

**BC Bioenergy Network  
Request for Proposals**

**BC Renewable and Low Carbon Gas Supply Potential Study**

**Issue Date:** June 15, 2021

The proposal must be sent **BEFORE** the closing date **5:00 PM PT** on July 5, 2021, and sent to the Closing Location:

Ralohn Hunt  
Project Director, BC Bioenergy Network  
Email: [ralohn.hunt@bcbioenergy.ca](mailto:ralohn.hunt@bcbioenergy.ca)

Proposals must be submitted in PDF format and use the following file name: RFP\_BC Gas Supply Study\_ *Proponent Name*

Please submit questions to the above email address by 5:00 PM PT, June 28.  
Answers will be posted on the BCBN [website](#) on June 30.

**THIS PROPOSAL IS SUBMITTED BY:**

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|---|
| NAME OF BIDDER: _____                                   |
| ADDRESS: _____  |
| PHONE: _____ EMAIL: _____                               |
| NAME OF AUTHORIZED REPRESENTATIVE (PLEASE PRINT): _____ |
| SIGNATURE: _____ DATE: _____                            |

## TERMS AND CONDITIONS

1. Acceptance of Terms and Conditions
  - a. Submitting a proposal indicates acceptance of all the terms and conditions set out in the request for proposal (RFP), including these RFP Rules and any Addenda.
  - b. A proposal must be signed in the manner specified by the RFP by a person authorized to sign on behalf of the Proponent with the intent to bind the Proponent to the RFP and to the statements and representations in the Proponent's proposal.
2. Submission of Proposals
  - a. Proposals must be submitted before Closing Time to the Closing Location. The Proponent is solely responsible for ensuring that BCBN receives a complete proposal, including all attachments or enclosures, before the Closing Time. For submissions, the following applies:
    - i. The maximum size of each attachment must be 20 MB or less (Proponents are solely responsible for ensuring that email proposal submissions comply with any size restrictions imposed by the Proponent's internet service provider);
    - ii. Proponents should submit email proposal submissions in a single email and avoid sending multiple email submissions for the same opportunity. If the file size of an electronic submission exceeds the applicable maximum size, the Proponent may make multiple submissions to reduce attachment file size to be within the maximum applicable size; Proponents should identify the order and number of emails making up the email proposal submission (e.g. "email 1 of 3, email 2 of 3...");
    - iii. For proposal submissions sent through multiple emails, BCBN reserves the right to seek clarification or reject the proposal if BCBN is unable to determine what documents constitute the complete proposal;
    - iv. Attachments must not be compressed, must not contain a virus or malware, must not be corrupted and must be able to be opened. Proponents submitting by electronic submission are solely responsible for ensuring that any emails or attachments are not corrupted. BCBN may reject proposals that are compressed, cannot be opened or that contain viruses or malware or corrupted attachments.
  - b. The Proponent bears all risk associated with delivering its Proposal by electronic submission, including but not limited to delays in transmission between the Proponent's computer and BCBN's server.
3. Late Proposals
  - a. Proposals will be marked with their receipt time at the Closing Location. Only complete proposals received and marked before the Closing Time will be considered to have been received on time. Proposals received late will not be considered. In case of a dispute, the proposal receipt time as recorded at the Closing Location will prevail whether accurate or not.
4. Firm Pricing
  - a. Prices will be firm for the entire Contract period unless the RFP specifically states otherwise.
5. Evaluation
  - a. Proposals will be assessed in accordance with the evaluation criteria. BCBN will be under no obligation to receive further information, whether written or oral, from any Proponent.
6. Subcontractors

- a. BCBN will accept proposals where more than one organization or individual is proposed to complete services described in the RFP. The Proponent is required to identify the lead entity which will have the sole responsibility to deliver the services under the contract and complete a majority of the work. BCBN will enter into a Contract with the Proponent only.
  - b. All subcontractors, including affiliates of the Proponent, should be clearly identified in the proposal.
7. Contract
- a. By submitting a proposal, the Proponent agrees that should its proposal be successful the Proponent will enter into a Contract with BCBN on the terms and conditions set out in the RFP and such other terms and conditions to be finalized to the satisfaction of BCBN.
  - b. Written notice to a Proponent that it has been identified as the successful Proponent and the subsequent full execution of a written Contract will constitute a Contract for the goods or services, and no Proponent will acquire any legal or equitable rights or privileges relative to the goods or services until the occurrence of both such events.
8. No Implied Approvals
- a. Neither acceptance of a proposal nor execution of a Contract will constitute approval of any activity or development contemplated in any proposal that requires any approval, permit or license under any federal, provincial, regional district or municipal statute, regulation, or by-law.
9. Confidentiality Agreement
- a. The proponent acknowledges that it may be required to enter into a non-disclosure agreement with BCBN in the case that specific information is shared with the selected Proponent to undertake the project.

