildings/17864>) under different economic assumptions. A key aspect of the project will be to create notional assumptions on innovative approaches highlighted by CanmetENERGY researchers to understand how far these technologies may be from economic viability. The consultant should recommend a level of effort associated with measures of this kind as a percentage of overall level of effort on Task 4. CanmetENERGY may also wish to develop their own measures for inclusion. This would occur during this stage, and NRCan will coordinate this input through the project authority.



The consultant will not be asked to coordinate the input of multiple groups, however the database and analysis tool (may be an Excel-based tool, or another option which does not require the purchase of licensing of software) must be capable of incorporating an **unlimited number of additional electrification measures and technology baselines** in the long run. The consultant must clearly outline how to input this data into the tool both during the project and for future use, and provide the opportunity for these to be inputted into the tool during the project so long as CanmetENERGY researchers follow the requested data format.

It is important to note that the goal of this project is not to have highly accurate data on specific technologies in different permutations. Rather, it is to collate existing assumptions and estimate impacts which are less clear such that economic assumptions can be applied, enabling the assessment of different challenges within a tool that can be used by NRCan going forward.

Deliverables:

- Draft of report appendix (in the agreed upon database and tool (or potentially Excel)) with descriptions of technologies, assumptions, and relevant references
- Summary of measure-level cost-effectiveness results

Task 5 – Current Technical and Economic Potential and Sensitivity Results

The next task is to finalize and apply the economic assumptions to the data collected during tasks 3 and 4. However, the consultant should have already been conducting this analysis on a preliminary basis during technology research.

During this stage, the consultant should finalize a cost-benefit figure for each technologies in each relevant context. The consultant should then develop an approach which uses the data collected during the previous two (2) tasks to determine the technical and economic potential of current electric end-use technologies. The consultant will develop multiple scenarios to test the sensitivity of this question to different assumptions.

The discount rate selected should be used consistently across all scenarios. NRCan will make the final decision on this figure during project execution in consultation with other parts of NRCan.

Naturally, this will change based on the cost-test used. The tool(s) should provide the ability to conduct cost effectiveness testing at the provincial, national, and technology level.

NRCan is primarily interested the following tests:

- Total Resource Cost test (including \$50 carbon tax, with the ability to vary the carbon tax price)
- Participant Cost Test (including \$50 carbon tax, with the ability to vary the carbon tax price)
- Societal Cost Test (parameters to be determined)

The consultant should also propose an approach to applying the Ratepayer Impact Measure test while limiting level of effort with regard to complexity across provinces, with a view to demonstrating the potential to lower distribution rates through electrification, rather than the potential need for new peak capacity.



