



COORDINATING RESEARCH COUNCIL, INC.

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June 15, 2021

In reply, refer to:
CRC Project No. SM-4

Dear Prospective Bidder:

The Coordinating Research Council (CRC) invites you to submit a written proposal to provide services for “Evaluation of the Use of EVs for Transient Grid Storage (V2G) on Battery Life” (CRC Project No. SM-4). A description of the project is presented in Exhibit A, “Statement of Work.”

Please indicate by email before **June 30, 2021** if you or your organization intends to submit a written proposal for this research program. CRC will answer technical questions regarding the Request for Proposal if they are submitted in writing. CRC will then return written answers to all of the bidders, along with a copy of the original questions.

A CRC technical group composed of industry representatives will evaluate your proposal. CRC reserves the right to accept or reject any or all proposals.

The reporting requirements will be monthly progress reports and a summary technical report at the end of the contractual period. The reporting requirements are described in more detail in the attachment entitled “Reports” (Exhibit B). Contract language for intellectual property and liability clauses is presented in Exhibit C and in Exhibit D, respectively. Important selection factors to be taken into account are listed in Exhibit E. CRC evaluation procedures require the technical group to complete a thorough technical evaluation before considering costs. After developing a recommendation based on technical considerations, the costs are revealed and the recommendation is modified as needed.

The proposal must be submitted as two separate documents. The technical approach to the problem will be described in part one, and a cost breakdown that is priced by task will be described in part two. The cost proposal document should include all costs associated with conducting the proposed program. The technical proposal shall not be longer than 10 pages in length (not including resumes). **The schedule / timeline information should be included in the technical proposal.**

CRC expects to negotiate a cost-plus fixed fee or cost reimbursement contract for the research program.

The technical and cost proposals should be submitted to:
Christopher J. Tennant Email: ctennant@crcao.org

The deadline for receipt of your proposal is **July 22, 2021**.

EXHIBIT A – STATEMENT OF WORK

CRC Project SM-4

Evaluation of the Use of EVs for Transient Grid Storage (V2G) on Battery Life

Background

As the grid transitions to higher and higher percentage of renewable electricity concerns about intermittency and stability are increasing. Solar and wind power are subject to both short and long term fluctuations due to wind variation, cloud cover, and time of day. One option for grid stabilization is to use the batteries of EVs connected to the grid as a transient source of power to smooth supply and demand.

There is a lot of interest in V2G in the literature. However, a concern is that batteries do not have an infinite life but rather a life that is a function of many variables such as number of cycles, depth of cycle, and rates of charge and discharge. Traditionally automakers have developed their battery size, chemistry and cycling strategies batteries around typical customer driving patterns. There is limited data on the effects of V2G charging/discharging on battery life, particularly those with the newest chemistries.

Regulators have shown concern about the life of EV batteries and that uncertainty regarding battery life remaining could affect customer valuation and uptake of new and especially used EVs. Recently California proposed battery durability requirements that mandate certain levels of battery capacity for an extended period of time, for example, 80% of range for 15 years / 150k miles. This requirement will greatly increase OEM interest in how EV owners use their EVs. Use of an EV for V2G is likely to entail an increase in charge cycles and may affect battery durability.

Objective

The objective of this project is to model the battery life effects of V2G activity on top of ordinary vehicle driving cycles. The contractor should look at a variety of V2G strategies and develop possible strategies and recommendations for minimizing the V2G effects on battery life.

Statement of Work

The contractor will research a variety of likely V2G duty cycles for use in the model. The contractor will have an up-to-date battery use and life model and will layer the V2G duty cycles on a variety of existing vehicle use and charging scenarios. The contractor will develop strategies and recommendations for minimizing the effects of V2G duty cycles on battery life. The report will also include an overview of V2G including the standards (there are at least two), and whose vehicles are or will be capable.

Deliverables

Deliverables include:

- A kick-off meeting/call between CRC and the contractor to discuss project scope and align expectations.
- Monthly calls between CRC and the contractor to discuss preliminary results and identify any information gaps before finalizing findings and starting the final report.
- A final report, the draft of which will be reviewed by CRC before final release.

Project Schedule

The contractor will propose an appropriate timeline for completing the study, including milestones for study deliverables.

Project Management

CRC and its project technical panel will provide management and oversight for this project.

