



<p><b>RETURN BIDS TO: RETOURNER LES SOUMISSIONS À:</b></p> <p><b>Bid Receiving - Environment and Climate Change Canada / Réception des soumissions – Environnement et changement climatique Canada</b></p> <p><b>Electronic Copy:</b></p> <p><a href="mailto:soumissionsbids@ec.gc.ca">soumissionsbids@ec.gc.ca</a></p> <p><b>BID SOLICITATION DEMANDE DE SOUMISSIONS</b></p> <p><b>PROPOSAL TO: ENVIRONMENT AND CLIMATE CHANGE CANADA</b></p> <p>We offer to perform or provide to Canada the services detailed in the document including any attachments and annexes, in accordance with the terms and conditions set out or referred to in the document, at the price(s) provided.</p> <p><b>SOUSSION À: ENVIRONNEMENT ET CHANGEMENT CLIMATIQUE CANADA</b></p> <p>Nous offrons d'effectuer ou de fournir au Canada, aux conditions énoncées ou incluses par référence dans le document incluant toutes pièces jointes et annexes, les services détaillés dans le document, au(x) prix indiqué(s).</p>	<p><b>Title – Titre</b> Study of the Greenhouse Gas reversal risk for forestry offset projects in Canada</p>	
	<p><b>EC Bid Solicitation No. /SAP No. – N° de la demande de soumissions EC / N° SAP</b> 5000062604</p>	
	<p><b>Date of Bid solicitation (YYYY-MM-DD) – Date de la demande de soumissions (AAAA-MM-JJ)</b> 2022-03-04</p>	
	<p><b>Bid Solicitation Closes (YEAR-MM-DD) - La demande de soumissions prend fin (AAAA-MM-JJ)</b></p> <p>at – à 2:00 P.M. on – le 2022-03-18</p>	<p><b>Time Zone – Fuseau horaire</b></p> <p>Eastern Time Zone</p>
	<p>F.O.B – F.A.B Destination</p>	
	<p><b>Address Enquiries to - Adresser toutes questions à</b> Megan Filliol <a href="mailto:megan.filliol@ec.gc.ca">megan.filliol@ec.gc.ca</a></p>	
	<p><b>Telephone No. – N° de téléphone</b> 902-600-6216</p>	<p><b>Fax No. – N° de Fax</b></p>
	<p><b>Delivery Required (YEAR-MM-DD) – Livraison exigée (AAAA-MM-JJ)</b> 2022-09-09</p>	
	<p><b>Destination of Services / Destination des services</b> See herein</p>	
	<p><b>Security / Sécurité</b> See herein</p>	
	<p><b>Vendor/Firm Name and Address - Raison sociale et adresse du fournisseur/de l'entrepreneur</b></p>	
	<p><b>Telephone No. – N° de téléphone</b></p>	<p><b>Fax No. – N° de Fax</b></p>
	<p><b>Name and title of person authorized to sign on behalf of Vendor/Firm: (type or print) / Nom et titre de la personne autorisée à signer au nom du fournisseur/de l'entrepreneur (taper ou écrire en caractères d'imprimerie)</b></p>	
<p><b>Signature</b></p>	<p><b>Date</b></p>	



## TABLE OF CONTENTS

<b>PART 1 - GENERAL INFORMATION.....</b>	<b>4</b>
1.1 Introduction.....	4
1.2 Summary .....	4
1.3 Debriefings .....	5
<b>PART 2 - BIDDER INSTRUCTIONS.....</b>	<b>6</b>
2.1. Standard Instructions, Clauses and Conditions.....	6
2.2. SACC Manual Clauses .....	7
2.3. Submission of Bids .....	7
2.4. Former Public Servant – Competitive Bid .....	7
2.5. Enquiries - Bid Solicitation.....	8
2.6. Applicable Laws .....	9
2.7. Bid Challenge and Recourse Mechanisms .....	9
<b>PART 3 - BID PREPARATION INSTRUCTIONS.....</b>	<b>10</b>
3.1. Bid Preparation Instructions.....	10
<b>PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION.....</b>	<b>14</b>
4.1. Evaluation Procedures .....	14
4.2. Technical Evaluation.....	14
5.1. Certifications Required Precedent to Contract Award .....	22
5.2. Additional Certifications Required Precedent to Contract Award .....	22
<b>PART 6 - RESULTING CONTRACT (at contract award, delete this line).....</b>	<b>24</b>
6.1. Statement of Work.....	24
6.2. Standard Clauses and Conditions.....	24
6.3. Security Requirement .....	24
6.4. Term of Contract.....	24
6.5. Authorities.....	24
6.6. Proactive Disclosure of Contracts with Former Public Servants.....	25
6.7. Payment.....	25
6.8. Invoicing Instructions .....	26
6.9. Certifications and Additional Information .....	27
6.10. Applicable Laws .....	27
6.11. Priority of Documents.....	27

6.12. Insurance.....	27
6.13. Dispute Resolution.....	28
<b>ANNEX "A" STATEMENT OF WORK.....</b>	<b>29</b>
<b>Table 1 – Schedule for Completion of Project.....</b>	<b>41</b>
<b>ANNEX "B" BASIS OF PAYMENT.....</b>	<b>43</b>

List of Attachments:

Attachment 1 to Part 3, Financial Bid Presentation Sheet  
Attachment 1 to Part 4, Mandatory Technical Criteria And Point Rated Technical Criteria

List of Annexes:

Annex A Statement of Work  
Annex B Basis of Payment



## **PART 1 - GENERAL INFORMATION**

### **1.1 Introduction**

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

Part 1 General Information: provides a general description of the requirement;

Part 2 Bidder Instructions: provides the instructions, clauses and conditions applicable to the bid solicitation;

Part 3 Bid Preparation Instructions: provides bidders with instructions on how to prepare their bid;

Part 4 Evaluation Procedures and Basis of Selection: indicates how the evaluation will be conducted, the evaluation criteria that must be addressed in the bid, and the basis of selection;

Part 5 Certifications and Additional Information: includes the certifications and additional information to be provided;

Part 6 Resulting Contract Clauses: includes the clauses and conditions that will apply to any resulting contract.

The Attachments include the Financial Bid Presentation Sheet, Mandatory Technical Criteria And Point Rated Technical Criteria.

The Annexes include the Statement of Work, the Basis of Payment, the Security Requirements Checklist.

### **1.2 Summary**

1.2.1 Environment and Climate Change Canada (ECCC) requires a quantitative estimate of involuntary Greenhouse Gas (GHG) reversal risk for forestry offset projects in Canada. This estimate will need to be performed for different climate change scenarios, for different project's risk exposure characteristics and for different risk mitigations measures, or group of measures, implemented by the proponent. Based on these estimates, ECCC requires recommendation for the portion of offset credits that should be allocated to Environmental Integrity Account (EIA), a risk pool that will compensate for involuntary GHG reversal in order to maintain the environmental integrity of the federal GHG offset system. Further details are provided in the Statement of Work, Annex A to the bid solicitation.

The period of the contract is from contract award to 2022-Sep-09

1.2.2 Bidders must provide a list of names, or other related information as needed, pursuant to section 01 Integrity Provisions of Standard Instructions 2003.

1.2.3 For services requirements, bidders in receipt of a pension or a lump sum payment must provide the required information as detailed in article 3 of Part 2 of the bid solicitation.

### **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 of 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 PSPC/PWGSC *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.