## REQUIREMENTS AND RESPONSE

### Background:

The Province of British Columbia (Province) is demonstrating leadership in climate change mitigation through ambitious greenhouse gas emission reduction targets set in CleanBC, the Provincial economic, energy and environmental plan.<sup>1</sup> The CleanBC Plan is committed to a minimum of 15% renewable content in the natural gas system by 2030. The Province amended the [Greenhouse Gas Reduction \(Clean Energy\) Regulation \(GGRR\)](#) to incent the production and utility purchase of Renewable Natural Gas (RNG) and recently expanded the eligible energy sources to include synthesis gas (syngas), hydrogen, and lignin to achieve this target.

While the GGRR has been successful in stimulating the supply of clean gases, further action is required to meet the CleanBC targets. An analysis conducted by Guidehouse Consulting and FortisBC demonstrated that using the existing gas system to distribute renewable and low carbon gases can achieve an 80% GHG reduction by 2050 and be a more affordable and resilient pathway for BC to reduce emissions. BC Bioenergy Network (BCBN), The Province, and FortisBC endeavour to determine the total supply potential of renewable and low carbon gases in British Columbia, and the cost of producing them. This analysis will inform the Provincial government's CleanBC Roadmap to achieve the 2030 target and future actions by natural gas utilities.

The prominent role for renewable and low carbon gases in CleanBC underscores the need to identify diverse sources of supply in and outside BC, their potential volumes and cost curves. This will enable the development of a roadmap for increased utilization of renewable and low carbon gas and the decarbonization of our energy system. Innovation in technology, policy and regulations is accelerating the development of the low carbon economy.

Various supply potential analyses have been completed in BC that will inform this project: the Resource Supply Potential for Renewable Natural Gas in BC (Hallbar Consulting, 2017), an internal Ernst & Young study on RNG potential in BC (2015), the BC Hydrogen Study (Zen Clean Energy, 2019), a pre-feasibility study for syngas and biomethane production at BC pulp mills (Tom Browne, 2019), Revitalization of the BC Bioenergy Sector: Assessment of biomass feedstocks in BC (ENVINT, 2019), Renewable Natural Gas (Biomethane) Feedstock Potential in Canada (Torchlight Bioresources, 2020).

### Objectives:

This project will update estimates of the renewable and low carbon gas supply potential and develop a growth strategy for increasing production in BC to 2030 and 2050. The project will conduct a literature review from outside BC that could be reasonably accessed. The updated estimates would reflect the latest technological and policy developments shaping renewable and low carbon gas supply. The work would aim to develop a range of supply estimates and the important assumptions and factors. The project will stitch together existing analyses to develop a comprehensive overview of the total renewable and low carbon gas potential and carbon intensity for different energy types (renewable natural gas, hydrogen, syngas, lignin). The project would also look at unique use-cases and end-uses

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<sup>1</sup> Province of British Columbia. (2019). CleanBC.  
[https://blog.gov.bc.ca/app/uploads/sites/436/2019/02/CleanBC\\_Full\\_Report\\_Updated\\_Mar2019.pdf](https://blog.gov.bc.ca/app/uploads/sites/436/2019/02/CleanBC_Full_Report_Updated_Mar2019.pdf)

such as evaluating the potential for required infrastructure in BC and using industrial consumers as host-sites for renewable and low carbon gas production.

The key objectives this project will address include:

- Develop a BC-wide supply potential and carbon intensity for all renewable and low carbon gas types and cost-curves as well as similar analysis outside of BC
- Use existing analyses where possible and update them with new assumptions reflecting the changing market
- Evaluate unique use-cases and end-uses such as evaluating the potential for required infrastructure in BC and using industrial consumers as host-sites for renewable and low carbon gas production.
- Establish a strategy to grow the installed operating project base to increase production capacity and a high-level deployment strategy to achieve this.

