



**RETURN BIDS TO:  
RETOURNER LES SOUMISSIONS À:**

Health Canada / Santé Canada

**Attn: Sami Nouh**

**Email:** [sami.nouh@hc-sc.gc.ca](mailto:sami.nouh@hc-sc.gc.ca)

**REQUEST FOR PROPOSAL  
DEMANDE DE PROPOSITION**

Proposal To: Health Canada

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

**Proposition à:  
Santé Canada**

Nous offrons par la présente de vendre à Sa Majesté la Reine du chef du Canada, aux conditions énoncées ou incluses par référence dans la présente et aux annexes ci-jointes, les biens, services et construction énumérés ici sur toute feuille ci-annexées, au(x) prix indiqué(s).

**Instructions : See Herein  
Instructions: Voir aux présentes**

**Issuing Office – Bureau de distribution**

Health Canada / Santé Canada  
200, Eglantine Driveway  
Tunney's Pasture  
Ottawa Ontario K1A 0K9

<b>Title – Sujet</b> Combined health risk from climate change and ambient air pollution	
<b>Solicitation No. – N° de l'invitation</b>  1000247420	<b>Date</b>  January 24, 2023
<b>Solicitation Closes at – L'invitation prend fin à 2:00 PM</b>  on / le – February 24, 2023	<b>Time Zone</b> <b>Fuseau horaire</b> EDT
<b>F.O.B. - F.A.B.</b> Plant-Usine: <input type="checkbox"/> Destination: <input type="checkbox"/> Other-Autre: <input type="checkbox"/>	
<b>Address Enquiries to: - Adresser toutes questions à :</b> Name: Sami Nouh Email: <a href="mailto:sami.nouh@hc-sc.gc.ca">sami.nouh@hc-sc.gc.ca</a>	
<b>Telephone – téléphone : 613-941-2074</b>	
<b>Destination – of Goods, Services, and Construction:</b> <b>Destination – des biens, services et construction :</b> See Herein – Voir ici	
<b>Delivery required - Livraison exigée</b>  <b>See Herein – Voir ici</b>	
<b>Vendor/firm Name and address</b> <b>Raison sociale et adresse du fournisseur/de l'entrepreneur</b>          <b>Facsimile No. – N° de télécopieur :</b> <b>Telephone No. – N° de téléphone :</b>	
<b>Name and title of person authorized to sign on behalf of Vendor/firm</b> <b>Nom et titre de la personne autorisée à signer au nom du fournisseur/de l'entrepreneur</b>          <b>(type or print)/ (taper ou écrire en caractères d'imprimerie)</b>	
<b>Signature</b>	<b>Date</b>



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## **PART 1 - GENERAL INFORMATION**

### **1.1 Statement of Work**

The Work to be performed is detailed under Appendix "A" Statement of Work of the resulting contract clauses

### **1.3 Debriefings**

Bidders may request a debriefing on the results of the bid solicitation process. Bidders should make the request to the Contracting Authority within 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](#) (2020-05-28) Standard Instructions - Goods or Services - Competitive Requirements, are incorporated by reference into and form part of the bid solicitation.

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

Delete: 60 days

Insert: 90 days

### 2.2 Submission of Bids

Bids must be submitted only to [sami.nouh@hc-sc.gc.ca](mailto:sami.nouh@hc-sc.gc.ca) by the date, time and place indicated on page 1 of the bid solicitation.

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

### 2.3 Former Public Servant

Contracts awarded to former public servants (FPS) in receipt of a pension or of a lump sum payment must bear the closest public scrutiny, and reflect fairness in the spending of public funds. In order to comply with Treasury Board policies and directives on contracts awarded to 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: 2019-01](#) and the [Guidelines on the Proactive Disclosure of Contracts](#).

#### *Work Force Adjustment Directive*

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

If so, the Bidder must provide the following information:

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



## 2.4 Enquiries - Bid Solicitation

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

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

## 2.5 Applicable Laws

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

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

## 2.6 Bid Challenge and Recourse Mechanisms

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



**PART 3 - BID PREPARATION INSTRUCTIONS**

If the Bidder chooses to submit its bid electronically, Canada requests that the Bidder submits its bid in accordance with section 08 of the 2003 standard instructions.

The bid must be gathered per section and separated as follows:

Section I: Technical Bid File

Section II: Financial Bid File

Section III: Certifications File

**Section I: Technical Bid**

In their technical bid, Bidders should explain and demonstrate how they propose to meet the requirements and how they will carry out the Work.

**Section II: Financial Bid**

Bidders must submit their financial bid in accordance with the Basis of Payment below

**Initial Contract Period**

Milestone Payment	Key Deliverables	Due Date	Payment (%)	Payment (\$)
1	Progress Report # 1 on milestone (1)	Jan. 31, 2023	15%	\$
2	Final Report #2 on milestone (1 -2)	March 15, 2023	35%	\$
3	Progress Report #3 on milestone (3)	July 31, 2023	10%	\$
4	Progress Report #4 on milestone (4)	Nov. 30, 2023	20%	\$
5	Final Report #5 on milestone (3-5)	March 10, 2024	20%	\$
<b>Total</b>			<b>100%</b>	<b>\$</b>

**Option Period #1**

Milestone Payment	Key Deliverables	Due Date	Payment (%)	Payment (\$)
1	Progress Report #6 on milestone (6)	July 31, 2024	30%	\$
2	Progress Report #7 on milestone (7)	Nov. 30, 2024	40%	\$
3	Final Report #8 on milestone (1-10)	March 10, 2025	40%	\$
<b>Total</b>			<b>100%</b>	<b>\$</b>

**Section III: Certifications**

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



## **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**

The bid must meet the mandatory criteria set out below. The Bidder must provide the necessary documentation to support compliance. Bids which fail to meet the mandatory criteria will be declared non-responsive. Mandatory criteria are evaluated on a simple pass or fail basis. This will be evaluated as either a "Yes" or a "No."