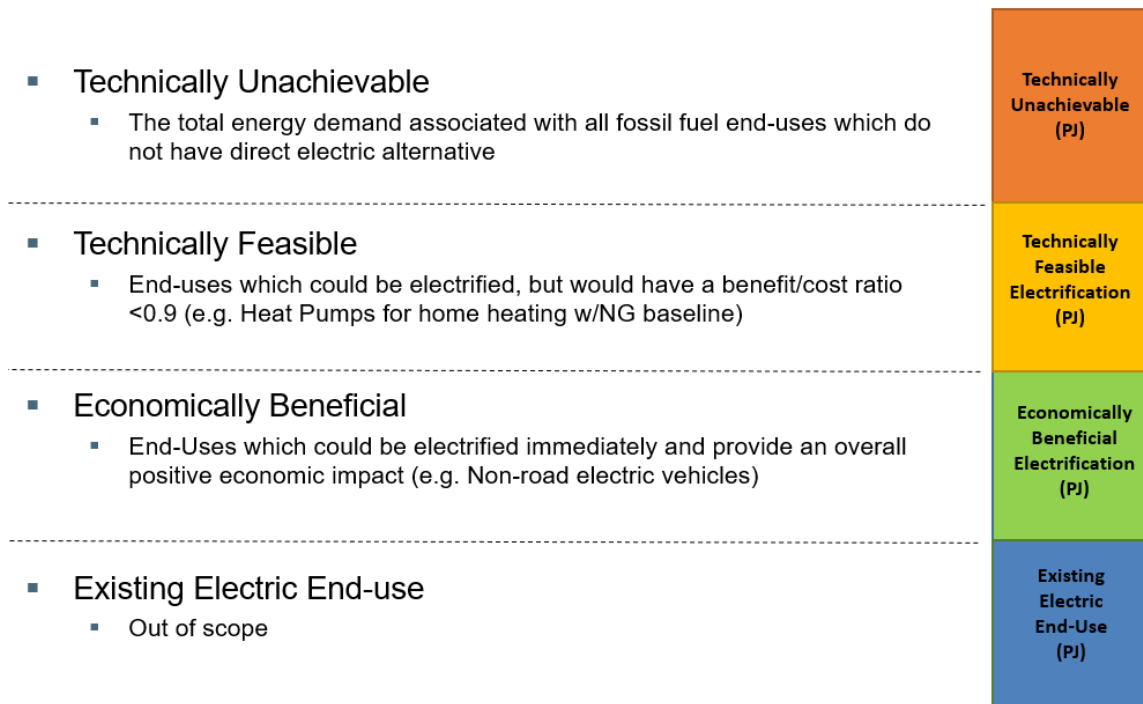
These tests should be conducted as per the California Standard Practice Manual¹ or an alternative as proposed by the consultant. The consultant may propose to calculate additional cost tests to provide added value.

For the purposes of determining net present value (NPV), current fuel costs should be assumed to increase by the rate of inflation or, ideally, at a rate indicated by utilities during rate filings. *The tool should include an easy to use “dashboard” enabling adjustments to all variables.*

The following scenarios should be analyzed:

- Scenario which prioritizes economic benefits
- Scenario which prioritizes low energy consumption
- Scenarios assuming all technologies are deployed on an early replacement basis
- Scenarios assuming all technologies are deployed only when the baseline technology needs to be replaced
- Scenarios designed to show the sensitivity of the results to electricity and fuel prices
- Scenarios which prioritize partial electrification measures with high levels of dispatchability or more limited peak coincidence (e.g. dual-fuel heat pumps)

The diagram below outlines what is expected in each of these scenarios alongside the relevant assumptions.



The consultant should outline how they plan to develop these outputs using existing capabilities or a custom-built tool.

Deliverable:

¹ <http://www.calmac.org/toolkitEE.asp>



- None – results to be delivered alongside task 6

Task 6 – 50-year Achievable Potential and Sensitivity Results

The final major research task is to analyze the extent to which electrification is a viable pathway to meeting 2050 targets. The consultant will do this by applying the techno-economic results from the previous tasks by assessing both capital stock turnover and potential adoption curves (including the ability to force the adoption of certain technologies) for these technologies and baselines, including the potential effect of incentives. The tool should project results as far as 2070 in order to understand the potential to overshoot on our 2030, 2040 and 2050 net-zero objective and/or potential benefits of mitigating through other means.

These outputs should be designed to provide guidance/insight/advice to NRCan on the most promising paths forward on end-use electrification given different economic and environmental considerations and sensitivities.

The tool should be able to provide separate results for Task 5 (i.e. a snapshot) and Task 6 (i.e. a projection).

Deliverable:

- Draft slide deck presented in-person at Natural Resources Canada, 580 Booth St., Ottawa

Task 7 – Database and Analysis Tool Package (e.g. Excel Files) and Draft-Report

The draft report should outline the study’s approach, high-level results, data-quality commentary, and commentary on the sensitivity of the results to various scenarios. The draft report should also include an appendix (in an agreed upon format, potentially Excel) providing the documentation on each of the technologies researched and how assumptions were developed. The database and analysis tool (possibly an Excel file) should also be delivered at this time.