The standard instructions 2003 are modified as follows:

**Under “Text” at 02:**

**Delete:** “Procurement Business Number”

**Insert:** “Deleted”

**At Section 02 Procurement Business Number**

**Delete:** In its entirety

**Insert:** “Deleted”

**At Section 05 Submission of Bids, Subsection 05 (2d):**

**Delete:** In its entirety

**Insert:** “send its bid only to Environment and Climate Change Canada as specified on page 1 of the bid solicitation or to the address specified in the bid solicitation;”

**At Section 06 Late Bids:**

**Delete:** “PWGSC”

**Insert:** “Environment and Climate Change Canada”

**At Section 07 Delayed Bids:**

**Delete:** “PWGSC”

**Insert:** “Environment and Climate Change Canada”

**At Section 08 Transmission by Facsimile, Subsection 08 (1):**

**Delete:** In its entirety

**At Section 12 Rejection of Bid, Subsection 12 (1) a. and b.:**

**Delete:** In their entirety

**Insert:** “Deleted”

**At Section 17 Joint Venture, Subsection 17 (1) b.:**

**Delete:** “the Procurement Business Number of each member of the joint venture,”

**Insert:** “Deleted”

**At Section 20 Further Information, Subsection 20 (2):**

**Delete:** In its entirety

**Insert:** "Deleted"

At Section 05 Submission of Bids, Subsection 05 (4):

**Delete:** "sixty (60) days"

**Insert:** "one hundred and twenty (120) days"

## **2.2. SACC Manual Clauses**

A7035T (2007-05-25) List of Proposed Subcontractors

## **2.3. Submission of Bids**

Bids must be submitted to Environment and Climate Change Canada at the address and by the date, time and place indicated on page 1 of the bid solicitation.

## **2.4. Former Public Servant – Competitive Bid**

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

### **Definitions**

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

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

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

"pension" means a pension or annual allowance paid under the [Public Service Superannuation Act](#) (PSSA), R.S., 1985, c.P-36, and any increases paid pursuant to the



Supplementary Retirement Benefits Act, R.S., 1985, c.S-24 as it affects the PSSA. It does not include pensions payable pursuant to the Canadian Forces Superannuation Act, R.S., 1985, c.C-17, the Defence Services Pension Continuation Act 1970, c.D-3, the Royal Canadian Mounted Police Pension Continuation Act, , 1970, c.R-10, and the Royal Canadian Mounted Police Superannuation Act, R.S., 1985, c.R-11, the Members of Parliament Retiring Allowances Act, R.S., 1985, c.M-5, and that portion of pension payable to the Canada Pension Plan Act, R.S., 1985, c.C-8.

### **Former Public Servant in Receipt of a Pension**

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

If so, the Bidder must provide the following information, for all FPS 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.

## **2.5. Enquiries - Bid Solicitation**



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

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

## **2.6. Applicable Laws**

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

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.

## **2.7. Bid Challenge and Recourse Mechanisms**

### **Bid Challenge and Recourse Mechanisms**

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



## **PART 3 - BID PREPARATION INSTRUCTIONS**

### **3.1. Bid Preparation Instructions**

Canada requests that bidders provide their bid in separately bound sections as follows:

Section I: Technical Bid (1 soft copies in PDF format)

Section II: Financial Bid (1 soft copies in PDF format)

Section III: Certifications (1 soft copies in PDF format)

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

Canada requests that bidders follow the format instructions described below in the preparation of their bid:

- (a) use 8.5 x 11 inch (216 mm x 279 mm) paper;
- (b) use a numbering system that corresponds to the bid solicitation.

#### **Note for electronic submission of bids:**

In order to be considered, bids must be received by the date and time indicated on the cover page to herein as the "Closing Date." Bids received after the Closing Date will be considered non-responsive and will not be considered for contract award. Bids submitted by email must be submitted ONLY to the following email address:

Email Address: [soumissionsbids@ec.gc.ca](mailto:soumissionsbids@ec.gc.ca)

Attention: Megan Filliol

Solicitation Number: 500062604

Bidders should ensure that their name, address, Closing Date of the solicitation and Solicitation Number are clearly indicated in the body of their email. Bids and supporting information may be submitted in either English or French.

The total size of the email, including all attachments, must be less than 15 megabytes (MB). It is each Bidder's responsibility to ensure that the total size of the email does not exceed this limit.

Bids sent by fax will not be accepted.

It is important to note that emails systems can experience systematic delays and, at times, large attachments may cause systems to hold or delay transmission of emails. It is solely the Bidder's responsibility to ensure that the Contracting Authority receives a bid on time, in the mailbox that has been identified for bid receipt purposes. Date stamps for this form of transmission are not acceptable.

## **Section I: Technical Bid**

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

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

Part 4, Evaluation Procedures, contains additional instructions that bidders should consider when preparing their technical bid.

## **Section II: Financial Bid**

**1.1** Bidders must submit their financial bid in Canadian funds and in accordance with the Financial Bid Presentation Sheet in Attachment 1 to Part 3. The total amount of Applicable Taxes must be shown separately.

**1.2** Bidders must submit their price and rate FOB destination; Canadian customs duties and excise taxes included, as applicable; and Applicable Taxes excluded.

### **1.3 Price Breakdown**

In their financial bid, the bidders are requested to provide a detailed breakdown of the price for the following elements for each phase of the Work, as applicable:

(a) Professional fees: For each individual and (or) labour category to be assigned to the Work, the bidders should indicate: i) the firm hourly rate or the firm daily rate, inclusive of overhead and profit; and ii) the estimated number of hours or days, as applicable. The bidders should indicate the number of hours in one working day.

The professional fees must include the total estimated cost of all travel and living expenses that may need to be incurred for:

- (i) Work described in Part 7, Resulting Contract of the bid solicitation required to be performed within the "National Capital Region (NCR). The NCR is defined in the *National Capital Act*, R.S.C. 1985, c. N-4, S.2. *The National Capital Act* is available on the Justice Website: [http://laws-lois.justice.gc.ca/eng/acts/N-4/;](http://laws-lois.justice.gc.ca/eng/acts/N-4/)")
- (ii) travel between the successful bidder's place of business and the NCR; and
- (iii) the relocation of resources

to satisfy the terms of any resulting contract. These expenses cannot be charged directly and separately from the professional fees to any contract that may result from the bid solicitation.

(b) Equipment (if applicable): The bidders should specify each item required to complete the



Work and provide the pricing basis of each one, Canadian customs duty and excise taxes included, as applicable.

- (c) **Materials and Supplies (if applicable):** The bidders should identify each category of materials and supplies required to complete the Work and provide the pricing basis. The Bidder should indicate, on a per category basis, whether the items are likely to be consumed during the performance of any resulting contract.
- (d) **Subcontracts (if applicable):** The bidders should identify all of the proposed subcontractors and provide in their financial bid for each one a price breakdown.
- (e) **Other Direct Charges (if applicable):** The bidders should identify all of the categories of other direct charges anticipated, such as long distance communications and rentals, providing the pricing basis for each and explaining the relevance to the work described in Part 7 of the bid solicitation.
- (f) **Applicable Taxes:** The bidders should indicate the Applicable Taxes separately.

**1.5** Bidders should include the following information in their financial bid:

- (a) Their legal name; and
- (b) The name of the contact person (including this person's mailing address, phone and facsimile numbers and email address) authorized by the Bidder to enter into communications with Canada with regards to their bid; and any contract that may result from their bid.

### **Section III: Certifications**

Bidders must submit the certifications required under Part 5.

**ATTACHMENT “1” TO PART 3 -  
FINANCIAL BID PRESENTATION SHEET**

The Bidder must complete this Financial Bid Presentation Sheet and include it in its financial bid.

<b>Deliverables</b>	<b>Target Date</b>	<b>Subtotal</b>
<b>Deliverable 1: Document that includes deliverables from tasks 2 and 3, see SOW article 3.1.4</b>	3 weeks from contract award	
<b>Deliverable 2: Project Plan that includes deliverables for tasks 4, see SOW article 3.1.6</b>	3.5 weeks from Deliverable 1	
<b>Deliverable 3: Interim Report covering task 5, 6 and 7, see SOW article 3.1.9</b>	9 weeks from Deliverable 2	
<b>Deliverable 4: Final Report covering task 8, see SOW article 3.1.11</b>	6 weeks from Deliverable 3	
Subtotal for Evaluation Purposes		

The inclusion of volumetric data in this document does not represent a commitment by Canada that Canada’s future usage of the services described in the bid solicitation will be consistent with this data.