##### **Substantiation**

Bidders must provide substantiation of meeting the requirements of the Point Rated criteria. The "substantiation" provided by the Bidder must provide sufficient information to substantiate, to the satisfaction of the evaluators, that the services or experience being proposed meet the requirement. Bidders are advised that providing substantiations without providing any supporting data to describe responsibilities, duties, and relevance to the requirements will not be considered "substantiated" for the purpose of this evaluation. The Bidder should provide complete project details as to where, when (month and year) and

##### **Validation**

Any or all references may be contacted to validate the substantiation.





#### 4.1.1.1 Mandatory Technical Criteria

The bidder must meet the mandatory technical criteria specified below. The Bidder must provide the necessary documentation to support compliance with this requirement.

Bids which fail to meet the mandatory technical criteria will be declared non-responsive. Each mandatory technical criterion should be addressed separately.

Instruction to bidders:

Write beside each of the criterion the relevant page number(s) from your bid that addresses the requirement identified for that criterion.

#	Mandatory Criteria	Page #
M1	The bidder's project leader must have a Ph.D from a recognized university, an educational institution designated by an appropriate authority, with specialization in Statistics.	
M2	The bidder's project leader must demonstrate that they have experience with <b>spectral analysis in the past 5 years</b> , by providing a link or printable pdf document of two (2) published science paper in a peer-reviewed journal.	
M3	The bidder's project leader must show that they have experience with <b>non-stationary models for time series data in the past 5 years</b> , by providing a link or printable pdf document to two (2) published science papers in a peer-reviewed journal.	
M4	The bidder's project leader must demonstrate their experience with <b>frequency based decorrelation among multi-air pollutants or various climate data in the past 5 years</b> , by providing a printable pdf document of one (1) published science paper in a peer-reviewed journal or an official report.	
M5	The bidder's project leader must demonstrate, by providing a project plan, that they can begin the work in <b>January 2023</b> and provide deliverables as per scheduled deliverable date outlined in the Activities and Timelines table of the Statement of Work.	



#### 4.1.1.1 POINT-RATED REQUIREMENTS

A proposal with a score less than the specified minimum for technical compliance for any one criterion will be considered non responsive, and eliminated from the competition. To be considered responsive, a bid must obtain the required minimum points for each criterion which are subject to point rating.

#	Point-Rated Criteria	Max Points	Minimum Points	Reference page #
R1	<p>Indicate the number of <b>peer-reviewed publications in the past 10 years</b> for which the bidder or bidder's project team was listed as an author and which dealt with <b>Bayesian inference</b>. Provide the name and date of the publication and the title of article.</p> <p><u>Scoring Grid</u> Two points for each, up to a maximum of 10 points.</p>	10	6	
R2	<p>Indicate the number of <b>peer-reviewed publications in the past 10 years</b> for which the bidder or bidder's project team was listed as an author and which dealt with <b>air pollution or changing climate, and public health in Canada</b>. Provide the name and date of the publication and the title of article.</p> <p><u>Scoring Grid</u> Two points for each, up to a maximum of 10 points.</p>	10	6	
R 3	<p>Indicate the number of <b>peer-reviewed publications in the past 10 years</b> for which the bidder or bidder's project team was listed as an author and which dealt with <b>spectral analysis</b>. Provide the name and date of the publication and the title of article.</p> <p><u>Scoring Grid</u> Two points for each, up to a maximum of 10 points.</p>	10	6	
R 4	<p>Indicate the number of <b>peer-reviewed publications in the past 10 years</b> for which the bidder or bidder's project team was listed as an author and which dealt with <b>trends in annual associations between environmental data and public health</b>. Provide the name and date of the publication and the title of article.</p> <p><u>Scoring Grid</u> Two points for each, up to a maximum of 10 points.</p>	10	6	



<b>R 5</b>	<p>Indicate the number of <b>peer-reviewed publications in the past 10 years</b> for which the bidder or bidder's project team was listed as an author and which dealt with <b>effect of short-term exposure to air pollution accounting for climate variable(s)</b>. Provide the name and date of the publication and the title of article.</p> <p><u>Scoring Grid</u> Two points for each, up to a maximum of 10 points.</p>	10	6	
<b>Total Points</b>		<b>50</b>		

#### 4.1.2 Financial Evaluation

Bids must meet the mandatory financial criteria specified in the table inserted below. Bids which fail to meet the mandatory financial criteria will be declared non-responsive.

Number	Mandatory Financial Criterion
<b>MF1</b>	The bidders financial bid must not exceed \$185,840.00 CAD (before tax).