Deliverable:

- Draft report and appropriate file package delivered electronically

Task 7 – Final Report and Revised Database and Analysis tool

The final report and PowerPoint should be submitted within 2 weeks of receiving feedback from NRCan.

Deliverable:

- Final report delivered electronically
- Final Slide Deck delivered electronically

Table 1: Tasks, Milestones & Timelines

Task	Deliverable/Milestone	Schedule
Task 1	<ul style="list-style-type: none"> • Meeting Agenda – delivered via-email by forty-eight (48) hours before the meeting takes place. • Meeting Minutes – delivered via e-mail 	To be determined at contract award



	within one week of the kickoff meeting.	
Task 2	<ul style="list-style-type: none"> Briefing materials or simplified examples of study outputs, presented via teleconference. Briefing materials on preliminary plan for economic assumptions Meeting Minutes – delivered via e-mail within one week of the kickoff meeting. 	<i>To be determined during kickoff meeting</i>
Task 3	<ul style="list-style-type: none"> Deck presented to project team via teleconference outlining results, challenges, and implications for next steps. 	<i>To be determined during kickoff meeting</i>
Task 4	<ul style="list-style-type: none"> Draft of report appendix with descriptions of technologies, assumptions, and relevant references. Draft Database and Analysis tool package with assumptions 	<i>To be determined during kickoff meeting</i>
Task 5	<ul style="list-style-type: none"> Draft slide deck presented in-person at Natural Resources Canada, 580 Booth St., Ottawa 	<i>To be determined during kickoff meeting</i>
Task 6	<ul style="list-style-type: none"> Draft report 	<i>To be determined during kickoff meeting</i>
Task 7	<ul style="list-style-type: none"> Final report and slide Deck 	February 28, 2021

SW.4.2 Reporting Requirements

This project will be managed by an OERD project manager in collaboration with a manager from ERB. The OERD project manager is the main contact and lead of this project. Additional support will be provided by a researcher and will be conducted using primarily external resources.

The lead Project Authority will work to ensure that the contract is on budget and of an acceptable quality through working in close consultation with the contractor and through requiring regular status updates (at minimum biweekly) and opportunities to review and comment on work as it is progressing.

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.5.0 OTHER TERMS AND CONDITIONS OF THE SOW

SW.5.1 Contractor's Obligations

In addition to the obligations outlined in Section 2 of this Statement of Work, the Contractor shall:

- keep all documents and proprietary information confidential;
- return all materials belonging to NRCan upon completion of the Contract;
- submit all written reports in electronic Microsoft Office Word, PowerPoint, Excel and otherwise agreed-upon formats;
- supply other deliverables or results in the format(s) identified and agreed upon by the Project Authority and the Contractor (ex. electronic database, transfer password or administrative rights, etc.);
- will return or surrender access to any databases, specialized tools or software supplied by the OERD or otherwise, that will be used to continue to collect, store, monitor, analyze and/or report OERD, ERB and OEE performance;
- participate in teleconferences, as needed;
- store all data and documentation in a secure area.

SW.5.2 NRCan's Obligations

NRCan will facilitate the completion of the project by providing the following:

- access to program information relevant to the project, including Government publications, reports, studies, etc.;
- access to a staff member who will be available to help coordinate activities;
- access to facilities and meeting rooms with associated equipment, telephone, etc, if conducting work onsite at NRCan (if and as agreed by the Project Authority);
- if and as agreed upon in writing the project authority, OERD, ERB or OEE may provide access to or cover the cost of supplemental data (ex. Statistics Canada microdata) and/or specialized tools that may be necessary to carry out work;
- provide comments on draft reports within five (5 working days) and/or,
- provide other assistance or support, as appropriate.

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

Work will primarily be conducted at the Contractor's place of business. If and as agreed upon in writing by the Project Authority and Contractor, the Contractor may be required to conduct work or attend meetings onsite at NRCan in Ottawa.