## 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.

### 4.2. Technical Evaluation

Except where expressly provided otherwise, the experience described in the bid must be the experience of the Bidder itself (which includes the experience of any companies that formed the Bidder by way of a merger but does not include any experience acquired through a purchase of assets or an assignment of contract). The experience of the Bidder's affiliates (i.e. parent, subsidiary or sister corporations), subcontractors, or suppliers will not be considered.

### 4.2. Technical Evaluation

Mandatory and point rated technical evaluation criteria are included in Attachment "1" to Part 4.

### 4.3. Financial Evaluation

#### 4.3.1 Mandatory Financial Criteria

	Mandatory criteria	Met/Not Met	Reference to Page in Proposal (Bidder to Insert)
MF1	Environment Canada has established funding for this project at a maximum amount of <b>\$80,000.00</b> (in Canadian dollars) – excluding taxes – for professional services.		

#### 4.3.2 Evaluation of Price

The price of the bid will be evaluated in Canadian dollars, the Applicable Taxes excluded, Canadian customs and excise taxes included.

For evaluation purposes only, the price of the bid will be determined as follows:

- 4.3.2.1. The volumetric data included in the Financial Bid Presentation Sheet detailed in Attachment 1 to Part 3 are provided for bid evaluated price determination purposes only. They are not to be considered as a contract guarantee.

**4.3.2.2.** For bid evaluation and contractor(s) selection purposes only, the evaluated price of a bid will be determined in accordance with the Financial Bid Presentation Sheet detailed in Attachment 1 to Part 3.

**4.4 Basis of Selection**

**4.4.1 Basis of Selection - Highest Combined Rating of Technical Merit (70%) and Price (30%)**

1. To be declared responsive, a bid must:
  - (a) comply with all the requirements of the bid solicitation;
  - (b) meet all mandatory criteria and mandatory financial criteria;
 and
  - (c) obtain the required minimum of 40 points overall for the technical evaluation criteria which are subject to point rating.

The rating is performed on a scale of 55 points.

2. Bids not meeting (a) or (b) or (c) will be declared non-responsive.
3. The evaluation 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 135 and the lowest evaluated price is \$45,000 (45).

	<b>Bidder 1</b>	<b>Bidder 2</b>	<b>Bidder 3</b>
<b>Overall Technical Score</b>	115/135	89/135	92/135



<b>Bid Evaluated Price</b>		\$55,000.00	\$50,000.00	\$45,000.00
<b>Calculations</b>	<b>Technical Merit Score</b>	$115/135 \times 70 = 59.63$	$89/135 \times 70 = 46.15$	$92/135 \times 70 = 47.70$
	<b>Pricing Score</b>	$45/55 \times 30 = 24.55$	$45/50 \times 30 = 27.00$	$45/45 \times 30 = 30.00$
<b>Combined Rating</b>		84.18	73.15	77.7
<b>Overall Rating</b>		1st	3rd	2nd



**ATTACHMENT “1” TO PART 4,  
MANDATORY TECHNICAL CRITERIA AND POINT RATED TECHNICAL CRITERIA**

**Mandatory Technical Criteria**

The bid 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.

Item #	Mandatory Requirement	Reference to Page Number in Proposal (Bidder to insert)	Met/ Not Met	Comments
<b>Proposed Resource (Project Manager)</b>				
<b>M1</b>	The Project Manager must demonstrate a Bachelors’ degree in a relevant field such as statistics, mathematics, economics, business, forestry from a recognized University.  Proof of education must be provided			
<b>M2</b>	The Project Manager must demonstrate having been a main contributor on two (2) projects relevant to the Statement of Work completed within the past 10 years. Relevant projects are considered to be those that pertain to actuarial studies, statistical risk assessments, environmental modelling, macro-economics and/or sectoral research in forest resources.  For each project the bidder must provide, at a minimum:  <ul style="list-style-type: none"> <li>- A brief description of the project, including objectives</li> <li>- Duration of project (start and end date)</li> <li>- Proposed resources’ role on the project</li> <li>- Contact information (name, title, phone number or email address) for the organization for which the project was performed.</li> </ul>			
<b>Proposed Resources (Project Team)</b>				
<b>M3</b>	The Bidder must describe the team that it proposes to complete the work. The description of the team must include:  <ul style="list-style-type: none"> <li>- A list of team members (including subcontractors, as applicable)</li> <li>- Their proposed roles and responsibilities in relation to the work in the SOW</li> </ul>			



	<ul style="list-style-type: none"> <li>- Current CV's of all proposed Project Team members, including their education and list of projects</li> </ul> <p>Note that it is not required that the team has more than one member.</p>			
<b>Corporate Experience</b>				
<b>M4</b>	<p>The Bidder must provide one or more project example(s) demonstrating a minimum of 2 years' experience within the past 5 years' in the below subject matter:</p> <ul style="list-style-type: none"> <li>- Actuarial modeling and research</li> <li>- Forestry and/or Greenhouse gas monitoring, reporting and verification (MRV) in forest contexts</li> </ul> <p>For each project the bidder must provide, at a minimum:</p> <ul style="list-style-type: none"> <li>- A brief description of the project, including objectives</li> <li>- Duration of project (start and end date)</li> <li>- Proposed resources' role on the project</li> <li>- Contact information (name, title, phone number or email address) for the organization for which the project was performed.</li> </ul>			

**Point Rated Technical Criteria**

Bids which meet all the mandatory technical criteria will be evaluated and scored as specified in the tables inserted below.

Bids which fail to obtain the required minimum number of points specified will be declared non-responsive. Each point rated technical criterion should be addressed separately.

<b>Criteria #</b>	<b>Point Rated Technical Criteria</b>	<b>Reference to Page Number in Proposal (Bidder to insert)</b>	<b>Maximum Points Available</b>	<b>Points Received</b>	<b>Comments</b>
<b>I. EXPERIENCE OF FIRM AND PROPOSED RESOURCES</b>					
The proposal shall identify resources to be assigned to the project, their individual experience in relevant work and relevant company experience required for execution of the project. (Maximum 30 points)					
<b><u>Bidder Experience</u></b>					

<p><b>PR1</b></p>	<p>The Bidder should provide a list of projects conducted in Canada related to GHG offsets, GHG emission mitigation, carbon policy forest pest/fire risk analysis, and/or actuarial modelling. To meet this criteria each project must include:</p> <ul style="list-style-type: none"> <li>- A brief description of the project, including objectives and geographic region</li> <li>- Duration of project (start and end date)</li> </ul> <p><b>Two (2) points for each project; maximum of ten (10) points.</b></p>		<p>10</p>		
<p><b>PR2</b></p>	<p>The Bidder should provide a list of the projects conducted outside Canada, related to GHG offsets, GHG emission mitigation, carbon policy, forest pest/fire risk analysis and/or actuarial modelling. To meet this criteria each project must include:</p> <ul style="list-style-type: none"> <li>- A brief description of the project, including objectives and geographic region</li> <li>- Duration of project (start and end date)</li> </ul> <p><b>One (1) point for each project; maximum of five (5) points.</b></p>		<p>5</p>		
<p><b>PR3</b></p>	<p><i>Number of research projects related to actuarial science, modeling and research</i> – the Bidder should briefly describe quantitative research done by the firm that specifically models or projects risk.</p> <p><b>Two (2) points per project; maximum of ten (10) points.</b></p>		<p>10</p>		
<p><b><u>Proposed Resources' Experience</u></b></p>					



<b>PR4</b>	<p>The Bidder should list the title of any publications for which it was the main contributor (i.e. technical reports, journal papers, etc.) along with the abstract that the proposed resources for this project have worked on related to GHG offsets, GHG mitigation, carbon policy, forest pest/fire risk analysis, and/or actuarial modelling.</p> <p><b>One (1) point for each publication; maximum of five (5) points.</b></p>		5		
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**I. METHOD PROPOSED**

The proposal will be evaluated based upon the method presented to achieve the identified project objectives within the timelines indicated. (Maximum 25 points)

**PR 5 – Work Methods and Structure**

The Bidder should demonstrate an understanding of the logistical requirements to conduct the project successfully. The Bidder should demonstrate this understanding by defining a work plan that is clear, detailed and feasible.