#### 4.2 Basis of Selection

##### 4.2.1 Basis of Selection – Highest Combined Rating or Technical Merit (70%) and Price (30%)

1. To be declared responsive, a bid must:
  - a. comply with all the requirements of the bid solicitation; and
  - b. meet all mandatory criteria; and
  - c. meet all financial criteria
  - d. obtain the required minimum for each technical evaluation criteria which are subject to point rating.
2. Bids not meeting (a) or (b) or (c) or (d) will be declared non-responsive.
3. The selection will be based on the highest responsive combined rating of technical merit and price. The ratio will be 70% for the technical merit and 30% for the price.
4. To establish the technical merit score, the overall technical score for each responsive bid will be determined as follows: total number of points obtained / maximum number of points available multiplied by the ratio of 70%.
5. To establish the pricing score, each responsive bid will be prorated against the lowest evaluated price and the ratio of 30%.
6. For each responsive bid, the technical merit score and the pricing score will be added to determine its combined rating.
7. Neither the responsive bid obtaining the highest technical score nor the one with the lowest evaluated price will necessarily be accepted. The responsive bid with the highest combined rating of technical merit and price will be recommended for award of a contract.

The table below illustrates an example where all three bids are responsive and the selection of the contractor is determined by a 70/30 ratio of technical merit and price, respectively. The total available points equals 28 and the lowest evaluated price is \$60,000 (60).



<b>Basis of Selection - Highest Combined Rating Technical Merit (70%) and Price (30%)</b>			
	<b>Bidder 1</b>	<b>Bidder 2</b>	<b>Bidder 3</b>
<b>Overall Technical Score</b>	26/28	24/28	22/28
<b>Bid Evaluated Price</b>	\$70,000.00	\$65,000.00	\$60,000.00
<b>Calculations</b>	<b>Technical Merit Score</b>	$26/28 \times 70 = 65$	$24/28 \times 70 = 60$
	<b>Pricing Score</b>	$60/70 \times 30 = 25.71$	$60/65 \times 30 = 27.69$
<b>Combined Rating</b>	90.71	87.69	85
<b>Overall Rating</b>	1st	2nd	3rd



## **PART 5 – CERTIFICATIONS AND ADDITIONAL INFORMATION**

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

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

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

### **5.1 Certifications Required with the Bid**

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

#### **5.1.1 Integrity Provisions - Declaration of Convicted Offences**

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

### **5.2 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 provided will render the bid non-responsive.

#### **5.2.1 Integrity Provisions – Required Documentation**

In accordance with the section titled Information to be provided when bidding, contracting or entering into a real property agreement of 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 the required documentation, as applicable, to be given further consideration in the procurement process.



## **PART 6 - RESULTING CONTRACT CLAUSES**

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

### **6.1 Security Requirements**

**6.1.1** There is no security requirement applicable to the Contract.

### **6.2 Statement of Work**

The Work to be performed is detailed under Appendix "A" Statement of Work of the resulting contract clauses

### **6.3 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.

#### **6.3.1 General Conditions**

[2010B](#) (2020-05-28), General Conditions - Professional Services (Medium Complexity) apply to and form part of the Contract.

#### **6.3.2 Supplemental General Conditions**

[4006](#) (2010-08-16), Contractor to Own Intellectual Property Rights in Foreground Information

### **6.4 Term of Contract**

#### **6.4.1 Period of the Contract**

The period of the Contract is from date of Contract to March 31, 2024.

#### **6.4.2 Option to Extend the Contract**

The Contractor grants to Canada the irrevocable option to extend the term of the Contract by up to one (1) additional one-year periods under the same conditions. The Contractor agrees that, during the extended period of the Contract, it will be paid in accordance with the applicable provisions as set out in the Basis of Payment.

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



**6.5 Authorities**

**6.5.1 Contracting Authority**

The Contracting Authority for the Contract is:

Name: Sami Nouh  
Title: Senior Contracting Officer  
Public Works and Government Services Canada  
Acquisitions Branch  
Directorate: Material and Assets Management Division  
Address: 200 Eglantine  
Telephone: 613-941-2102  
E-mail address: [sami.nouh@hc-sc.gc.ca](mailto:sami.nouh@hc-sc.gc.ca)

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

**6.5.2 Project Authority**

The Project Authority for the Contract is:

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

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

**6.5.3 Contractor's Representative**

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

**6.6 Proactive Disclosure of Contracts with Former Public Servants**

By providing information on its status, with respect to being a former public servant in receipt of a [Public Service Superannuation Act](#) (PSSA) pension, the Contractor has agreed that this information will be reported on departmental websites as part of the published proactive disclosure reports, in accordance with [Contracting Policy Notice: 2012-2](#) of the Treasury Board Secretariat of Canada.



**6.7 Payment**

**6.7.1 Basis of Payment - Firm Price, Firm Unit Price(s) or Firm Lot Price(s)**

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 the contract 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.

**6.7.2 Limitation of Price**

SACC Manual clause C6000C (2017-08-17) Limitation of Price

**6.7.3 Milestone Payments - Not subject to holdback**

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

- a. an accurate and complete claim for payment using PWGSC-TPSGC 1111, Claim for Progress Payment, and any other document required by the Contract have been submitted in accordance with the invoicing instructions provided in the Contract;
- b. all the certificates appearing on form PWGSC-TPSGC 1111 have been signed by the respective authorized representatives;
- c. all work associated with the milestone and as applicable any deliverable required has been completed and accepted by Canada.