SW.5.4 Insurance Requirements

It is the sole responsibility of the Contractor to decide whether or not any insurance coverage is necessary for its own protection or to fulfill its obligations under the Contract, and to ensure compliance with required federal, provincial or municipal law. Any such insurance shall be provided and maintained by the Contractor at its own expense.

Any insurance secured is to the benefit and protection of the Contractor and shall not be deemed to release or diminish its liability in any manner including as may be referenced elsewhere by the provisions of this Contract.



ANNEX “B” - BASIS OF PAYMENT

(to be completed at contract award)



ANNEX "C" - SECURITY REQUIREMENTS CHECK LIST

Government of Canada / Gouvernement du Canada

Contract Number / Numéro du contrat 154089
Security Classification / Classification de sécurité UNCLASSIFIED

**SECURITY REQUIREMENTS CHECK LIST (SRCL)
LISTE DE VÉRIFICATION DES EXIGENCES RELATIVES À LA SÉCURITÉ (LVERS)**

PART A - CONTRACT INFORMATION / PARTIE A - INFORMATION CONTRACTUELLE		
1. Originating Government Department or Organization / Ministère ou organisme gouvernemental d'origine Natural Resources Canada	2. Branch or Directorate / Direction générale ou Direction ETS/OERD	
3. a) Subcontract Number / Numéro du contrat de sous-traitance	3. b) Name and Address of Subcontractor / Nom et adresse du sous-traitant	
4. Brief Description of Work / Brève description du travail Research and Modelling on Energy Technologies		
5. a) Will the supplier require access to Controlled Goods? Le fournisseur aura-t-il accès à des marchandises contrôlées? <input checked="" type="checkbox"/> No / <input type="checkbox"/> Yes / <input type="checkbox"/> Oui		
5. b) Will the supplier require access to unclassified military technical data subject to the provisions of the Technical Data Control Regulations? Le fournisseur aura-t-il accès à des données techniques militaires non classifiées qui sont assujetties aux dispositions du Règlement sur le contrôle des données techniques? <input checked="" type="checkbox"/> No / <input type="checkbox"/> Yes / <input type="checkbox"/> Oui		
6. Indicate the type of access required / Indiquer le type d'accès requis		
6. a) Will the supplier and its employees require access to PROTECTED and/or CLASSIFIED information or assets? Le fournisseur ainsi que les employés auront-ils accès à des renseignements ou à des biens PROTÉGÉS et/ou CLASSIFIÉS? (Specify the level of access using the chart in Question 7. c.) (Préciser le niveau d'accès en utilisant le tableau qui se trouve à la question 7. c.) <input type="checkbox"/> No / <input checked="" type="checkbox"/> Yes / <input type="checkbox"/> Oui		
6. b) Will the supplier and its employees (e.g. cleaners, maintenance personnel) require access to restricted access areas? No access to PROTECTED and/or CLASSIFIED information or assets is permitted. Le fournisseur et ses employés (p. ex. nettoyeurs, personnel d'entretien) auront-ils accès à des zones d'accès restreintes? L'accès à des renseignements ou à des biens PROTÉGÉS et/ou CLASSIFIÉS n'est pas autorisé. <input checked="" type="checkbox"/> No / <input type="checkbox"/> Yes / <input type="checkbox"/> Oui		
6. c) Is this a commercial courier or delivery requirement with no overnight storage? S'agit-il d'un contrat de messagerie ou de livraison commerciale sans entreposage de nuit? <input checked="" type="checkbox"/> No / <input type="checkbox"/> Yes / <input type="checkbox"/> Oui		
7. a) Indicate the type of information that the supplier will be required to access / Indiquer le type d'information auquel le fournisseur devra avoir accès		
Canada <input checked="" type="checkbox"/>	NATO / OTAN <input type="checkbox"/>	Foreign / Étranger <input type="checkbox"/>
7. b) Release restrictions / Restrictions relatives à la diffusion		
No release restrictions / Aucune restriction relative à la diffusion <input checked="" type="checkbox"/>	All NATO countries / Tous les pays de l'OTAN <input type="checkbox"/>	No release restrictions / Aucune restriction relative à la diffusion <input type="checkbox"/>
Not releasable / À ne pas diffuser <input type="checkbox"/>		
Restricted to: / Limité à: <input type="checkbox"/>	Restricted to: / Limité à: <input type="checkbox"/>	Restricted to: / Limité à: <input type="checkbox"/>
Specify country(ies): / Préciser le(s) pays:	Specify country(ies): / Préciser le(s) pays:	Specify country(ies): / Préciser le(s) pays:
7. c) Level of information / Niveau d'information		
PROTECTED A / PROTÉGÉ A <input checked="" type="checkbox"/>	NATO UNCLASSIFIED <input type="checkbox"/>	PROTECTED A / PROTÉGÉ A <input type="checkbox"/>
PROTECTED B / PROTÉGÉ B <input checked="" type="checkbox"/>	NATO NON CLASSIFIÉ <input type="checkbox"/>	PROTECTED B / PROTÉGÉ B <input type="checkbox"/>
PROTECTED C / PROTÉGÉ C <input type="checkbox"/>	NATO RESTRICTED <input type="checkbox"/>	PROTECTED C / PROTÉGÉ C <input type="checkbox"/>
CONFIDENTIAL / CONFIDENTIEL <input type="checkbox"/>	NATO DIFFUSION RESTREINTE <input type="checkbox"/>	CONFIDENTIAL / CONFIDENTIEL <input type="checkbox"/>
SECRET / SECRET <input type="checkbox"/>	NATO CONFIDENTIAL <input type="checkbox"/>	SECRET / SECRET <input type="checkbox"/>
TOP SECRET / TRÈS SECRET <input type="checkbox"/>	NATO SECRET <input type="checkbox"/>	TOP SECRET / TRÈS SECRET <input type="checkbox"/>
TOP SECRET (SIGINT) / TRÈS SECRET (SIGINT) <input type="checkbox"/>	NATO SECRET <input type="checkbox"/>	TOP SECRET (SIGINT) / TRÈS SECRET (SIGINT) <input type="checkbox"/>
	COSMIC TOP SECRET / COSMIC TRÈS SECRET <input type="checkbox"/>	