The outcomes of this project will inform future work in key areas, including

- Is the net benefit of developing projects within BC vs. North America as an important comparison to the cost of renewable and low carbon gases. This important research which includes jobs, environment, social and governance, Indigenous relations, and regional impacts; and
- The creation of a forum for meaningful discussion with stakeholders from across BC and seek to develop a common position on renewable and low carbon gas potential in BC.

These elements would be assessed under contract(s) awarded under a future RFP(s) or other means and is not included within the scope of this project.

**Timing:**

- Final report to be completed within 14 weeks of executing of the contract.

**Scope of Work:**

1. Working in collaboration with the project team and steering committee, the Proponent will develop a Project Execution Plan that will detail the approach to each of the following areas for approval:
  - a. Deliverables list;
  - b. Budget, workplan and schedule management plan;
  - c. Best Available Technology (BAT) vendor scan and deployment status (international focus);
  - d. Scan of pre-commercial innovative technology that may be transformative to the sector (international focus); and
  - e. Establish input parameters/assumptions framework for future techno-economic modelling.
2. The Proponent will build a transparent and holistic supply potential, carbon intensity and cost curves of renewable and low carbon gases available to help achieve BC's 2030 and 2050 GHG

reduction targets. The supply potential will aggregate all renewable and low carbon gas types and estimate a low and high-cost curve to achieve a given level. The potential would also assess renewable and low carbon gas supply from outside of BC (rest of Canada and US) and develop cost curves with a specified and justified share of out of province supply.

3. The potential supply estimate would be developed by reviewing and updating, where appropriate, existing supply potential estimates for specific renewable and low carbon gases. The estimates would be informed by detailed assessment of feedstocks available in BC, current evaluation of Best Available Technologies (BAT) for conversion and upgrading to convert the feedstock to renewable and low carbon gases, new technology innovation and readiness level, state of the art industrial application, and their costs, as well as assessment of gathering, transport, and distribution costs of feedstocks. A compilation of existing BAT scans will be provided to the successful Proponent.
4. Based on existing reports, for each renewable and low carbon gas type, an estimate of total feedstock, quality of feedstock, location of feedstock, longevity of supply and costs associated with delivering gas from feedstock type to the provincial gas system, technology used for renewable and low carbon gas production and total volume, carbon intensity and cost of renewable and low carbon gas is desired. The analysis will have two distinct estimates based on technical and market potential.
5. The Proponent will develop two learning curves for each renewable and low carbon gas type based on technical and market potential assumptions for use in developing the cost-curve for each gas type.
6. For each renewable and low carbon gas type, the Proponent will identify other limiting factors that will bound the supply potential such as enabling policies, financial incentives, access to the gas distribution grid, blending limits, sustainability considerations.
7. The Proponent will develop three representative supply portfolios for the 2035 and 2050 years to identify sensitivities, cost differences, enabling policies, financial incentives, and feasibility considerations. Supply portfolios could indicatively be high hydrogen portfolio, high out-of-province portfolio, high biomass scenario. For each scenario, include a total volume, cost per GJ, required infrastructure, total investment and discussion on necessary technology innovation, government policy, market conditions and other key factors needed to achieve.
8. The Proponent will develop an indicative deployment strategy, scenario analysis and roll-out roadmap plan to achieve the three representative supply portfolios in terms of production capacity. This will include an integrated approach to understand how, among other things, large scale distributed renewable and low carbon gas production will integrate the existing gas system and use geospatial mapping of resource locations relative to the provincial gas system network and other tools as required to demonstrate various scenarios.

#### **Deliverables:**

- Project kickoff meeting within one week of contract execution
- Project Execution Plan within three weeks of contract execution
- A report (no more than 20 pages, plus appendices) covering the Objective and Scope of Work

- Draft report submission within 10 weeks of contract execution
- Penultimate report submission within 12 weeks of contract execution
- Final report within 14 weeks of contract execution
- Two live (virtual) PowerPoint presentations summarizing key findings
  - Draft presentations submitted for review within one week of report
  - Final presentations within two weeks of report submission

### **Proposal Format:**

The following format, sequence, and instructions should be followed to provide consistency in Proponent response and ensure each proposal receives full consideration.