**Initial Contract Period**

Milestone Payment	Key Deliverables	Due Date	Payment (\$)
1	Progress Report # 1 on milestone (1)	Jan. 31, 2023	\$
2	Final Report #2 on milestone (1 -2)	March 15, 2023	\$
3	Progress Report #3 on milestone (3)	July 31, 2023	\$
4	Progress Report #4 on milestone (4)	Nov. 30, 2023	\$
5	Final Report #5 on milestone (3-5)	March 10, 2024	\$
<b>Total</b>			<b>\$</b>





**Option Period #1**

Milestone Payment	Key Deliverables	Due Date	Payment (\$)
1	Progress Report #6 on milestone (6)	July 31, 2024	\$
2	Progress Report #7 on milestone (7)	Nov. 30, 2024	\$
3	Final Report #8 on milestone (1-10)	March 10, 2025	\$
<b>Total</b>			<b>\$</b>

**6.7.4 Electronic Payment of Invoices – Contract**

The Contractor accepts to be paid using any of the following Electronic Payment Instrument(s):

- a. Direct Deposit (Domestic and International);

**6.8 Invoicing Instructions**

The Contractor must submit invoices in accordance with the section entitled "Invoice Submission" of the general conditions. Invoices cannot be submitted until all work identified in the invoice is completed.

Each invoice must be supported by:

- a copy of time sheets to support the time claimed;
- a copy of the release document and any other documents as specified in the Contract;

Invoices must be distributed as follows:

One (1) copy must be forwarded to the following email address(es) for certification and payment.  
[hc.p2p.east.invoices-factures.est.sc@canada.ca](mailto:hc.p2p.east.invoices-factures.est.sc@canada.ca)

**6.9 Certifications and Additional Information**

**6.9.1 Compliance**

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

**6.10 Applicable Laws**

The Contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in Ontario



### 6.11 Priority of Documents

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

- (a) the Articles of Agreement;
- (b) the Supplemental General Conditions, [4006](#) (2010-08-16), Contractor to Own Intellectual Property Rights in Foreground Information
- (c) the General Conditions [2010B](#) (2020-05-28), General Conditions - Professional Services (Medium Complexity);
- (d) Annex A, Statement of Work;
- (e) the Contractor's bid dated \_\_\_\_\_

### 6.12 Dispute Resolution

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



## **ANNEX "A"**

### **Statement of Work**

#### **1. TITLE**

Combined health risk from climate change and ambient air pollution

#### **2. SCOPE**

##### **2.1. Introduction**

The environment and population health are directly related to climate change, resulting in adverse health outcomes associated with severe weather events (e.g., heatwaves, floods, wildfires), seasonal illness such as vector-borne diseases (e.g., West Nile virus, Lyme disease), and other longer-term effects such as impacts on mental health. Climate affects AP concentrations (e.g., ozone, airborne dust) and potentially increases in AP-related respiratory and circulatory deaths in vulnerable subpopulations (e.g., seniors, people with chronic health conditions). However, the mechanisms relating climate change, environmental variables, and population health are complex and require further study. Moreover, previous studies have reported inconsistent findings between these variables. This project proposes a comprehensive study to understand how the changing climate affects public health through the environmental background (temperature, precipitation, humidity) including ambient APs (O<sub>3</sub>, NO<sub>2</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>). This study will investigate if changes in climate worsen adverse health effects of APs, and how to quantify the combined effects of heat and air pollution. This project applies canonical correlation analysis to determine which subset of climate variables are associated with the APs. Also the influence of extreme climate events on the association between APs and health outcomes will be quantified through a comparison to the association during a corresponding non-extreme event period. A Bayesian hierarchical framework will be employed to combine extreme climate effects of a given type localized in time and space to give an overall estimate of the effect. The study findings can provide guidance on protecting public health during various events (heat, wildfire, etc) with poor air quality.

##### **2.2. Objectives of the Requirement**

The term "changing climate" refers to different levels and trends of climate variables (e.g., temperature, humidity, precipitation) over time. The term "extreme climate event" refers to events such as wildfires, floods, heat waves, etc. The objective of this project is to examine changes in associations between health outcomes (hospitalization, emergency visit, mortality), APs (ozone, NO<sub>2</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, and black carbon) and climate change in Canada. In particular, this study focuses on health outcomes caused by respiratory (ICD-10, J00-J99) and circulatory (I00-I99) diseases by examining 3-decade periods: 1991-2000, 2001-2010, and 2011-2020. This project will address the following three research questions.

Q1: How to detect and estimate the association between climate and air pollutants?

Q2: How to detect and estimate the influence of changing climate on AP-related health risks?

Q3: How to estimate combined effects of extreme climate events and multi-air pollutants on public health risks?