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Security Classification / Classification de sécurité UNCLASSIFIED
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PART A (continued) / PARTIE A (suite)

8. Will the supplier require access to PROTECTED and/or CLASSIFIED COMSEC information or assets?
Le fournisseur aura-t-il accès à des renseignements ou à des biens COMSEC désignés PROTÉGÉS et/ou CLASSIFIÉS? No Yes
Non Oui

If Yes, indicate the level of sensitivity:
Dans l'affirmative, indiquer le niveau de sensibilité :

9. Will the supplier require access to extremely sensitive INFOSEC information or assets?
Le fournisseur aura-t-il accès à des renseignements ou à des biens INFOSEC de nature extrêmement délicate? No Yes
Non Oui

Short Title(s) of material / Titre(s) abrégé(s) du matériel :
Document Number / Numéro du document :

PART B - PERSONNEL (SUPPLIER) / PARTIE B - PERSONNEL (FOURNISSEUR)

10. a) Personnel security screening level required / Niveau de contrôle de la sécurité du personnel requis

- | | | | |
|---|---|---|--|
| <input checked="" type="checkbox"/> RELIABILITY STATUS
COTE DE FIABILITÉ | <input type="checkbox"/> CONFIDENTIAL
CONFIDENTIEL | <input type="checkbox"/> SECRET
SECRET | <input type="checkbox"/> TOP SECRET
TRÈS SECRET |
| <input type="checkbox"/> TOP SECRET- SIGINT
TRÈS SECRET - SIGINT | <input type="checkbox"/> NATO CONFIDENTIAL
NATO CONFIDENTIEL | <input type="checkbox"/> NATO SECRET
NATO SECRET | <input type="checkbox"/> COSMIC TOP SECRET
COSMIC TRÈS SECRET |
| <input type="checkbox"/> SITE ACCESS
ACCÈS AUX EMPLACEMENTS | | | |

Special comments:
Commentaires spéciaux :

NOTE: If multiple levels of screening are identified, a Security Classification Guide must be provided.
REMARQUE : Si plusieurs niveaux de contrôle de sécurité sont requis, un guide de classification de la sécurité doit être fourni.

