



COORDINATING RESEARCH COUNCIL, INC.

3650 MANSELL ROAD, SUITE 140
ALPHARETTA, GA 30022
TEL: 678/795-0506 FAX: 678/795-0509
WWW.CRCAO.ORG

October 6, 2010

In reply, refer to:

CRC Project No. E-88-2

Dear Prospective Bidder:

The Coordinating Research Council (CRC) invites you to submit a written proposal to provide services for "Follow-On Study of Transportation Fuel Life Cycle Analysis" (CRC Project No. E-88-2). A description of the project is presented in Exhibit A, "Statement of Work."

Please indicate by letter, fax, or email by **October 20, 2010**, 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 when 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 and government 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).

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.

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

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.

Thirty (30) copies of the technical proposal and three (3) copies of the cost proposal (or one each electronic-copy) should be submitted to:

Dr. Chris Tennant
Coordinating Research Council
3650 Mansell Road, Suite 140
Alpharetta, GA 30022

Phone: 678-795-0506
Fax: 678-795-0509
E-mail: ctennant@crcao.org

The deadline for receipt of your proposal is **November 5, 2010**.

Yours truly,

Chris Tennant
Deputy Director

EXHIBIT A

STATEMENT OF WORK

CRC Project E-88-2

Follow-On Study of Transportation Fuel Life Cycle Analysis

Background

Over the past several years, significant efforts to improve and refine the life cycle analysis (LCA) of transportation fuels have taken place as the science evolves. This has become particularly important as regulatory efforts of the U.S. Environmental Protection Agency (EPA), the California Air Resources Board (CARB), and other agencies have used LCA as the basis for determining compliance with transportation fuel regulations such as the EPA's Renewable Fuel Standard (RFS2) and CARB's Low Carbon Fuel Standard (LCFS). Although those regulations have been finalized and are now in effect, there remain certain aspects of LCA that continue to be subject to considerable uncertainty and debate.

The Coordinating Research Council (CRC) recently funded a study of transportation fuel LCA (CRC Project E-88) that was intended to review the state of the science, compare the results of different models, and provide information on key inputs to LCA modeling that contribute to uncertainty in the emissions estimates. That study was also to recommend specific areas for targeted research to reduce those uncertainties.

On October 20-21, 2009, the CRC, with the support of twelve additional sponsors, hosted a workshop at Argonne National Laboratory which focused on technical issues associated with life cycle analysis (LCA) of biofuels.¹ Specifically, the following goals were established for the workshop:

- Outline technical needs arising out of policy actions and the ability of LCA to meet those needs.
- Identify data gaps, areas of uncertainties, validation/verification, model transparency, and data quality issues.
- Establish priorities for directed research to narrow knowledge gaps and gather experts' opinions on where best to spend scarce research dollars.

The Scope of Work outlined below is intended to address several key issues and uncertainties associated with the LCA of transportation fuels that evolved from the CRC-sponsored efforts highlighted above. Three separate tasks are listed below. While a proposal covering all three tasks is preferred, CRC will consider proposals covering one or two tasks. Cost proposals should clearly delineate the cost of each task, as CRC may fund one, two, or all three of them.

¹ See http://www.crcao.com/workshops/LCA%20October%202009/CRC_LCA_Workshop_Summary_01-12-10.pdf for a summary of the workshop.

Scope of Work

Task 1. Review of Economic Models Used to Estimate Indirect Land Use Change (iLUC) – Both EPA and CARB have relied on agro-economic models as the basis of the iLUC estimates for biofuels included in their RFS2 and LCFS rulemakings. Estimating iLUC has become a contentious issue, and the models (and inputs to those models) used to estimate iLUC continue to be refined. Under this task, the contractor will review and compare economic models used for iLUC estimates. This will include those models used by both EPA (i.e., FASOM and FAPRI-CARD) and CARB (GTAP), as well as other models that may be used for this purpose. Key input parameters and modeling methodologies leading to differences in results among models will be identified and discussed, and the key factors contributing to uncertainty in results will be highlighted. The contractor, to the extent possible, should attempt to duplicate EPA and CARB results based on available documentation; this would help identify assumptions that are not clearly specified. The contractor should isolate, to the extent possible, the quantitative impact of key data and model parameters in the various models reviewed. This task will also include a basic primer on economic modeling including an assessment of the strengths and weaknesses (inputs, outputs, model structure, etc.) of different approaches (e.g., general equilibrium versus partial equilibrium models). Finally, recommendations for future work will be made with an eye on reducing the uncertainty in the estimates.

Task 2. Review of Global Land-Use Databases – Outputs from the economic models reviewed in Task 1 are typically linked, either internally or externally, with global land-use and land-cover-type databases. In this way, carbon stocks on land converted to agriculture can be estimated. The type of land converted to agriculture has a significant impact on the outcome of the analysis (e.g., conversion of pasture to agriculture has a much smaller carbon impact than conversion of forest to agriculture). As a result, proper identification of land use before and after biofuel production is a critical input to the iLUC estimates.

Under this task, the contractor will review the available global land-use databases and how they are used to estimate indirect land-use change. This would include the linkage between land cover types and the emission factors representing above-ground biomass and below-ground carbon stocks as well as a review and evaluation of those parameters. The main factors impacting the results will be identified, and gaps in knowledge will be highlighted. Recommendations for future work in this area will be made with an emphasis on how best to reduce the uncertainties in these estimates.

An optional effort under Task 2 would be a review of time accounting used to allocate GHG emissions from iLUC over time and whether discounting is appropriate. Scientific evidence to support EPA and CARB assumptions used in the RFS2 and LCFS rulemakings (i.e., 30 years with zero discount rate) would also be reviewed and evaluated.

Task 3. Review and Comparison of Data and Models Used to Estimate Agricultural N₂O and CH₄ Emissions – Given its high global warming potential, more research is needed to quantify N₂O emissions from agricultural operations. N₂O emissions from nitrogen application are a function of region, fertilizer type, soil type, soil moisture, soil temperature, soil cultivation and crop management practices, etc. Many researchers feel that a simple global average estimate for

the fraction of applied nitrogen converted to N_2O is insufficient. Under this task, the contractor will review current estimates of agricultural-based N_2O emissions associated with biofuel production and establish an uncertainty band around those estimates. Additionally, CH_4 emissions from agricultural operations (e.g., from rice cultivation) will also be investigated under this task, with an emphasis on soil-based emissions (i.e., methane from livestock enteric fermentation would not be studied under this task). Knowledge gaps will be identified and recommendations for future work will be made.

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. Thirty-five (35) hardcopies or one 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.

FINAL REPORT

The contractor shall submit to or distribute for CRC thirty-five (35) hardcopies (or one hardcopy and one electronic pdf-compatible copy transmittable via email) of a rough draft of a final report within thirty (30) days after completion of the technical effort specified in the contract. The report shall document, in detail, the test program and all of the work performed under the contract. The report shall include tables, graphs, diagrams, curves, sketches, photographs and drawings in sufficient detail to comprehensively explain the test program and results achieved under the contract. The report shall be complete in itself and contain no reference, directly or indirectly, to the monthly report(s).

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.

Within thirty (30) days after receipt of the approved draft copy of the final report, the contractor shall make the requested changes and deliver to CRC fifty (50) hard copies. The final report shall also be submitted as an electronic copy in both a Microsoft® Word and a pdf or pdf-convertible file format. 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 of Contractor in connection therewith. 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 of Contractor 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