1. Submitted in PDF format;
2. All pages should be 8.5" x 11" in size, with 1" margins, and should be consecutively numbered;
3. Table of contents including page numbers;
4. A short (one or two page) summary of the key features of the proposal;
5. The body of the proposal:
  - a. Experience and Qualifications
  - b. Proposed Methodology
  - c. Budget
  - d. Personnel
6. The Proposal should not exceed 15 pages in length and be font size 11, font type Calibri or Times New Roman, and single spaced. The 15 page limit does not include RFP cover page, table of contents, Proponent Contact, project experience examples, resumes of individuals or appendices;
7. Referenced appendices if appropriate;
8. Identification of Proponent (legal name); and
9. Identification of Proponent contact name (if different from the authorized representative) and contact information.

### **Assumptions:**

- A significant amount of the project information required will be made available by BCBN and project sponsors
- No travel is expected; final presentation can be delivered via video conference call
- The final report is expected to be public, and any sensitive or confidential information can be put into an appendix which would not be published with the report.

### **Resources: (non-public reports will be provided on a confidential basis to the successful Proponent)**

- Revitalization of the BC Bioenergy Sector: Assessment of biomass feedstocks in BC (ENVINT, 2019)
- Renewable Natural Gas (Biomethane) Feedstock Potential in Canada (Torchlight Bioresources, 2020)
- Resource Supply Potential for Renewable Natural Gas in B.C. (Hallbar Consulting, 2017): Evaluated RNG potential in BC and provided cost curves for supply.
- RNG potential in BC (Ernst & Young, 2015)

- Syngas and Renewable Natural Gas options for the BC forest sector (Tom Browne and Associates, 2019): Evaluated potential and cost curves for syngas production in BC’s pulp mills
- Pre-Feasibility Study: Hydrogen Generation in BC’s Pulp & Paper Sector (Zen, 2020)
- BC Hydrogen Study (Zen, 2019): Detailed potential and cost assessment of hydrogen in BC
- Renewable Sources of Natural Gas: Supply and Emissions Reduction Assessment (American Gas Foundation/ICF, 2019): Study evaluating the low carbon gas potential in the United States
- FortisBC – Pathways to 2050 Report (Guidehouse)

**Evaluation:**

- Proposals will be evaluated by a selection committee formed by BCBN and will be based on the following criteria:
  - Experience and Qualifications
  - Methodology to meet the Objectives and Scope of Work
  - Personnel
  - Price

**Budget:**

- Provide an all-inclusive price for all services proposed. There is no maximum contract amount, however price is a key consideration in the evaluation process
- Provide a cost breakdown and hours required for each activity/task. The cost breakdown should be inclusive of all costs and expenses for the services proposed
- Include any and/or all assumptions for the cost breakdown

**Project Management:**

- BCBN will be the contracting entity for the project
- The successful Proponent will report to BCBN and project partners
- Update of progress and analysis to be provided every two weeks
- An indicative table of contents is provided (Appendix 1) as guidance to the successful Proponent

## **Appendix 1. Indicative Table of Contents**

### **Executive Summary**

### **Background and Objective**

#### **Anaerobic Digestion and Waste Feedstocks**

1. Description of Pathway
2. Feedstock availability update
3. Technology update
4. Technical limitations and considerations
5. Updated Supply Volume in and out of Province, marginal cost (achievable, optimistic), carbon intensity

#### **Forest Biomass Feedstocks**

1. Description of Production Pathways: RNG, Syngas, Hydrogen, Lignin
2. Feedstock availability update
3. Technology update
4. Technical limitations and considerations
5. Updated Supply Volume in and out of Province, marginal cost (achievable, optimistic), carbon intensity

#### **Hydrogen**

1. Description of Production Pathways: Blue, Green, Waste, Turquoise
2. Summary of BC Hydrogen Study (BCBN, 2019)
3. Technology update from Zen Clean Energy Solutions
4. Technical limitations and considerations
5. Updated Supply Volume in and out of Province, marginal cost (achievable, optimistic), carbon intensity

#### **Total Supply Potential**

1. Summary of total supply potential and cost curve ranges for achievable and optimistic scenarios
2. Indicative supply portfolios
3. Criteria for developing portfolios
4. Total supply, costs, carbon intensity, and emissions reductions

#### **Deployment Strategy Scenario Analysis and Roadmap Plan**

#### **Discussion**

1. Key considerations
2. Policy requirements
3. Innovation and technology