10. b) May unscreened personnel be used for portions of the work?
Du personnel sans autorisation sécuritaire peut-il se voir confier des parties du travail? No Yes
Non Oui

If Yes, will unscreened personnel be escorted?
Dans l'affirmative, le personnel en question sera-t-il escorté? No Yes
Non Oui

PART C - SAFEGUARDS (SUPPLIER) / PARTIE C - MESURES DE PROTECTION (FOURNISSEUR)

INFORMATION / ASSETS / RENSEIGNEMENTS / BIENS

11. a) Will the supplier be required to receive and store PROTECTED and/or CLASSIFIED information or assets on its site or premises?
Le fournisseur sera-t-il tenu de recevoir et d'entreposer sur place des renseignements ou des biens PROTÉGÉS et/ou CLASSIFIÉS? No Yes
Non Oui

11. b) Will the supplier be required to safeguard COMSEC information or assets?
Le fournisseur sera-t-il tenu de protéger des renseignements ou des biens COMSEC? No Yes
Non Oui

PRODUCTION

11. c) Will the production (manufacture, and/or repair and/or modification) of PROTECTED and/or CLASSIFIED material or equipment occur at the supplier's site or premises?
Les installations du fournisseur serviront-elles à la production (fabrication et/ou réparation et/ou modification) de matériel PROTÉGÉ et/ou CLASSIFIÉ? No Yes
Non Oui

INFORMATION TECHNOLOGY (IT) MEDIA / SUPPORT RELATIF À LA TECHNOLOGIE DE L'INFORMATION (TI)

11. d) Will the supplier be required to use its IT systems to electronically process, produce or store PROTECTED and/or CLASSIFIED information or data?
Le fournisseur sera-t-il tenu d'utiliser ses propres systèmes informatiques pour traiter, produire ou stocker électroniquement des renseignements ou des données PROTÉGÉS et/ou CLASSIFIÉS? No Yes
Non Oui

11. e) Will there be an electronic link between the supplier's IT systems and the government department or agency?
Disposera-t-on d'un lien électronique entre le système informatique du fournisseur et celui du ministère ou de l'agence gouvernementale? No Yes
Non Oui

TBS/SCT 350-103(2004/12)

Security Classification / Classification de sécurité UNCLASSIFIED
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PART C - (continued) / PARTIE C - (suite)

For users completing the form manually use the summary chart below to indicate the category(ies) and level(s) of safeguarding required at the supplier's site(s) or premises.

For users completing the form online (via the Internet), the summary chart is automatically populated by your responses to previous questions.

SUMMARY CHART / TABLEAU RÉCAPITULATIF

Category / Catégorie	PROTECTED / PROTÉGÉ			CLASSIFIED / CLASSIFIÉ			NATO				COMSEC					
	A	B	C	CONFIDENTIAL / CONFIDENTIEL	SECRET	TOP SECRET / TRÈS SECRET	NATO RESTRICTED / NATO DIFFUSION RESTREINTE	NATO CONFIDENTIAL / NATO CONFIDENTIEL	NATO SECRET	COSMIC TOP SECRET / COSMIC TRÈS SECRET	PROTECTED / PROTÉGÉ			CONFIDENTIAL / CONFIDENTIEL	SECRET	TOP SECRET / TRÈS SECRET
											A	B	C			
Information / Assets / Renseignements / Biens / Production	✓															
IT Media / Support TI / Lien électronique	✓															