EXHIBIT B

REPORTS

MONTHLY TECHNICAL PROGRESS REPORTS

The contractor shall submit a monthly technical progress report covering work accomplished during each calendar month of the contract performance. An electronic Microsoft® Word compatible file (<1 MB) of the monthly technical progress report shall be distributed by the contractor within ten (10) calendar days after the end of each reporting period. The report shall contain a description of overall progress, plus a separate description for each task or other logical segment of work on which effort was expended during the reporting period. Periodic conference calls may also be requested by CRC to update the technical committee overseeing the project.

FINAL REPORT

The contractor shall submit to CRC a draft final report. The report shall document the test procedure, document details of each test iteration, and explain any observations noted. The test data will be recorded and reviewed, and the final report will include a certification that the test procedures were followed, noting any exceptions. The detailed data will also be supplied electronically to CRC.

The draft report must have appropriate editorial review corrections made by the contractor prior to submission to CRC to avoid obvious formatting, grammar, and spelling errors. The report should be written in a formal technical style employing a format that best communicates the work conducted, results observed, and conclusions derived. Standard practice typically calls for a CRC Title Page, Disclaimer Statement, Foreword/Preface, Table of Contents, List of Figures, List of Tables, List of Acronyms and Abbreviations, Executive Summary, Background, Approach (including a full description of all experimental materials and methods), Results, Conclusions, List of References, and Appendices as appropriate for the scope of the study. Incomplete draft reports or reports of poor quality requiring additional outside editorial review may have outside editorial services charged back to the project budget.

Comments regarding the report shall be furnished by the CRC committee to the contractor within one (1) month after receipt of the draft copy. Additional rounds of review may be required.

Within thirty (30) days after receipt of comments, the contractor shall make the requested changes and submit an electronic copy of the draft final report in both Microsoft Word and Adobe pdf file format. Once accepted, the contractor shall deliver five (5) hard copies of the final report to CRC. The final report may be prepared using the contractor's standard format, acknowledging author and sponsors. An outside CRC cover page will be provided by CRC. The electronic copy will be made available for posting on the CRC website.

EXHIBIT C

INTELLECTUAL PROPERTY RIGHTS

Title to all inventions, improvements, and data, hereinafter, collectively referred to as (“Inventions”), whether or not patentable, resulting from the performance of work under this Agreement shall be assigned to CRC. Contractor X shall promptly disclose to CRC any Invention which is made or conceived by Contractor X, its employees, agents, or representatives, either alone or jointly with others, during the term of this agreement, which result from the performance of work under this agreement, or are a result of confidential information provided to Contractor X by CRC or its Participants. Contractor X agrees to assign to CRC the entire right, title, and interest in and to any and all such Inventions, and to execute and cause its employees or representatives to execute such documents as may be required to file applications and to obtain patents covering such Inventions in CRC’s name or in the name of CRC’s Participants or nominees. At CRC’s expense, Contractor X shall provide reasonable assistance to CRC or its designee in obtaining patents on such Inventions.

To the extent that a CRC member makes available any of its intellectual property (including but not limited to patents, patent applications, copyrighted material, trade secrets, or trademarks) to Contractor X, Contractor X shall have only a limited license to such intellectual property for the sole purpose of performing work pursuant to this Agreement and shall have no other right or license, express or implied, or by estoppel. To the extent a CRC member contributes materials, tangible items, or information for use in the project, Contractor X acknowledges that it obtains only the right to use the materials, items, or information supplied for the purposes of performing the work provided for in this Agreement, and obtains no rights to copy, distribute, disclose, make, use, sell or offer to sell such materials or items outside of the performance of this Agreement.

EXHIBIT D

LIABILITY

It is agreed and understood that _____ is acting as an independent contractor in the performance of any and all work hereunder and, as such, has control over the performance of such work. _____ agrees to indemnify and defend CRC from and against any and all liabilities, claims, and expenses incident thereto (including, for example, reasonable attorneys' fees) which CRC may hereafter incur, become responsible for or pay out as a result of death or bodily injury to any person or destruction or damage to any property, caused, in whole or in part, by _____'s performance of, or failure to perform, the work hereunder or any other act of omission in connection therewith.

EXHIBIT E

PROPOSAL EVALUATION CRITERIA

- 1) Merits of proposed technical approach.
- 2) Previous performance on related research studies.
- 3) Personnel available for proposed study – related experience.
- 4) Timeliness of study completion.
- 5) Cost.