### 2.3. Background and Specific Scope of the Requirement

The association between air pollution and adverse acute health outcomes has been studied for decades. Several authors have studied the link between air pollution and mortality and morbidity, while also accounting for various climate variables. Schwartz and Dockery found a significant association between daily mortality and total suspended particulates (TSP). Temperature and humidity were included as variates of interest along with dummy variables for hot days, humid days, cold days and seasons. Work by Dominici et al included the first full fledged generalized additive model (GAM) formulations including age-specific time smoothers and smooth function links for temperature and humidity. The GAM model approach is used in the current formulation of Canada's AQHI. Fairley, following a similar approach to Schwartz and Dockery, found associations between high particulate concentrations and increased mortality after accounting for temperature, relative humidity, year, and seasonality. Simpson et al. considered daily O<sub>3</sub>, NO<sub>2</sub>, PM, and CO in addition to smooth functions of temperature, humidity, barometric pressure, and precipitation. Ravindra et al. provide an overview of using the GAM framework in the context of the effect of air pollution related health risks, linking temperature, precipitation, and air pollution to excessive mortality and morbidity. Katsouyanni et al. considered the effect on mortality due to interaction effects between air pollutants and climate variables and found significant effects of temperature on the risk due to air pollution; warmer and drier countries have larger risks with temperature being more important than humidity. Hu et al. examined the interaction between temperature and SO<sub>2</sub> in Sydney, Australia and found an "apparent association" between mortality and elevated daily max temperatures combined with high SO<sub>2</sub> concentrations.

The effect of climate variables as primary predictors on health risk has also been considered. Anderson et al. considered temperature as the primary predictor for mortality including air pollution variables as confounders. Vicedo-Cabrera et al. found increases in warm-season heat-related deaths attributed to climate change with increased mortality being evident on every continent. In the recent past, some studies have investigated the health effects of solar activity. Dimitrova et al. and Vieira et al. both found effects on cardiovascular mortality risk due to solar activity driven geomagnetic disturbances. D'Amato et al. found a link between thunderstorms, airborne allergens and pollen, and emergency department admissions for asthma.

The effect of temperature, solar activity, and solar ultraviolet radiation on both ground level and atmospheric ozone is well established (Keating and Chadyšiene), while nitrogen dioxide and sulfur dioxide are produced in the burning of fossil fuels. Wallace et al. investigated the effect of temperature inversions on ground-level NO<sub>2</sub> and PM<sub>2.5</sub> in Ontario, Canada and found significant increases in both pollutants during nighttime inversion episodes.

Extreme climate events have significant effects on human health. Ebi et al. discuss the link between extreme heat, drought, and wildfires, via smoke, on rates of morbidity and mortality. Finlay reviewed papers which find many links between wildfires and health effects including cardiovascular, ocular issues, and burns. Lin found that as temperature increased there was an associated increase in same-day hospitalizations due to respiratory diseases and a lagged association in hospitalizations due to cardiovascular diseases. Huynen et al. considered the impact of heat waves and cold spells on mortality in the Netherlands, and the possibility of any heat wave- or cold spell-induced forward displacement of mortality.

Research on the difference in health risks between men and women is mixed. It would appear that women, in general, experience a stronger effect than men, while young boys experience a stronger effect than girls; this relationship reverses in older cohorts. With respect to age, it has been observed that the elderly, defined as older than 65, are more affected by particulate matter than those under the age of 65; effect differences from other pollutants (CO, NO<sub>2</sub>, O<sub>3</sub> and SO<sub>2</sub>) due to age were minimal.

The spectrum and autocovariance are Fourier transform pairs where the Periodogram is the Fourier transform of the Bartlett autocovariance (the "standard" autocovariance). The Bartlett autocovariance estimator, although asymptotically unbiased, converges slowly enough as to be biased for all practical situations. In addition it is an inconsistent estimator. Therefore, any approaches depending on the



Periodogram share these same drawbacks. A less biased approach is to use a direct estimate of the spectrum, then inverse Fourier transform to obtain an estimate of the autocovariance. A direct estimate is one where the data are weighted (tapered) first prior to estimating the spectrum. The weights are specifically chosen to reduce the bias in the estimator. The Fourier transform uses sines and cosines as its basis functions and so this estimation at each frequency boils down to estimating the ratio of amplitudes and phase differences between the input and output time series. These estimates, a function of frequency, are what is known as the frequency response of the transfer function. Inverse Fourier transforming the frequency response provides a time domain filter called the impulse response of the transfer function that encodes the frequency by frequency relationship between the two time series.

The environment and population health are directly related to climate. Climate change has a direct impact on many severe weather events (e.g., heat waves, floods, prolonged dry periods, wildfires, etc.). In addition, climate affects AP concentrations (e.g., ozone, airborne dust) and can potentially increase AP-related respiratory and circulatory illness and death in vulnerable subpopulations (e.g., seniors, people with chronic health conditions, pregnant women, and young children). However, the mechanisms relating climate change, environmental variables, and population health continue to remain unclear due to their complex linkages, and some previous studies have reported inconsistent findings. This project proposes a comprehensive study to understand how changing climate affects public health through the environmental background (temperature, precipitation, humidity) and its interaction with APs in the Canadian context. This project will investigate if changes in climate worsen adverse health effects of APs (ozone, NO<sub>2</sub>, PM<sub>2.5</sub>, and SO<sub>2</sub>), and how to quantify the combined effects of heat, precipitation, humidity, wind speed, barometric pressure, and air pollution.

In Canada, studies of the health risks associated with day-to-day exposure to air pollution have looked at each pollutant individually. Health Canada combines these data in calculations for the Air Quality Health Index (AQHI) – a communication tool that sums the individual risks associated with three major components of pollution: ozone, nitrogen dioxide (NO<sub>2</sub>) and fine particulate matter up to 2.5 micrometers in size (PM<sub>2.5</sub>). This method is understood to be only an approximation, because the formula used in the calculations does not fully represent the effect of the combined exposures on health due to interactions among the three air pollutants nor does it take into account potential confounding due to climate variables, with the exception of temperature. Recent work has aimed to provide a framework to estimate risk of air pollution on health by decorrelating the air pollution variables from each other using signal processing techniques thereby allowing the risk associated with each air pollutant to be estimated in one three-pollutant model, rather than three single-pollutant models. This approach helps to mitigate the overestimation of the risk associated with each air pollutant.