12. a) Is the description of the work contained within this SRCL PROTECTED and/or CLASSIFIED? / La description du travail visé par la présente LVERS est-elle de nature PROTÉGÉE et/ou CLASSIFIÉE? No / Non Yes / Oui
- If Yes, classify this form by annotating the top and bottom in the area entitled "Security Classification". / Dans l'affirmative, classifiez le présent formulaire en indiquant le niveau de sécurité dans la case intitulée « Classification de sécurité » au haut et au bas du formulaire.
12. b) Will the documentation attached to this SRCL be PROTECTED and/or CLASSIFIED? / La documentation associée à la présente LVERS sera-t-elle PROTÉGÉE et/ou CLASSIFIÉE? No / Non Yes / Oui
- If Yes, classify this form by annotating the top and bottom in the area entitled "Security Classification" and indicate with attachments (e.g. SECRET with Attachments). / Dans l'affirmative, classifiez le présent formulaire en indiquant le niveau de sécurité dans la case intitulée « Classification de sécurité » au haut et au bas du formulaire et indiquez qu'il y a des pièces jointes (p. ex. SECRET avec des pièces jointes).



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.

Item	Mandatory Technical Criteria	Compliant	Bidders are to identify where in their proposal and/or resume to find the information
M1	The bidder MUST provide proof that the proposed resource(s) have experience conducting technology analysis in the Canadian energy sector. This experience is shown through a minimum of 2 projects, providing a summary and duration of project	<input type="checkbox"/> Yes <input type="checkbox"/> No	
M2	The bidder MUST provide proof the proposed resource(s) have experience conducting cost effectiveness analysis in the context of the design of utility demand-side management programs in North America. This experience is shown through a minimum of 2 projects, providing a summary and duration of project	<input type="checkbox"/> Yes <input type="checkbox"/> No	



M3	The bidder MUST provide proof the proposed resource(s) have experience conducting potential studies for demand-side management in the North American Utility sector or the Canadian utility sector within the past 10 years	<input type="checkbox"/> Yes <input type="checkbox"/> No	
M4	The bidder MUST provide proof the proposed resource(s) have recent experience analyzing fuel-switching technologies. This experience is shown through a minimum of 2 projects, providing a summary and duration of project	<input type="checkbox"/> Yes <input type="checkbox"/> No	
M5	<p>The bidder MUST provide proof at least one proposed resource has expertise relevant to the “core technologies” discussed under task 4 of the SOW and listed below (a single resource can provide expertise on multiple technologies). This expertise is shown through projects and related credentials, which should be outlined in the attached CVs of the proposed resource.</p> <ul style="list-style-type: none"> • Electric resistance in all sectors • Air Source Heat Pumps • Ground Source Heat Pumps • Water source Heat Pumps • Solar thermal • Replacement of instrument gas • Non-road electric vehicles • Light Duty electric vehicles • Short-haul electric planes • All other electric vehicles • Advanced heating electro technologies (e.g. induction, infrared, microwave) <p>Note: each item listed above should be covered (not necessary by one person).</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No	

1.2 EVALUATION OF RATED CRITERIA

The criteria contained herein will be used by NRCan to evaluate each proposal that has met all of the mandatory criteria.

Proposals must achieve the stated minimum points required overall for the rated criteria to be assessed



as responsive under the point rated technical criteria section; proposals not meeting the minimum required points will be deemed non-responsive.