The method will be evaluated based on its potential to fulfill the study objectives and obtain the required information. If demonstrated the bidder will receive up to the full point amount, if not demonstrated they will receive 0 points.

<b>(a)</b>	Suitability of methods proposed to research how other offset systems address GHG reversal risk		2		
<b>(b)</b>	Suitability of method proposed to gather relevant information and data on GHG reversal risk in forests across Canada		5		
<b>(c)</b>	Suitability of proposal for developing or using a method that quantifies the risk of GHG reversal given forestry offset project's risk exposure characteristics and the risk mitigations measures that are implemented by the proponent, under different climate change scenarios.		4		
<b>(d)</b>	Suitability of method to develop recommendation for contribution rates to the EIA given risk characteristics of the project, implemented risk mitigation measures and climate change scenarios.		4		

<b>(e)</b>	Work plan and schedule identified		4		
<b>(f)</b>	Proposed resources allocation, role and level of effort described for each phase of the project		2		
<b>(g)</b>	Major deliverables addressed		2		
<b>(h)</b>	Identification of key steps and activities in the project		2		
Bidders' Score					
Minimum pass score			40		

The successful Bidder must meet all of the Mandatory Technical Criteria and achieve a score of 40/55 or better in the Rated Technical Criteria listed above.



## **PART 5 - CERTIFICATIONS**

Bidders must provide the required certifications and associated 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 in carrying out any of its obligations under the Contract, 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 may render the bid non-responsive or constitute a default under the Contract.

### **5.1. Certifications Required Precedent to Contract Award**

#### **5.1.1 Integrity Provisions - Associated Information**

By submitting a bid, the Bidder certifies that the Bidder and its Affiliates are in compliance with the provisions as stated in Section 01 Integrity Provisions - Bid of Standard Instructions 2003. The associated information required within the Integrity Provisions will assist Canada in confirming that the certifications are true.

#### **5.1.2. 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" list available at the bottom of the page of the [Employment and Social Development Canada \(ESDC\) - Labour's](https://www.canada.ca/en/employment-social-development/programs/employment-equity/federal-contractor-program.html#) website (https://www.canada.ca/en/employment-social-development/programs/employment-equity/federal-contractor-program.html#).

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. Additional Certifications Required Precedent to Contract Award**

The certifications listed below should be completed and submitted with the bid but may be submitted afterwards. If any of these required certifications 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 comply with the request of the Contracting Authority and to provide the certifications within the time frame provided will render the bid non-responsive.

#### **5.2.1. 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. Failure to comply with the request may result in the bid being declared non-responsive.

### **5.2.2. Education and Experience**

*SACC Manual* clause A3010T (2010-08-16) Education and Experience



## **PART 6 - RESULTING CONTRACT** *(at contract award, delete this line)*

The following clauses and conditions apply to and form part of any contract resulting from the bid solicitation. *(at contract award, delete this sentence and add the title of the requirement)*

**Title:** *(insert only at contract award)*

### **6.1. Statement of Work**

The Contractor must perform the Work in accordance with the Statement of Work at Annex A.

### **6.2. Standard Clauses and Conditions**

All clauses and conditions identified in the Contract by number, date and title are set out in the PSPC/PWGSC *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.

#### **6.2.1 General Conditions**

2035 (2021-12-02) General Conditions - Professional Services (High Complexity), apply to and form part of the Contract.

#### **6.2.2 Specific Person(s)**

The Contractor must provide the services of the following person(s) to perform the Work as stated in the Contract: \_\_\_\_\_ *(insert name(s) of person(s))*.

### **6.3. Security Requirement**

**6.3.1** There is no security requirement applicable to this Contract.

### **6.4. Term of Contract**

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

The period of the Contract is from date of Contract to 2022-09-09 inclusive.

### **6.5. Authorities**

#### **6.5.1 Contracting Authority**

The Contracting Authority for the Contract is:

Name: Megan Filliol  
Title: Team Manager, Procurement – Operations Atlantic  
Environment and Climate Change Canada  
Procurement and Contracting Division  
Address: 17<sup>th</sup> Floor, 45 Alderney Dr., Dartmouth NS B2Y 2N6



Telephone: 902-600-6216  
E-mail address: [megan.filliol@ec.gc.ca](mailto:megan.filliol@ec.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** *(insert only at contract award)*

The Project Authority for the Contract is:

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

The Project Authority named above 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.

### **6.5.4 Contractor's Representative** *(Fill in or delete as applicable)*

## **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: 2019-01](#) of the Treasury Board Secretariat of Canada.

## **6.7. Payment**

### **6.7.1 Basis of Payment**

The Contractor will be reimbursed for the costs reasonably and properly incurred in the performance of the Work, as determined in accordance with the Basis of Payment in Annex B , to a limitation of expenditure of \$\_\_\_\_\_ *(insert the amount at contract award)*. Customs duties are included and Applicable Taxes are extra.



### **7.7.2 Limitation of Expenditure**

- (a) Canada's total liability to the Contractor under the Contract must not exceed \$ \_\_\_\_\_. Customs duties are included and the Applicable Taxes are extra.
- (b) No increase in the total liability of Canada or in the price of the Work resulting from any design changes, modifications or interpretations of the Work, will be authorized or paid to the Contractor unless these design changes, modifications or interpretations have been approved, in writing, by the Contracting Authority before their incorporation into the Work. The Contractor must not perform any work or provide any service that would result in Canada's total liability being exceeded before obtaining the written approval of the Contracting Authority. The Contractor must notify the Contracting Authority in writing as to the adequacy of this sum:
  - (i) when it is 75 percent committed, or
  - (ii) four (4) months before the contract expiry date, or
  - (iii) as soon as the Contractor considers that the contract funds provided are inadequate for the completion of the Work,whichever comes first.
- (c) If the notification is for inadequate contract funds, the Contractor must provide to the Contracting Authority a written estimate for the additional funds required. Provision of such information by the Contractor does not increase Canada's liability.

### **6.7.3 Multiple Payments**

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

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

### **6.7.4 Supplemental General Conditions**

A9117C (2007-11-30) T1204 - Direct Request by Customer Department

### **6.8. Invoicing Instructions**

### **6.8.1 Single Payment**

6.8.1.1 The Contractor must submit invoices monthly in accordance with the section entitled "Invoice Submission" of the general conditions.

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

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

### **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 \_\_\_\_\_. (*Insert the name of the province or territory as specified by the bidder in its bid, if applicable.*)

### **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 2035 (2021-12-02) General Conditions - Professional Services (High Complexity);
- (c) Annex A, Statement of Work;
- (d) Annex B, Basis of Payment;
- (e) the Contractor's bid dated \_\_\_\_\_, (*insert date of bid*) (*If the bid was clarified or amended, insert at the time of contract award:* ", as clarified on \_\_\_\_\_" **or** ", as amended on \_\_\_\_\_" *and insert date(s) of clarification(s) or amendment(s)*).

### **6.12. Insurance**

SACC Manual clause G1005C (2016-01-28) Insurance – No Specific Requirement



### **6.13. Dispute Resolution**

(a) The parties agree to maintain open and honest communication about the Work throughout and after the performance of the contract.

(b) The parties agree to consult and co-operate with each other in the furtherance of the contract and promptly notify the other party or parties and attempt to resolve problems or differences that may arise.

(c) If the parties cannot resolve a dispute through consultation and cooperation, the parties agree to consult a neutral third party offering alternative dispute resolution services to attempt to address the dispute.

(d) Options of alternative dispute resolution services can be found on Canada's Buy and Sell website under the heading "[Dispute Resolution](#)".

## ANNEX “A” STATEMENT OF WORK

### Study of Greenhouse Gas (GHG) reversal probability and severity in Canadian Forests for projects in the Federal GHG Offset System

#### **1.0 Purpose**

Environment and Climate Change Canada (ECCC) requires a quantitative estimate of the probability and severity (referred to as risk) of involuntary Greenhouse Gas (GHG) reversal for forestry GHG offset projects that will be implemented in Canada and registered under the *Greenhouse Gas Offset Credit System Regulations (Canada) (The Regulations)*. This estimate will need to be calculated for different climate change scenarios, for different project's risk exposure characteristics and for different risk mitigations measures, or group of measures, implemented by the proponent.