Since the present project will conduct epidemiological research on the impacts of climate change and air pollutants on population health, it is relevant to multiple priorities and themes of the AAPHI. In particular, this project can directly address one of the priorities on interactions between AP and changing climate. There have been considerable studies, which reported the impact of air pollution (mainly for single pollutant) on health without accounting for other environmental factors such as heatwaves and wildfires. This project aims to consider extreme climate events and solar activities to quantify effects of multi-pollutants in relation with such harmful environmental factors. To support the ambient air quality management, this project will estimate health risks of the criteria air pollutants (e.g., NO<sub>2</sub>, PM<sub>2.5</sub> and SO<sub>2</sub>) and short-lived climate pollutants (e.g., black carbon, methane, and ozone) subject to data availability. This project will also identify vulnerable subpopulations by age and sex, which would eventually assist age-sex-specific health guidelines to protect the subpopulations. Therefore, this project will upgrade our understanding of the impact of multi-pollutants, accounting for extreme climate events and thus improve public communications to protect Canadian health.



### 3. REQUIREMENTS

#### 3.1. Tasks, Activities, Deliverables and/or Milestones

**Required Datasets:** This project requires four databases on health outcomes, AP, climate and solar activity, and extreme climate events. Tables 1 to 3 summarize the connection between these databases and thresholds of extreme climate events.

##### (1) Climate variables and APs

<b>Table 1: List of climate variables, solar, and related air pollutants for 1990-2018<sup>a</sup></b>		
<b>Climate Variable</b>	<b>Variations</b>	<b>Air Pollutants affected by climate variables</b>
Temperature	daily: mean, min, max	O <sub>3</sub> , NO <sub>2</sub> , PM, SO <sub>2</sub>
Precipitation	daily total: rain, snow, precipitation	O <sub>3</sub> , NO <sub>2</sub> , PM, SO <sub>2</sub>
Humidity	relative humidity	O <sub>3</sub> , NO <sub>2</sub> , PM, SO <sub>2</sub>
Air pressure	daily mean atmospheric pressure	
Wind	max gust; avg daily: wind speed, wind direction	O <sub>3</sub> , NO <sub>2</sub> , PM, SO <sub>2</sub>
Solar	Ultraviolet spectral irradiance, solar activity index, F10.7 daily data.	O <sub>3</sub>

<sup>a</sup> The study period can be changed depending on data availability, in particular, for rural areas.

##### (2) Extreme climate events

<b>Table 2: Extreme climate events and associated threshold</b>	
<b>Extreme Climate Event</b>	<b>Threshold</b>
Heat wave	3 days with max temperature > 30°C <sup>a</sup>
Extremely hot days	Max temperature > 34°C <sup>a</sup>
Extremely cold days	Min temperature < -30°C <sup>a</sup>
Prolonged dry period	No official standard <sup>b</sup>
Prolonged rain	No official standard <sup>b</sup>
Extremely heavy rain days	Day with > 20mm of precipitation <sup>a</sup>
Extreme humidity	No official standard <sup>b</sup>
Wildfires	Low (<30%), moderate (30%-80%), or high severity (>80%) <sup>c</sup>
Extreme solar activity	M class flares and above

<sup>a</sup> from [www.climateatlas.org/variables](http://www.climateatlas.org/variables)

<sup>b</sup> No official standards in the literature, to be determined through investigation

<sup>c</sup> The % is percentage of vegetation killed or soil exposed



(3) Health outcomes

<b>Table 3:</b> list of health outcomes to be investigated.	
<b>Cause</b>	<b>ICD-10<sup>a</sup> code &amp; condition</b>
Circulatory system <sup>c</sup>	<u>I00-I99</u>
	<b>I20-I25 Ischaemic heart diseases<sup>b</sup></b>
	<b>I30-I52 Other forms of heart disease<sup>b</sup></b>
	<b>I60-I69 Cerebrovascular diseases<sup>b</sup></b>
Respiratory system <sup>d</sup>	<u>J00-J99</u>
	<b>J00-J06 Acute upper respiratory infections<sup>b</sup></b>
	<b>J09-J18 Influenza and pneumonia<sup>b</sup></b>
Cardiopulmonary <sup>e</sup>	Sum of circulatory & respiratory
Non-Cardiopulmonary <sup>f</sup>	Difference between (All non-accidental) & (Cardio-Pulmonary)

<sup>a</sup> International Classification of Diseases (version 10) defined by WHO. The listed health outcomes will be extracted based on ICD-10. For those years with ICD-9, a conversion from ICD-9 to ICD-10 will be used. (<https://www.who.int/standards/classifications/classification-of-diseases>)

<sup>b</sup> Causes in bold are for morbidity only, whereas the other causes are for both mortality and morbidity.

<sup>c</sup> Circulatory comprises about 33% of all non-accidental mortality.

<sup>d</sup> Respiratory comprises about 9% of all non-accidental mortality.

<sup>e</sup> Both circulatory and pulmonary health outcomes have known to be associated with AP and climate.

