

Questions 1 to 10 &Answers re: RFP K2A13-14-0001

Question # 1) The RFP states (p.15): "The modular approach offers the advantage of developing the modules related to electricity production as part of this project, with the flexibility to add the transmission modules in later phases."

Does this mean that the current work should not consider transmission losses of centralized versus decentralized options? Does the "cradle-to-grave approach" only pertain to the fuel cycle, power production, and decommissioning but not to electricity delivery?

Answer # 1) It is up to the contractor to further define the scope and boundaries of the project in their proposal and ensure the scope and boundaries are aligned with the project's objective. Because of the complexity of the project, the modular approach is proposed in order to allow the current project (phase 1) to focus on a certain scope, while leaving a place holder for other aspects to be added later on. It is generally agreed that transmission would likely be a module. Each proposal should determine and justify the scope and boundaries, i.e. modules to be used in the current project, considering the time, budget, objective of the project and guidance given in the RFP. All assumptions should be clearly stated.

In Task 1, methodological challenges or considerations related to centralized versus decentralized systems will be identified, based on the literature review. In Task 6, the influence of the scale of electricity generating systems on the use of the framework will be examined and a method or approach will be developed to address the differences in scales of electricity generating systems on the framework.

Question # 2) Also on p.15, the RFP states, "The conceptual framework will contain the knowledge, information and data necessary to provide the generic information for all indicators for different types of fuels." Please confirm whether this refers to a variety of biomass fuels or whether you mean a variety of electricity options (e.g., coal, wind, PV, gas turbines etc.).

If the latter, do you have a good idea as to which electricity generation options should definitely be included in this study with their respective life-cycle data? If the former, can you indicate which (or how many) biomass fuels you would like to see covered? Also, which biomass options should be included, i.e. solid versus liquid biomass, biomass derivatives (pellets, bio-oil, biochar, etc.), biogas and landfill gas?

Answer # 2) The conceptual framework will contain the knowledge, information and data necessary to provide the generic information for all indicators for different types of electricity options (i.e. biomass, coal, natural gas, solar, tidal, wind, nuclear, hydro, etc). As presented in the RFP, other than the biomass to electricity component, there is no fixed number of electricity generation options in the contract nor indication provided as to which one should be included. It is up to the contractor to select those, within the time, budget and scope of the project and to justify this selection in the proposal in order for the reviewers to evaluate the advantages and feasibility of the proposed approach.

Of consideration (for guidance only):

- While no fixed number is set, four (4) to five (5) electricity options, including biomass, would be considered reasonable, although more or less will be considered with the appropriate approach, rationale and justification.

- Priority should be given to current electricity options and options available in the near future.
- The report *Life Cycle Assessment of forest-based biomass at the Atikokan power plant project* (unpublished) resulting from an R&D project led by the same Environment Canada - Natural Resources Canada team in 2011-12 will provide some of the data for the biomass component. In this project, coal was used as a reference case, and data for the coal reference case could be made available if this pathway was selected.
- As coal combustion will have a CO₂ emission standard to meet in the upcoming years, natural gas may be a more suitable fossil fuel pathway to explore if a fossil fuel pathway is part of the scope.
- Intermittent electricity sources could be considered in combination with another type of fuel that can ramp up to ensure the electricity demand is met.
- For the biomass to electricity component, utilities tend to use biomass in the form of wood pellets (white and/ or brown pellets) while independent power producers tend to use hog fuel.

Question # 3) You refer to a 'simple' tool to be populated with biomass-to-power data. Please confirm whether you mean the tool should be easy to use or whether it should be simple in its design. We believe a simple tool will not provide adequate results; a tool that is easy to use may still be very complex in its design.

Answer # 3) The simple tool means a tool with minimal investment in terms of software, programming, interface, etc. The intent is to develop a simple analytical tool to test the conceptual framework with the biomass to electricity component. This tool will be reviewed and expanded upon in later phases of the project (see background section of the Terms of Reference on page 11). The simple analytical tool should not mobilize too many resources and should allow others to build upon it in later phases. New software or development of software for this Task would not be considered advantageous. It would be a serious lack of advantage to the proposed approach if the proposed simple analytical tool can only be updated by a select group of people because of software considerations. Software currently licenced by the federal government is preferred.