Based on these estimates, ECCC requires recommendations for the portion of offset credits that should be deposited to Environmental Integrity Account (EIA), a risk pool that will compensate for involuntary GHG reversal in order to maintain the environmental integrity of the federal GHG offset system. The contractor will need to consider how the EIA deposits impact the economic viability of offset forestry projects.

#### **1.1 Objective:**

The Contractor will familiarize themselves with the federal GHG offset system rules and research how other offset systems address GHG reversal risk using contributions to an EIA or buffer pool (see Reference Documents). Based on this research, the contractor will develop or recommend the use of an actuarial method/model to quantify the risk of involuntary GHG reversal for forestry offset projects. The contractor will also need to propose assumptions that could be used to generate three climate change scenarios, define five profiles of risk exposure characteristics for forestry projects implemented in different Canadian ecosystems, and for each of these scenarios and profile, assess how the implementation of individual and grouped risk mitigation measure will affect that risk. The assumptions must incorporate the following considerations:

- Climate change scenarios commonly referred to as Representative Concentration Pathways (RCPs). RCPs are designed to provide plausible future scenarios of human emissions patterns. For this study, the contractor will need to assess the three following scenarios:
  - RCP8.5: high global emission scenario. This scenario indicates global average warming levels of 3.2 to 5.4°C by 2090.
  - RCP4.5: medium global emission scenario, includes measures to limit (mitigate) climate change. This scenario indicates global average warming levels of 1.7 to 3.2°C by 2090.
  - RCP2.6: low emission global scenario, requires strong mitigation actions. This scenario indicates global average warming levels of 0.9 to 2.3°C by 2090.
- Characteristics of the project that affect the risk of involuntary GHG reversal (see background notes: internal, external, and natural risks)
- Risk mitigation measures implemented by the project proponent individually and grouped.



After presenting the proposed assumptions and method/model and risk mitigation measures, ECCC officials may provide feedback and may require revisions. The Contractor will apply any new assumptions and revisions to the method/model required by ECCC and will quantify the different levels of risk of involuntary GHG reversal for forestry offset project types based on the list of considerations above.

Next, the contractor will recommend the percentage of credits generated by forestry offset projects that should be deposited in the EIA (akin to insurance premiums) to the EIA, taking into consideration that ECCC wants to avoid a situation in which the credits in the EIA would not suffice to compensate for the aggregate of involuntary reversals that may occur across projects registered in the system as this would compromise environmental integrity of federal offset credits. The impact of the EIA rate on the economic viability of forestry projects should also be considered.

## **1.2 Background**

### ***Overview of the Federal GHG Offset System***

- Pricing carbon pollution is the most efficient way to reduce greenhouse gas emissions, stimulate investments in clean innovation, and encourage a competitive and prosperous economy as we transition to a low-carbon world.
- The federal offset system creates a financial incentive to undertake projects that reduce GHG emissions from activities not already incentivized and that increase GHG removals from the atmosphere and for which there are applicable protocols. It will generate economic opportunities in sectors such as forestry, agriculture, and waste.
- Federal offset credits can be used by facilities regulated under the federal OBPS to compensate for excess emissions. In this way, an offset credit is a substitute for a direct emission reduction and can help reduce the overall cost of compliance.
- Federal offset credits can also be used by other groups including governments and businesses for other purposes including greening government operations, net-zero commitments, or other voluntary GHG reduction goals.

### ***Federal Offset Protocols***

- The federal offset system requires the use of protocols that set out eligible offset project activities, specify the approach for quantifying GHG emissions reductions and removals for each specific offset project type, and establish clear rules for data collection and management. They will also specify GHG reversal risks factors based on offset project-specific characteristics.
- Federal offset protocol for *Improved Forest Management* is currently under development. Work to identify additional project types for the next phase of protocol development in the Federal GHG Offset System is underway.
- The draft protocols are informed by teams of technical experts who provide advice on technical aspects of implementing offset project activities.

### ***Issuance of offset credits***

- The Minister must issue offset credits to a proponent for a reporting period provided that requirements of the Regulations and the applicable protocols are met.

- The number of credits will correspond to the difference between the GHG emission reductions and removal enhancements (collectively referred to as GHG reductions) eligible to generate credits, quantified as per the applicable protocol requirements and the quantity of credits that will be deposited in the EIA
- The number of credits to be deposited into the EIA will correspond to the product of the number of CO<sub>2</sub>e tonnes of GHG reductions and removal achieved during the reporting period and a percentage.

For biological sequestration projects, that will be 3% plus a percentage taking into consideration certain risk factors (e.g., risk of fire, insect outbreak, measures taken to mitigate risk of natural disturbance, risk to the permanency of the project); **GHG reversals**

- Carbon stored in forests or agricultural soil sinks is vulnerable to GHG reversals caused by natural disturbances such as pest outbreaks, wildfires or by anthropogenic causes such as timber harvesting, or soil cultivation.
- Carbon sequestered in carbon reservoirs for which offset credits have been issued can be released back into the atmosphere after credits have been issued for those GHG reductions. This is called a **GHG reversal**. The proponent of a sequestration project must establish, in accordance with the applicable protocol, a reversal risk management plan that identifies and assesses reversal risks associated with the project and a description of any measures and monitoring activities to mitigate those risks.
- If a GHG reversal occurs, the Minister will determine whether it was “**voluntary**” or “**involuntary**”.
  - **involuntary reversal** means a reversal that is out of the proponent’s control or that occurs in spite of the proponent implementing measures set in the project’s reversal risk management plan.
  - **voluntary reversal** means a reversal that is within of the control of a proponent or resulting from a proponent’s failure to implement a reversal risk management plan.
- If, following the examination of reports, the Minister determines that the GHG reversal was involuntary:
  - The Minister will cancel the number of credits in the EIA that corresponds to the lesser quantity of the GHG released into the atmosphere during the reversal and the quantity of offset credits that have been issued.
  - If the reversal reduce the inventory of sequestered CO<sub>2</sub>e below the level of the inventory in the baseline, the Minister will cancel the project registration.

### ***Ensuring permanence in the Federal GHG Offset System***

- Ensuring **permanence** of GHG removals in biological sequestration projects is critical for the environmental integrity of the federal GHG offset system.
- Under the proposed Regulations, the length of the permanence period is 100 years after the end of the crediting period. Biological sequestration projects can have a crediting period up to 100 years meaning any credit issued in year 100 must be permanent for the next proceeding 100 years (the monitoring period).
- The Regulations impose additional requirements on biological sequestration projects in order to mitigate the risk of GHG reversal, including:



- requiring proponents to develop, submit, and implement a reversal risk management plan in accordance with the applicable federal offset protocol (as explained above).
- retaining a percentage of generated credits in the **Environmental Integrity Account** (EIA) (note: some other offset programs call the EIA a “buffer pool”). The percentage is based on the combination of the project’s risk characteristics and the reversal risk mitigation measures the project plans to implement. The credits retained in the EIA is akin to an insurance premium. ECCC would retain a higher percentage of credits in the EIA for projects with higher GHG reversal risk. A project proponent would have the flexibility/option to decrease the percentage of credits retained in the EIA by implementing robust **risk mitigation measures**. Federal offset protocols will set out risk mitigation measures that a project proponent may implement. Creating the EIA allows GHG reversal risk to be aggregated/pooled so that GHG reversal risk can be shared/diversified across individual project proponents that have varying exposure to different risks.
- requiring project proponents to submit periodic monitoring reports which describes the risk mitigation measures that are implemented by the project proponent and includes a declaration that the reversal risk management plan was implemented and that no GHG reversal occurred.
- **Reversal risk mitigation measures** implemented by the proponent or in partnership with local communities could include:
  - Land tenure and measures put in place that restrict land use change. e.g. whether a conservation easement exists on the land of the project location
  - Fire risk suppression activities such as reducing surface fuel loads, removing ladder fuels, adding fuel breaks, controlled burns and reducing stand density
  - Disease/insect outbreak suppression
  - Ongoing monitoring of the project through involvement of local communities, or through an Indigenous Guardians Program
  - Designation of land as an Indigenous Protected and Conserved Area
- **Project-specific risk characteristics** that could influence GHG reversal risk include:
  - Considerations about the location specific geography, climate, accessibility that affect GHG reversal risk
  - Risk of natural disturbance based on the project location/region, taking climate change into account
    - Exposure to forest fire risk
    - Exposure to a major windthrow event risk (hurricane, tornado, high wind event),
    - Exposure to potential disease or insect outbreak risk
  - Whether the project land is privately owned, on crown land, reserve land and how this affects financial insolvency risk/probability of the project to default over the course of the project life