<sup>f</sup> This non-cardiopulmonary health outcome is to be compared with cardiopulmonary health outcome.

**Overview:** This project will investigate 1) the association between climate variables and air pollutants; 2) the effect of extreme climate events on health outcomes; and 3) the interaction between climate and air pollutants and their combined effect on health outcomes. This will provide a more complete picture of the relationship between health outcomes and air pollution while also considering climate variables. The study population consists of large urban population centres (100,000 or greater following Statistics Canada's definition), which covers about 60% of Canada's population. This is required to have statistical power and to have national estimates for short-term exposure analysis. In order to address the three above-mentioned objectives, the following investigations will be conducted:

(a) Data collection, screening, and validation: The first step of this project will be to collect the relevant climate, air pollution, and health data. The climate variables to be used in the work include temperature, precipitation, humidity, wind speed and direction, barometric pressure, and solar activity. Air pollutants to be used in the study are ozone, nitrogen dioxide, particulate matter, sulfur dioxide, carbon monoxide, and particulate matter. Climate data (temperature, precipitation, humidity, air pressure, and wind) will be obtained from Environment and Climate Change Canada (ECCC), solar data from NASA and NRCAN, and wildfire data from the Canadian National Fire Database and Canadian National Optimized Statistical Smoke Exposure Model (CanOSSEM).

(b) Association between climate variables and air pollutants: Modelling of the associations between climate variables and air pollutants and between extreme climate events and air pollutants will be done using both linear and non-linear models and will include the use of both time domain and frequency domain techniques. Climate variables that show no significant statistical interaction with any of the considered air pollutants will be excluded from further investigation.





One of the climate variables of interest is solar activity / UV solar irradiance. We will perform a preliminary analysis to determine if a solar climate variable should be included in the final model.

- (c) Categorization and threshold determination for extreme climate events: We will begin this work using predefined thresholds for extreme weather events as defined in the Climate Atlas of Canada (<https://climateatlas.ca/variables>). We will then investigate using different threshold values and compare these to their impact on risk estimates associated with air pollution variables. This investigation may lead to different threshold values for determining extreme events as they pertain to the air pollutants' health related risks. For the extreme climate events, see Table 2.
- (d) Determine association between extreme climate events and health outcomes: In order to properly separate the effect of air pollution from climate, we will examine the effect of extreme climate events on risk due to air pollution, exploring single pollutant models first to gain an estimate of the impact. For example, it is known that extreme heat has a deleterious effect on mortality and heat is also associated with air pollution concentrations (see Table 1). Additionally, we will explore how the risks associated with different air pollutants change with time and by location.
- (e) Investigate the interaction between climate variables and air pollution: There are interaction effects between climate and air pollution on health risks. This task is associated with exploring these associations.
- (f) Build a multipollutant model: The primary goal of this work is to create a multipollutant model that incorporates all of the pollutants of interest, climate variables and climate events.
- (g) Finalize solar effects investigation: If an effect due to solar activity is found in task (b), we will complete that investigation and incorporate the results into the final multipollutant model.

**Year 1 (2022-23) will focus on data collection, screening, and linkage between health outcome, APs and climate/solar databases through the following three steps.**

- (1) Build three databases for health outcomes, APs, and climate/solar variables.
- (2) Link the three databases by census division (CD) (or smaller unit, subject to data availability) and sort them into urban and rural areas based on population size and density.
- (3) Develop models to estimate the association between climate variables and APs.

**Methodology:**

- a. Canonical correlation analysis (CCA) to determine which subset of climate variables are associated with the health-related APs of interest. This allows the initial inclusion of a large set of climate variables with the most significant variables being selected for further analysis.
- b. Frequency domain models, as developed in a previous Health Canada contract, to capture the relationship between climate variables selected through CCA and APs at all time lags.
- c. Frequency domain models to estimate the correlation between climate variables at all time lags.
- d. Frequency domain models to capture the relationship between climate variables and AP-related health risks at all time lags.

**Year 2 (2023-24) will focus on extreme climate events and its linkage to the three databases built in Year 1 through the following four steps.**

- (4) Collect extreme climate events data (based on the threshold as shown in Table 2), and link them to the databases already built in Year 1.





- (5) Develop models to estimate the association between the extreme climate events and APs.
- (6) Investigate if the association between the extreme climate events and APs differ by built environment such as urban vs. rural areas.
- (7) Investigate the influence of solar activities on extreme climate events.

**Methodology:**

- a. Frequency domain models to capture the relationship between climate variables and AP-related health risks at all time lags in each of the 3-decades.
- b. The effect of an extreme climate event on the association between APs and AP-related health outcomes will be estimated through a comparison to the association during a corresponding non-extreme event period.
- c. Risks during extreme and non-extreme event periods will be estimated using generalized additive models.
- d. A Bayesian hierarchical framework to combine extreme climate effects of a given type localized in time and space to give an overall estimate of the effect. More details are in Annex E.

Although the extreme climate events in Table 2 are, for the most part, self-explanatory with their given thresholds, the examination of wildfires is less clear-cut. A large number of wildfires are active within any given year. Over the last 30 years, our study period of interest, wildfires have had a significant geographic footprint. Not only do these fires affect the immediate area, but smoke and particulate matter can be transported from the fire location hundreds of kilometres away. We will investigate the effect of wildfires in relation with AP-health associations.