Proposals will be evaluated based on the following criteria:

Item	Point Rated Technical Criteria	Points Breakdown	Max Points	Bidders are to identify where in their proposal and/or resume to find the information
R1	Bidder's Experience in fuel-switching analysis within the past 5 years. Projects examples to be provided with a summary and duration of project.	One point per project.	5	
R2	Number of individual resources with fuel-switching analysis experience within the past 5 years. At least 1 project example to be provided for each resource with a summary and duration of project.	One point per resource.	5	
R3	Bidder's understanding of the Requirement	1) Insight into the context of the requirement (5 points) 2) Perception of the opportunities, challenges and delivery of the requirement (5 points) 3) Identification of any obstacles to the requirement (5 points) <i>Excellent – 5</i> <i>Very good – 4</i> <i>Good – 3</i> <i>Unsatisfactory – 2</i> <i>Poor – 1</i> <u>(PLEASE SEE TABLE BELOW)</u>	15	



The evaluation grid described below will be used to evaluate the bidders' proposals based on R3s rated criterion.

EVALUATION GRID for R3	1	2	3
Excellent	Bidder demonstrated full and in-depth insight into the context of the requirement.	Bidder demonstrated a full and in depth perception of the opportunities, challenges and delivery of the requirement.	Bidder demonstrated a full and in depth identification of any obstacles to the requirement.
Very good	Bidder demonstrated advanced insight into the context of the requirement".	Bidder demonstrated an advanced perception of the opportunities, challenges and delivery of the requirement.	Bidder provided an advanced identification of any obstacles to the requirement.
Good	Bidder demonstrated adequate insight into the context of the requirement.	Bidder demonstrated an adequate perception of the opportunities, challenges and delivery of the requirement.	Bidder provided an adequate identification of any obstacles to the requirement.
Unsatisfactory	Bidder demonstrated limited insight into the context of the requirement.	Bidder demonstrated a limited perception of the opportunities, challenges and delivery of the requirement.	Bidder provided a limited identification of any obstacles to the requirement.
Poor	Bidder demonstrated poor insight into the context of the requirement.	Bidder demonstrated a limited perception of the opportunities, challenges and delivery of the requirement.	Bidder provided poor identification of any obstacles to the requirement.

2. FINANCIAL CRITERIA

2.1 MANDATORY FINANCIAL CRITERIA

Bidders must provide financial details as requested in this appendix. Proposals which do not contain pricing details as requested below shall be considered incomplete and non-responsive.

2.1.1 FUNDING LIMITATION

The maximum funding available for the Contract resulting from the bid solicitation is **\$ 600,000.00 (Applicable Taxes extra)**. Bids valued in excess of this amount will be considered non-responsive. This disclosure does not commit Canada to pay the maximum funding available.

This maximum **included a) the Price to perform the Work, b) any Travel and Living and c) Miscellaneous Expenses that may be required.**

Any bids received in excess of this maximum funding will be automatically deemed non-responsive and will not be evaluated.



APPENDIX “2” – FINANCIAL PROPOSAL FORM

1. FIRM PRICE - Milestone Payments

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

The bidder must complete the schedule below indicating the firm proposed amounts for each step according to the indicated percentages:

Milestone	Deliverable/Milestone	Milestone Firm Price
1	0% of Payment <ul style="list-style-type: none"> Meeting Agenda – delivered via-email by forty-eight (48) hours before the meeting takes place. Meeting Minutes – delivered via e-mail within one week of the kickoff meeting. 	
2	8.3% of Payment <ul style="list-style-type: none"> Briefing materials or simplified examples of study outputs, presented via teleconference. Briefing materials on preliminary plan for economic assumptions Meeting Minutes – delivered via e-mail within one week of the kickoff meeting. 	
3	25% of Payment <ul style="list-style-type: none"> Deck presented to project team via teleconference outlining results, challenges, and implications for next steps. 	
4	33.3% of Payment <ul style="list-style-type: none"> Draft of report appendix with descriptions of technologies, assumptions, and relevant references. Draft Database and Analysis tool package with assumptions 	



5	16.7% of Payment <ul style="list-style-type: none">Draft slide deck presented in-person at Natural Resources Canada, 580 Booth St., Ottawa	
6	8.3% of Payment <ul style="list-style-type: none">Draft report	
7	8.3% of Payment <ul style="list-style-type: none">Final report and slide Deck	
TOTAL:		\$ _____