As outlined above, the proposed Regulations provide the general framework for addressing GHG reversal risk. Actuarial modelling and science involves rigorous application of mathematics and statistics to quantify uncertainty. Actuaries have specialized education, training and



knowledge. ECCC does not have this capacity; determining the specific numerical probability and severity of GHG reversal under different scenarios and circumstances is outside of the scope of expertise within ECCC. ECCC does not have the modelling infrastructure to conduct such analysis. Although ECCC has compiled relevant and recent datasets and studies that can be assessed for the work outlined in this document, contracting external expertise will inform ECCC's decision on EIA contribution rates for federal offset protocols for project types in the forestry sector. Contracting external expertise will enable ECCC to complete this work in a more timely fashion compared with doing the work internally. Furthermore, application of actuarial models for the purposes of addressing GHG reversal risk in carbon offset systems is novel and has limited precedence. ECCC officials will ensure that the assumptions and method/model used in the quantitative analysis are appropriate for the context of the Regulations.

### **1.3 Terminology**

**Biological sequestration project** means a project involving the net removal of carbon dioxide (CO<sub>2</sub>) from the atmosphere by plants and microorganisms and the storage of CO<sub>2</sub> in vegetative biomass or soils.

**Greenhouse gas (GHG)** means a gas that is set out in column 1 of Schedule 3 of the *Greenhouse Gas Pollution Pricing Act*.

**GHG reservoir** means a component, other than the atmosphere, that has the capacity to accumulate, store and release GHGs.

**GHG reductions** means the reductions achieved due to the project.

**GHG sink** means a process that removes a GHG from the atmosphere.

**GHG source** means a process that releases a GHG into the atmosphere.

**Involuntary reversal** means a reversal that is out of the proponent's control or that occurs in spite of the proponent implementing the project's reversal risk management plan.

**Project** means a project that prevents greenhouse gases ("GHG"s) from being emitted ("GHG reductions") or that removes GHGs from the atmosphere ("GHG removals").

**Proponent** means the person responsible for a project.

**Voluntary reversal** means a reversal that is within of the control of a proponent or resulting from a proponent's failure to implement a reversal risk management plan.

### **2.0 Reference Documents**

Other Offset System Documentation

- BC Carbon Registry
  - Greenhouse Gas Emission Control Regulation  
[https://www.bclaws.gov.bc.ca/civix/document/id/lc/statreg/250\\_2015#section23](https://www.bclaws.gov.bc.ca/civix/document/id/lc/statreg/250_2015#section23)
- California Air Resources Board:
  - Cap and trade Regulation: Section 95983. Forestry Offset Reversals  
[https://ww2.arb.ca.gov/sites/default/files/2021-02/ct\\_reg\\_unofficial.pdf](https://ww2.arb.ca.gov/sites/default/files/2021-02/ct_reg_unofficial.pdf)
- Climate Action Reserve



- Reserve Offset Program Manual section 2.8.1  
[https://www.climateactionreserve.org/wp-content/uploads/2021/03/Reserve\\_Offset\\_Program\\_Manual\\_March\\_2021.pdf](https://www.climateactionreserve.org/wp-content/uploads/2021/03/Reserve_Offset_Program_Manual_March_2021.pdf)
- Forest Projects: Project Design Document Section 10: Reversal Risk Rating  
<https://www.climateactionreserve.org/wp-content/uploads/2019/11/Forest-PDD-Template-V5.0.docx>
- Verified Carbon Standard: AFOLU Non-Permanence Risk Tool v4.0. September 19, 2019  
[https://verra.org/wp-content/uploads/2019/09/AFOLU\\_Non-Permanence\\_Risk-Tool\\_v4.0.pdf](https://verra.org/wp-content/uploads/2019/09/AFOLU_Non-Permanence_Risk-Tool_v4.0.pdf)

#### Offset protocols from other offset systems

- British Columbia Greenhouse Gas Offset Protocol: Forest Carbon  
[https://www2.gov.bc.ca/assets/gov/environment/climate-change/ind/protocol/draft\\_fcop.pdf](https://www2.gov.bc.ca/assets/gov/environment/climate-change/ind/protocol/draft_fcop.pdf)
- Compliance Offset Protocol US Forest Projects Appendix D. Determination of a Forest Project's Reversal Risk Rating  
[https://www2.arb.ca.gov/sites/default/files/classic/cc/capandtrade/protocols/usforest/forest\\_protocol2015.pdf](https://www2.arb.ca.gov/sites/default/files/classic/cc/capandtrade/protocols/usforest/forest_protocol2015.pdf)
- Verified Carbon Standard: Methodology for Improved Forest Management  
[https://verra.org/wp-content/uploads/2020/08/FFCP\\_Methodology\\_10Aug2020.pdf](https://verra.org/wp-content/uploads/2020/08/FFCP_Methodology_10Aug2020.pdf)

#### Studies, Datasets, and other Resources

- ClimateData.ca
  - Standardised Precipitation Evapotranspiration Index (SPEI)
    - Prepared by the ECCC Climate Research Division and indicates longer term drought models
- Boucher et al (2018) Current and projected cumulative impacts of fire drought and insects on timber volumes across Canada. *Ecological Applications* (SEE ATTACHMENT)
- Ernie et al (2021) Exposure of the Canadian Wildland-Human Interface (WHI) and population to wildland fire, under current and future climate conditions. *Canadian Journal of Forest Research*. <https://cdnsciencepub.com/doi/abs/10.1139/cjfr-2020-0422>
- Guindon et al (2020) Trends in wildfire burn severity across Canada, 1985 to 2015. *Canadian Journal of Forest Research*. <https://cdnsciencepub.com/doi/abs/10.1139/cjfr-2020-0353>
- Guindon et al (2018) Missing forest cover gains in boreal forests explained. *Ecosphere*. <https://esajournals.onlinelibrary.wiley.com/doi/full/10.1002/ecs2.2094>
- Hanes et al (2018) Fire-regime changes in Canada over the last half century. *Canadian Journal of Forest Research*.
- Johnston et al (2020) Wildland fire risk research in Canada. *Environmental Reviews*. <https://cdnsciencepub.com/doi/full/10.1139/er-2019-0046>

- Parisien et al (2020) Fire deficit increases wildfire risk for many communities in the Canadian boreal forest. *Nature Communications*.  
<https://www.nature.com/articles/s41467-020-15961-y>
- Tymstra et al (2020) Wildfire management in Canada: Review, challenges and opportunities. *Progress in Disaster Science*.  
<https://www.sciencedirect.com/science/article/pii/S2590061719300456>
- Whitman et al (2020) A method for creating a burn severity atlas: an example from Alberta, Canada. *International Journal of Wildland Fire*  
<https://www.publish.csiro.au/wf/wf19177>
- Xu et al (2016) Climate change mitigation strategies in the forest sector: biophysical impacts and economic implications in British Columbia, Canada. *Mitigation Adaptation Strategy Global Change*. (SEE ATTACHMENT)

### **3.0 Requirements:**

#### **3.1 Tasks and Deliverables**

##### **3.1.1 Task 1 – Kick Off Meeting**

The Contractor and Project Authority will meet via teleconference within one week of the finalization of the contract to discuss the scope of the project, expectations for deliverables and periodic reports, format of deliverables and expected timelines.

