

Invitation for Proposals

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**OVERHEAD LINE DESIGN ISSUES & WIND AND ICE STORM MITIGATION
INTEREST GROUP (WISMIG)**

CEATI PROJECT No. T103700-3374

**METHODOLOGY TO DETERMINE TRANSMISSION LINE
LIFE CYCLE COSTS**

CEATI International Inc. (CEATI) invites the submission of proposals to perform research work on the following topic:

TITLE

Methodology to Determine Transmission Line Life Cycle Costs

INTRODUCTION

Life cycle cost analysis, incorporating both traditional and environmental considerations, is gaining recognition as an important decision making tool in the evaluation of utility projects by regulators. It is also a key element of the future environmental management programs for the construction of new transmission lines to be built to meet increasing energy demands or to transport power from remote renewable power generating locations to the load centres.

Life cycle cost analysis is an economic evaluation technique well-suited for comparing alternative designs for an asset with different cost expenditures over the life of the asset. The option identified with the lowest net present value is the most economical or lowest cost option. The life cycle cost includes the costs of acquisition, design, construction, maintenance, operation and disposal normalized over the whole life of the asset. For the construction of new transmission lines or the upgrade of lines in existing corridors, the life cycle costs also include the ‘social costs’ such as the impact on visual amenity and the costs related to sustainability and impact on environment and health and safety of the public. Some regulators may in addition require that the cost comparisons between various options also include the consideration of time required to get regulatory approvals as ‘lost revenue’ cost.

PROJECT OBJECTIVES

The objective of this project is to develop a methodology for conducting the life cycle cost analysis for determining the most cost-effective option for building a new transmission line or upgrading a line in an existing corridor.

SCOPE OF THE STUDY

The successful proponent shall develop a methodology for conducting life cycle cost analyses for various options under consideration for building or upgrading transmission lines. This methodology will include detailed descriptions of each step in the process along with recommendations for data collection and the development of weights and the ranking of attributes for factors which are difficult to quantify. The scope of this project includes the development and presentation of case studies demonstrating the application of the methodology for typical utility transmission lines.

The scope of the work, in general, shall include but may not be limited to the following tasks:

- Conduct a literature search to review the methods for life cost analysis. The purpose of the literature search is to determine the best practices and methodologies available and

document their applicability to transmission line studies with the intent of utilizing available techniques to avoid “reinventing the wheel.”

- Develop a methodology which can be used by utilities for conducting life cycle cost analyses for transmission line construction and/or upgrading projects.
- Prepare case studies with input from funding utilities to demonstrate the application of the methodology. The case studies will include the creation of potential options and the use of life cycle cost analysis to determine the most effective option through the consideration of all costs and the assignment of attributes.
- Prepare a comprehensive report detailing the recommended methodology and the case studies.

The methodology shall include analysis of all costs related to design, construction, maintenance, operation and disposal, including due consideration of the following costs:

- Right of Way (eg, terrain type, obstacles on the ROW, development near ROWs existing and planned)
- Electrical losses
- Reliability and unavailability
- Environmental impact
- EMF mitigation measures
- Revenue lost during time required for approval process

This study shall make recommendations on how to take into consideration special issues such as aboriginal issues, public opposition, etc.

Some work on Life Cycle Cost Analysis has been done by the CEATI Transmission Line Asset Management (TLAM) program. On request, one copy of the applicable CEATI report will be furnished to successful bidder for use during the execution of this project. No copies may be made of the report, which must be returned to CEATI at the conclusion of the project.

POTENTIAL BENEFITS

This study is intended to provide utilities with a methodology for comparing various options during the development or upgrading of transmission line projects which may also be used to meet regulatory requirements.

DELIVERABLES

The primary deliverable shall be a detailed report comprising a comprehensive discussion and compilation of the results of the investigation and including a bibliography and copies of any papers and other information used to reach the conclusions and recommendations stated in the report. The proponent should be prepared to present the results of the work in person at one of the biannual WISMIG meetings.

The successful proponent is expected to prepare a ready-to-publish report on the results of the investigation and present the results to funding consortium members. The completed report must be submitted for CEATI approval in editable, electronic format (Microsoft Word).

Progress reports will also be required on either a quarterly or milestone basis - normally these are scheduled to coincide with the completion of the identified tasks. Progress reports must make reference to the tasks identified in the proposal stating the percentage completed to date for each task.

The successful proponent is also expected to provide the following:

- A ten to fifteen (10-15) slide Power Point Presentation. This should be composed of three main sections:

1. The factors motivating the initiation of the work;
2. A description of the main findings;
3. Summary of the conclusions and recommendations for future research.

- Contents for the Project's Technical Brief. This is a summary of the report (between 1,000 and 1,500 words), which is published separately by CEATI. Proponents are not responsible for the preparation of a ready-to-print Technical Brief, but solely to provide the contents for the following 4 sections: Background, Summary, Conclusions and Recommendations.

1. The Report Background section should be short (approximately 200 words) and should detail the reasons the work was conducted.
2. The Summary section should be approximately 700 words. It must provide a general description of the work program.
3. The Conclusions section should be about 150 words and should provide a general outline of the key results (do not include specifics).
4. The Recommendations section should be about 200 words and should include a description of the potential applications of the results.

Please note that all reporting must be submitted in English. If written English is not the author's strong suit, it is recommended that a technical writer be hired to review the document prior to submission.

BUDGET AND SCHEDULE

The proposal must contain a schedule and a quote of required remuneration for the work in US or Canadian dollars. All prices shall be presumed to be in Canadian dollars (CAD) unless explicitly specified otherwise in the proposal. Proponents' responses to this section must include a full breakdown of the budget and schedule, including an indication of rates and hours and the task allocation for the key personnel by task and must correspond to any phases or milestones outlined above. (Please refer to the Proposal Template for more information).

It is expected that this project can be completed (draft final report submitted for review and approval) within twelve (12) months of initiation.

The proposal must include the names and qualifications of the key individuals who will be involved, as well as the name of the accountable manager.

CEATI is not bound to accept any proposal but any selection will take into account technical merit, qualifications, price and schedule. A proposal may be accepted in whole or in part. A commitment to proceed with the first phase of a multi-phase project does not automatically imply that the work of the subsequent phases will be undertaken.

ALTERNATIVE WORKS

Proponents shall generally follow the above description of work, but are encouraged to offer alternative works if these alternatives will meet the objectives and provide a better end product to the utilities sponsoring this work. Alternatives shall be fully described including logistics explaining why the alternate works are being offered and the benefits to be realized by the funding utilities. Where alternatives are proposed, separate budgets shall be calculated for each alternative.

SUBMISSION OF PROPOSALS

The proposal shall include a clear and detailed description of the tasks to be completed including the methodology for completing the tasks.

The consideration of proposals received will be limited to those who indicate their intent to employ a suitable experienced project team and who possess proper facilities to perform the work. Receipt of this “IFP” does not necessarily constitute a prior determination by CEATI that your organization has the requisite experience and facilities.

The proposal must be properly completed and executed in accordance with the CEATI guidelines available at <http://www.ceati.com/guidelines.php>, and shall be submitted to CEATI as an attachment in Microsoft Word at the following website: www.ceati.com/private/submissions. Be sure to indicate project number “**T103700-3374**” on the submission form. For assistance, please contact us at 514-866-5377 x 236.

CLOSING DATE FOR RECEIPT OF PROPOSALS

Thursday, April 1, 2010, 4:00 pm EDT