The end-tool (the tool developed after phase 3) should be simple to use by the end-user. This should influence the approach to the tool.

Question #4) Would it be possible to provide the study (mentioned several times throughout the RFP) "*Life Cycle Assessment of forest-based biomass at the Atikokan power plant*" to us during the RFP process?

A4: The report, in a pdf format, is attached.

Question #5) It is noted that 'industry and policy makers' are the intended audience for this framework/tool. Would you be able to provide further detail as to who or what organizations this may involve?

A5 : The framework will consider cradle to grave environmental impacts of electricity options. At the end of the four phases (beyond this project), a complete and holistic understanding of direct and indirect environmental direct impacts for various electricity options will be available, as well as a

transparent method to evaluate them. The framework will allow for an interactive high level environmental assessment of electricity options, which will likely be of interest to provincial governments, territorial governments, remote communities and the federal government, supporting their analysis of electricity option with a holistic and transparent method. The framework will likely be of interest for industry as well, such as utilities, for planning purposes, analysis and support in decision making.

Within the current project which focuses on validating the conceptual framework with biomass to electricity component in the analytical framework, community leaders, provincial and federal policy makers will likely be interested in quantitatively assessing the potential for environmental impacts (both positive and negatives) of bioenergy development in these locations so that they can make informed decisions regarding how best to implement these projects.

Question #6) What is the intended application of the tool?

A6 : For the current project (phase 1) , the application of the analytical framework (tool) is to test the conceptual framework with the biomass to electricity component.

After the completion of the future phases of the project, the analytical framework could be an on-line that proposes a holistic, consistent and transparent method to identify and quantify environmental benefits and impacts of electricity options, using a life cycle approach. Decision makers could then fully understand the direct and indirect environmental impacts and benefits of electricity options, which would help in decision making and developing appropriate mitigations strategies.

Question #7) Who is on the multi-disciplinary Advisory Committee?

A7 : The section Governance (page 20) of the Terms of Reference provides a description of the Advisory Committee. To ensure a transparent selection process, the name of the Advisory Committee members or their organization will not be shared. Members of the Advisory Committee will not participate in the preparation of any proposals. Also, it is possible that the Advisory Committee be adjusted after the selection of a Proponent, if additional expertise is required on the Advisory Committee to reflect the approach selected.

Question #8) Should the framework accommodate uncertainty and/or sensitivity analysis?

A8 : In the current project, the RFP mentions:

- Assessing uncertainty of the data in Task 3
- Assessing uncertainty in Task 5 (*``The uncertainty inherent in the data being used will be assessed and areas found to have high uncertainty will be considered as having priority for data improvement in future years.``*)
- Task 6 mentions that recommendations for future work should be based, amongst other things, on an uncertainty analysis.

Given this current project will be reviewed, updated and expanded upon in the next phases, a framework that inherently accommodate uncertainty and a sensitivity analysis will be an considered as an advantage to the approach.

Question # 9 - Could Environment Canada clarify whether these relevant past projects shall have been delivered by the Bidder itself, or if it is suitable to reference & describe relevant past projects delivered by the Project team members and/or the Project Manager prior to these professional staff being hired by the Bidder?

A9 (by Josee) – Yes it is suitable to reference & describe relevant past projects delivered by the Project team members and/or the Project Manager prior to these professional staff being hired by the Bidder.

Question # 10 – The project aims to develop (I quote) “*a flexible framework capable of handling multiple electricity sources*” and it is a matter, among other things, of studying (I again quote) the “*environmental impacts from different types of electricity production in a Canadian context*”.

Yet, there is only reference to fuels in several places in the request (for example, in task 2). I would therefore like to know if the study is to focus only on fuel sources or if it must also address electricity production from non-fuel sources such as hydroelectricity, wind and nuclear?

A10: The study concerns the production of electricity from various sources, including fuel and non-fuel. Question and answer 2 present more details.