The Project Authority will provide to the Contractor:

- Information regarding the proposed federal GHG offset system
- Studies and datasets relevant to the work in section 2.0 Reference Documents

The Contractor will review these materials to develop basic familiarity with the content.

##### **3.1.2 Task 2 - Conduct research on other offset systems**

The Contractor must conduct research on how environmental integrity accounts (also called contingency accounts or buffer pools) work in other offset programs. See reference documents for a list of programs and materials.

The Contractor will research and assemble available data sources, research studies and other relevant information on other offset programs and will include analysis of commonalities between programs to highlight precedence and best practices that can be drawn on by the contractor for work on subsequent contract tasks below.

##### **3.1.3 Task 3 - Identify risks and risk mitigation measures**

The contractor will identify different sources of risk that may lead to GHG reversals. The risk should include consideration to the frequency, severity, and correlation of risk<sup>1</sup>. The contractor will then identify risk mitigation measures that can decrease the risk of GHG reversals.

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<sup>1</sup> An example of risks that correlate maybe how disease outbreak increases the risk of forest fire.



The contractor can group GHG reversal risks into three categories: natural risks, internal risks, and external risks.

- Natural risks: Risk of natural disturbance depending on the project location/region. This could be the historical average number of times an event has occurred (frequency) over 100 and 200 years, and the significance (severity) of that event in terms of the extent to how much carbon sequestered in a GHG reservoir was released into the atmosphere. The risk of natural disturbance could be based on historical records but must also be forward looking based on projected climate change impacts. The method should rely on historical data to the extent possible, and modelled data if real data is unavailable. Any modelled data should be based on conservative assumptions and be informed by academic literature where applicable. Natural risks could include exposure to the following risks:
  - forest fire risk
  - major windthrow events (hurricane, tornado, high wind event)
  - flooding
  - potential disease or insect outbreak risk
  - drought
  - Geomorphic and/or geological risk (e.g. landslide, rock fall, earthquake)
- Internal risks
  - Whether the project land is privately owned, on crown land, reserve land and how this affects financial insolvency risk/probability of the project to default over the course of the project life
  - The financial viability of the project including
    - the length of time required to reach the cash flow breakeven point
    - the opportunity cost of alternative land use activities
  - Proponent's accessibility/proximity to the project site
  - The percentage of funding secured to carry out the project for the duration of the crediting period
- External risks
  - Considerations about the project location/accessibility/remoteness that affect
    - GHG reversal risk
    - Severity of GHG reversal events
    - Ability to mitigate GHG reversal risk
  - GHG reversals caused by anthropogenic activity ie. Whether active enforcement is needed to prevent encroachment from outside actors whose activities can cause GHG reversals or increase GHG reversal risk
- The contractor must identify any other relevant risks and assumptions (as appropriate)

Risk mitigation measures would be put in place by the project proponent and would decrease GHG reversal risk. Risk mitigation measures may include

- Land tenure and measures put in place that restrict land use change. e.g. whether a conservation easement exists on the land of the project location
  - Legally binding commitments and the associated time period of those commitments
- Fire risk suppression activities such as reducing surface fuel loads, removing ladder fuels, adding fuel breaks, controlled burns and reducing stand density

- Disease/insect outbreak suppression
- How species selection for planting/maintenance decreases the risk of natural disturbance
- Suppression of impact of other natural weather events may include but are not limited to:
  - Planting riparian zones or other buffers for flood or storm control
  - Use of species that are tolerant of potential weather or climate related risks
- Risk mitigation measures implemented by the project proponent or in partnership with local communities
  - Whether there is ongoing monitoring of the project through involvement of local communities, or through an Indigenous Guardians Program
  - Whether the land has been designated as an Indigenous Protected and Conserved Area

#### **3.1.4 Deliverable 1:**

##### **Document that includes deliverables from tasks 2 and 3:**

- Summary of research and findings based on data sources, research studies and other relevant information provided in Appendix and any other sources the Contractor deems relevant for this contract.
- Identification and description of risk factors and risk mitigation measures

#### **3.1.5 Task 4 – Establish assumptions and method to quantify the probability of GHG reversal risk**

The contractor will establish key assumptions and develop a method/model or use an existing method/model to quantify the risk of involuntary GHG reversal over a 200 year time period (both a 100 year crediting period + 100 year monitoring period) for a forestry offset projects under different climate change scenarios, profiles based on a range of different project specific characteristics identified in task 2, and the implementation of individual and grouped risk mitigation measures.

The method will be designed to provide estimates with a 95% confidence interval (or two standard deviations from the mean) for the probability of GHG reversal for combinations of the following:

**3.1.5.1 Three climate change scenarios<sup>2</sup>:** A set of scenarios referred to as Representative Concentration Pathways (RCPs) are in common use to study future climate change. RCPs are designed to provide plausible future scenarios of human emissions patterns. Based on best practices in the global science community, the Government of Canada usually presents 3 RCPs:

- RCP8.5: high global emission scenario. This scenario indicates global average warming levels of 3.2 to 5.4°C by 2090.
- RCP4.5: medium global emission scenario, includes measures to limit (mitigate) climate change. This scenario indicates global average warming levels of 1.7 to 3.2°C by 2090.

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<sup>2</sup> For more information on Scenarios and climate models used by the Government of Canada, visit: <https://www.canada.ca/en/environment-climate-change/services/climate-change/canadian-centre-climate-services/basics/scenario-models.html>



- RCP2.6: low emission global scenario, requires strong mitigation actions. This scenario indicates global average warming levels of 0.9 to 2.3°C by 2090.

**3.1.5.2 Five risk profiles** defined based on reversal risk exposure characteristics identified as per task 3 and agreed upon between the Project Authority and the Contractor.

**3.1.5.3 Individual and grouped set of risk mitigation measures** defined based on risk mitigation measures defined as per task 3 and agreed upon between the Project Authority and the Contractor.

Key assumptions used in the analysis shall be agreed upon between ECCC and the contractor.

### **3.1.6 Deliverable 2:**

#### **Project Plan that includes deliverables for tasks 4:**

- Presentation of assumptions and method to quantify the probability and severity of involuntary GHG reversal given the forestry offset project's risk exposure characteristics and the risk mitigations measures that are implemented by the proponent, under different climate change scenarios.<sup>3</sup>
- Report describing the proposed assumptions and method, as well as its limitations and related caveats

### **3.1.7 Task 5 – Analysis and Report of long-term GHG reversal risk probability for forestry project types**

Based on the assumptions and method defined as per task 4, the contractor will conduct an actuarial analysis to quantify the long-term probability and severity of a GHG reversal for forestry offset projects, over 2 time periods (100 years and 200 years). Estimates will be provided for all possible combination of climate change scenarios, profiles of forestry risk exposure characteristics and set of individual and grouped risk mitigation measures with a 95% confidence interval.

As an example, if the probability of GHG reversal under a certain RCP, for a project with a given risk profile over 200 years is 20%, the project proponent's choices of a group of measures to implement from the reversal risk management plan could decrease the probability of GHG reversal to 15%.

### **3.1.8 Task 6 – Quantify EIA Contribution Rate**

Based on the work completed in task 4 and 5, the next task is to provide recommendations for a suite of EIA contribution rates that apply to a project based on RCPs, reversal risk exposure profiles and risk mitigation measures implemented.

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<sup>3</sup> A set of scenarios referred to as Representative Concentration Pathways (RCPs) are in common use to study future climate change. RCPs are designed to provide plausible future scenarios of human emissions patterns. For this study, the contractor will need to assess the three following scenarios:

- RCP8.5: high global emission scenario. This scenario indicates global average warming levels of 3.2 to 5.4°C by 2090.
- RCP4.5: medium global emission scenario, includes measures to limit (mitigate) climate change. This scenario indicates global average warming levels of 1.7 to 3.2°C by 2090.
- RCP2.6: low emission global scenario, requires strong mitigation actions. This scenario indicates global average warming levels of 0.9 to 2.3°C by 2090.