**Year 3 (2024-25) will focus on solar activity variables and differences in health risks by age and sex through the following three steps.**

- (8) Accounting for solar activities, estimate combined effects of extreme climate events and multiple air pollutants on health outcomes by age group.
- (9) Accounting for solar activities, estimate combined effects of extreme climate events and multiple air pollutants on health outcomes by sex.
- (10) Finally write up reports on the study findings and prepare a draft paper.

**Methodology:**

- a. Apply developed models above to two age groups (non-seniors ( $\leq 65$  years old) vs. seniors ( $> 65$  years)). The age-specific risk estimates will be compared to the baseline risks estimated for all ages ( $\geq 1$  year old).
- b. Apply developed models to two sex groups (females vs. males). The sex-specific risk estimates will be compared to the baseline risks estimated for both sexes.
- c. A Bayesian hierarchical framework to combine age- or sex-specific risk estimates of a given type localized in time and space to give an overall estimate of the effect.

Solar activity is another “climate” variable that has a significant effect on ozone production. Although we are classifying solar activity as a climate variable, it certainly does not belong in this category traditionally. There are numerous types of data to use as a measure of the solar climate variable: solar wind speed, electron density, proton density, magnetic field measurements, sunspot numbers, and the list continues. One proxy for solar activity and ultraviolet irradiance, required for ozone production, is the F10.7 dataset. UV spectral irradiance is another dataset that is highly correlated with ground-level ozone concentrations. The relationship between UV and ozone has been found to be linear, and inclusion of this measurement in any modelling could assist in removing any confounding relationship.



Solar activity directly influences the Earth's magnetic field and extreme events such as solar flares can cause disturbances in the geomagnetic field. Geomagnetic activity has itself been linked to cardiovascular mortality risk. It is therefore worth considering the impact that solar activity and extreme solar events such as solar flares has on air pollution related health risks. Solar flares are occurring all the time, however there are powerful solar flares that would be considered extreme events.

### **3.2. Specifications and Standards**

All data collection, screening and interpolation conducted under this contact, along with any recommendations for further research and use of the data, will be summarized in a written report of up to 50 pages for progress reports and extended up to 100 pages for the final report each year. In addition to the final report, delivery of the final database of screened, validated and/or interpolated air pollution data is required. The report will describe the sources of all data used in the development, the statistical methods applied, and the results obtained, including a summary of available data for further use. The final report will include an executive summary of 2-3 pages, and all data developed will be delivered as encrypted files by email or on a portable storage device (eg: USB), which will be specified by the Departmental Representative (Project Authority) following Health Canada regulation. All data used for this project should be destroyed at the end of this contract unless otherwise instructed by the Project Authority.

### **3.3. Technical, Operational and Organizational Environment**

The proposed work extends some technical aspects originally developed by a contractor in previous research projects. The operation of the study will be facilitated by regular online and/or in-person meetings.

### **3.4. Method and Source of Acceptance**

All analyses will be summarized in a written report, which will describe the sources of all data used in these analyses, the statistical methods applied, and the results obtained. The Departmental Technical Representative will assess the work in terms of quality, provide feedback to the Contractor, request any necessary modifications, and be responsible for determining final acceptance of the report.

### **3.5. Reporting Requirements**

Refer to Section 3.1 on Tasks, Activities, Deliverables and/or Milestones. The Contractor must submit one (1) electronic copy a report to the Project Authority outlining the accomplishments for the given period, open issues and upcoming milestones on a bi-weekly basis.

The Project Authority will arrange meetings with the contractor on a regular basis (biweekly, via email, phone, or in person) to discuss current progress and updates. The Project Authority needs to provide comments/suggestions on progress reports and final report submitted by the contractor within 10 working days.

### **3.6. Project Management Control Procedures**

Refer to Section 3.5, "Reporting Requirements".

### **3.7. Security Requirements**

- Unscreened contractors must be escorted by an employee or Commissionaire at all times when visiting GoC facilities.
- Information which is to be used in the development of the contracted product, as reference material or otherwise made available to the contractor must be unclassified material and considered to be releasable to the public by HC/PHAC and/or The Government of Canada.
- No Protected or Classified information is to be made available to the contractor, used in the production of the contracted product, or produced as a result of this contract.



#### **4. ADDITIONAL INFORMATION**

##### **4.1. Canada's Obligations**

- provide air pollution data (ozone, PM<sub>2.5</sub> and NO<sub>2</sub>) upon request,
- provide climate data upon request,
- provide statistical models previously developed for air pollution,
- provide comments on draft and final reports within ten (10) working days, and
- provide other assistance or supports upon request.

##### **4.2. Contractor's Obligations**

- Unless otherwise specified, the Contractor must use its own equipment and software for the performance of this Statement of Work.
- Meet all tasks, deliverables and milestones as identified in Section 3.1.
- Ensure availability of staff with whom the Provider of Service may need to consult.
- Submit all written reports to Health Canada in electronic Microsoft Office Word and/or portable document format (PDF)
- Participate in teleconferences, if required.
- Attend meetings at government sites, if required.

##### **4.3. Location of Work, Work site and Delivery Point**

All the work will be completed at the contractor's workplace. All personnel assigned to this contract are ready to work in close and frequent contact with the Project Authority.

##### **4.4. Language of Work**

The work can be conducted in either official languages. The reports will be written in English.

##### **4.5. Travel and Living**

There is no Travel and Living expenses associated with this project.