

**Invitation for Proposals**

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

**CEATI PROJECT No. T103700-3375**

**EMERGENCY RESTORATION METHODS UNDER EXTREME EVENTS:  
A REPORT ON BEST PRACTICES**

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

**TITLE**

***Emergency Restoration Methods under Extreme Events: A Report on Best Practices***

**INTRODUCTION**

Every year, severe weather (such as ice storms, wind storms, hurricanes, and tornadoes) and natural disasters (like earthquakes, fires, and floods) present challenging situations for utilities working to maintain service throughout these extreme events. Over the years, most utilities have developed emergency restoration plans for dealing with the consequences of these extreme events. These emergency restoration plans are developed so that the top priority is to restore power to all critical facilities and clients in the fastest way possible with due consideration to the safety of the public and the maintenance personnel. However, once restoration is finished, and power is restored to all clients, there are few attempts to assess the efficiency of the emergency restoration methods and systematically learn and improve from the experience. New technological developments provide effective means and tools for achieving efficiency in the emergency restoration process and minimizing the duration of power outages due to extreme events.

The intent of this project is to present best practices for emergency restoration under extreme events. The study will take advantages of the experience gained from past events and examine what could be done to achieve efficiency and to minimize the duration of the power outages. The study will also include a review of recent technological developments and the availability of tools to effectively manage the restoration process and the required resources.

**PROJECT OBJECTIVES**

The objective of this project is to conduct an investigation into emergency restoration practices used by transmission utilities, review the experience while evaluating their effectiveness, investigate methods and tools for improving efficiency, and recommend best practices.

**SCOPE OF THE STUDY**

This project will gather information about the emergency restoration methods used by transmission utilities, document the experience gained from past extreme events, identify recent technological developments, and recommend best practices. The study will include all relevant aspects of emergency restoration plans and methods including key components of an extreme event response and restoration plan, strategies for before, during and after the storm, exercises and drills, damage assessment, outage and resource management, safety for the emergency responders, the public and utility personnel, communication with stakeholders, customers and media, mutual assistance from other utilities, compliance with regulatory requirements, the cost-benefit of system hardening intended to minimize the impact of future events, etc. The study will also include relevant case studies to support the recommendations made.

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

- Develop a detailed questionnaire to gather information about emergency restoration practices from transmission utilities.
- Analyze and compile the questionnaire responses received, and conduct a critical review of the emergency restoration plans obtained.
- Conduct a literature review to identify technological developments; review the various tools developed to effectuate efficiency in emergency restoration practices.
- Prepare case studies to support the study recommendations.
- Prepare a report containing the details of the investigation, documenting case studies, and recommending best practices for emergency restoration under extreme events.

Some work has been done previously by CEATI on emergency restoration plans under extreme events. On request, one copy of each of the applicable CEATI reports will be furnished to the successful bidder for use during the execution of this project. No copies may be made of the reports, and all reports must be returned to CEATI at the conclusion of the project.

### **POTENTIAL BENEFITS**

As a result of this work, utilities will be able to compare their emergency restoration practices with those used by other leading utilities. Those utilities who provide information for the analysis work will also obtain an assessment of their practices. The report will recommend the best practices and tools which utilities can adopt and use to increase efficiency of their restoration efforts during extreme events. The resulting report may also be used by utilities to justify requests for increased support and funding of emergency restoration plans, training, etc.

### **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 report will recommend the best practices utilities could adopt to increase the efficiency of their restoration efforts during extreme events and will also document several case studies and lessons learned from utilities that have experienced recent storm-related damage. 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 nine (9) 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](http://www.ceati.com/private/submissions). Be sure to indicate project number "T103700-3375" 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**