The estimated contribution rate will be a percentage of GHG reductions that combined will correspond to the sum of expected involuntary GHG reversal for which credits were issued for all forestry projects registered under the federal offset system. This will be in addition to the 3% of eligible GHG reductions that are deposited in the EIA for all GHG offset projects registered under the federal offset system, including non-sequestration projects. The proponent may increase the robustness of their risk mitigation measures over the project life to decrease the EIA contribution rate. However, the project proponent may not decrease the robustness of their risk mitigation measures as this would impact the GHG reversal risk going forward and the previous contribution rate may not be sufficient to cover the increase GHG reversal risk.

As an illustrative example if a project achieves 1,000 tonnes of carbon dioxide equivalent removals in year 1, the contribution rate would be a percentage of that issuance (plus the default 3% rate specified in the proposed Regulations<sup>4</sup>). The contribution rate based on the project characteristics and risk mitigation measures may be 10% plus the default 3% rate for a total of a 13% contribution rate. If the project proponent increases the robustness of the risk mitigation measures, the contribution rate could be lowered to 8% plus the default 3% rate for a total of a 11% contribution rate.

When determining the suite of EIA contribution rates, the contractor will consider the following:

- To ensure the environmental integrity of the system, the volume of credits that would need to be in the EIA to replace credits for which GHG are involuntary reversed, such as analyzing the typical proportion of carbon lost from forests as a result of a given natural disturbance events. Considering that GHG reversal risk between project may be correlated (e.g., if many projects are located in one area that experience a widespread forest fire) a certain buffer should be factored in to avoid using the entire volume of credits in the EIA. For the purpose of this assessment, assume the EIA contribution rate for a registered project may not be increased over time.
- Setting the EIA contribution overly high would compromise the potential economic viability of GHG offset projects in the forestry sector and could affect uptake. The inability to forecast the demand for federal offset credits may create some challenges for modelling the size of the EIA, and the corresponding contribution rates that are required

The contribution rate recommended by the Contractor will be compared against other offset systems (that are used for compliance and voluntary purposes) and if possible, any significant discrepancies should be identified.

### **3.1.9 Task 7 - Interim Report**

The Contractor must submit an interim report containing the analysis and results of the tasks outlined above to the Project Authority for review and feedback. Once feedback is sent/received, the contractor will revise and resubmit the interim report as required, according to feedback from the Project Authority and those designated by the Project Authority, before submitting the final report and model to the Project Authority for approval.

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<sup>4</sup> NOTE: the contribution rate for the EIA should be in addition to a 3% rate that is applicable to all projects regardless of the project type. See provision in 10(2)B(a) of the *Greenhouse Gas Offset Credit System Regulations (Canada)*.



The draft report must include:

- 3.1.7.1 Summary of existing research and findings GHG reversal in the forestry sector and how it is address in other GHG offset programs (task 2)
- 3.1.7.2 Identification and description of forestry offset projects risks characteristics and risk mitigation measures (task 3)
- 3.1.7.3 Explanation of the assumptions and method used to quantify the risk of involuntary GHG reversal under combinations of climate change scenarios, risk characteristic profiles and set of risks mitigation measures
- 3.1.7.4 Outline the caveats of the assumptions and model used for the quantitative analysis
- 3.1.7.5 Identification and description of data sets used
- 3.1.7.6 The estimates of the likelihood of voluntary GHG reversals over 100 and 200 year at a 95% confidence interval for all combination of climate change scenarios, risk characteristic profiles and set of risks mitigation measures
- 3.1.7.7 A matrix for estimates for EIA contribution rates for all combination of climate change scenarios, risk characteristic profiles and set of risks mitigation measures, considering that the total number of credits must suffice to cover all involuntary reversals for which offset credits were issued and the economic viability of GHG offset projects in the forestry sector
- 3.1.7.8 Recommendations for the suite of EIA contribution rates based on the project-specific risk characteristics and risk mitigation measures that impact the probability and severity of GHG reversal.
- 3.1.7.9 Presentation that summarizes the interim report and covers key recommendations

### **3.1.9 Deliverable 3:**

#### **Interim Report covering task 5, 6 and 7:**

- Quantitative estimate of the risk of involuntary GHG reversal risk for forestry offset projects in Canada over 200 years at a 95% confidence interval for different climate change scenarios, for different project's risk exposure characteristics and for different risk mitigations measures, or group of measures, implemented by the proponent.
- Proposals for the EIA contribution given risk exposure characteristics of the forestry projects and the risk mitigation measures implemented by the proponent under different climate change scenarios. These proposals must consider the need to minimize the risk of the number of credits in the EIA being insufficient to compensate for involuntary reversals and the economic viability of the project.
- Presentation that summarizes the interim report

### **3.1.10 Task 8 – Final Report & Presentation**

The Final report will contain all the elements mentioned above and embed feedback from the Project Authority.

The Contractor must then make a presentation to ECCC officials, and potentially other stakeholders, to provide a summary of the report and key recommendations. The presentation will be made via MS Teams and the presentation will be provided to ECCC in MS PowerPoint format.



**3.1.11 Deliverable 4:**

**Final Report covering task 8**

- Any update to the interim report
- Final recommendations for the EIA contribution rates for forestry GHG offset projects depending on project’s characteristics that influence the probability and severity of GHG reversals and the risk mitigation measures that are implemented, under different climate change scenario.
- A presentation that summarizes the final report and covers key recommendations

The deliverables must be completed in accordance with the schedule outlined in Table 1.

**Table 1 – Schedule for Completion of Project**

<b>Deliverables</b>	<b>Target Date</b>
<b>Deliverable 1: Document that includes deliverables from tasks 2 and 3, see SOW article 3.1.4</b>	3 weeks from contract award
<b>Deliverable 2: Project Plan that includes deliverables for tasks 4, see SOW article 3.1.6</b>	3.5 weeks from Deliverable 1
<b>Deliverable 3: Interim Report covering task 5, 6 and 7, see SOW article 3.1.9</b>	9 weeks from Deliverable 2
<b>Deliverable 4: Final Report covering task 8, see SOW article 3.1.11</b>	6 weeks from Deliverable 3

All deliverables and successful completion of the project are subject to the acceptance and/or approval by the Project Authority.

**The reports must be submitted in Microsoft (MS) Word and Adobe Acrobat PDF formats. All graphics, charts and figures must be embedded directly in the word-processing document wherever practical to do so.**

Reports must be prepared in MS Word 2010 format and will be provided in Word 2010 and Adobe Acrobat PDF format. All graphics, charts and figures shall be embedded directly in the word-processing document wherever practical to do so. The underlying data must be also provided separately. All spreadsheets and databases will be in MS Excel 2010 and MS Access 2010 formats, respectively.

All reports must be written in English, and both draft and final reports must be written in a clear and logical fashion.



The Contractor is encouraged to provide any additional information discovered during the course of this work that is deemed relevant in fulfilling the objectives of this contract.

### **3.2 Departmental Support:**

As required for completion of the work, ECCC will provide:

- Access to relevant documentation and reference materials to which the Contractor would not otherwise have access;
- Other assistance and support, as appropriate.

### **3.3 Official Language:**

Work will be performed in English.

### **3.4 Work Location and Travel:**

The work may be performed anywhere in Canada.

### **3.5 Travel**

No travel by the Contractor is required.

### **3.6 Security Clearance:**

No security clearance is required to perform the work.

### **4.0 Period of Contract:**

The period of the contract will be from the contract award date to September 9th, 2022.

**ANNEX "B" BASIS OF PAYMENT**

*(to be completed at contract award)*

<b>Deliverables</b>	<b>Target Date</b>	<b>Subtotal</b>
<b>Deliverable 1 as per SOW</b>	3 weeks from contract award	
<b>Deliverable 2 as per SOW</b>	3.5 weeks from Deliverable 1	
<b>Deliverable 3 as per SOW</b>	9 weeks Deliverable 2	
<b>Deliverable 4 as per SOW</b>	6 weeks from Deliverable 3	
	Subtotal	
	Tax	
	Total	