



COORDINATING RESEARCH COUNCIL, INC.

5755 NORTH POINT PARKWAY, SUITE 265
ALPHARETTA, GA 30022
TEL: 678/795-0506 FAX: 678/795-0509
WWW.CRCAO.ORG

April 13, 2016

In reply, refer to:

CRC Project No. A-100

Dear Prospective Bidder:

The Coordinating Research Council (CRC) invites you to submit a written proposal to provide services for “Improvements of Default Inputs for MOVES/SMOKE-MOVES” (CRC Project No. A-100). A description of the project is presented in Exhibit A, “Statement of Work.”

Please indicate by letter, fax, or email by **April 19, 2016** 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).

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.

Electronic copies of the technical and cost proposals should be submitted to:

Brent K. Bailey
Coordinating Research Council
5755 North Point Parkway, Suite 265
Alpharetta, GA 30022

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

The deadline for receipt of your proposal is **May 2, 2016**.

Yours truly,

A handwritten signature in blue ink that reads "Brent K. Bailey". The signature is written in a cursive, flowing style.

Brent K. Bailey
Executive Director

EXHIBIT A

Statement of Work

Improvements of Default Inputs for MOVES/SMOKE-MOVES

Objective:

The ultimate goal is to provide to state and local air agencies and US EPA more accurate input for the MOVES (Motor Vehicle Emission System) model. There are many parameters and many inputs for those parameters, but this project intends to focus its efforts on a limited number of parameters previous studies have identified as critical. The focus of this work is to provide an improved process for on-road inputs at the local level for the 2014 NEI version 2, and for EPA's broader inventory and air quality efforts. In addition to developing a process for these local-specific data, this project would provide a new database that would work with MOVES2014a. A corollary objective is to identify and evaluate data sources that could be used by modelers at the regional, state and municipal level to further improve their on-road mobile inventories and air quality modeling. The previous CRC-sponsored work during 2013 and 2014 has shown that promising national data sources exist to make meaningful improvements in the on-road MOVES inputs, resulting in significant changes in emissions in many areas. These inputs will be especially important for states that do not provide inputs to EPA for the NEI.

Background:

Regional, state, local, and tribal regulatory agencies, as well as academia and the EPA, are dependent on the on-road emissions estimated by EPA's MOVES model. In some cases, this also relies on the interaction of the Sparse Matrix Operator Kernel Emissions (SMOKE) model using the SMOKE-MOVES approach. The emissions estimates are used for a variety of air quality management evaluations including State Implementation Plans (SIPs), nonattainment designations for some NAAQS, emissions trends to inform the public and future projections used in SIPs and other regulatory evaluations. The NEI is a prime product used by EPA and the public for national scale assessments. The MOVES default database included with MOVES is the key starting point from which others update their input data for improving on-road emission estimates.

While data are sometimes provided by state and local air quality agencies as part of the NEI process, many states are unable to provide such data. Thus, significant additional efforts are needed to augment the efforts of air agencies to further improve the MOVES inputs. This approach was also taken for the 2011 NEI version 2 with very positive results for improving MOVES inputs. (See "Study of MOVES Information for the National Emission Inventory," CRC Report A-84 and the follow up A-88). This project is expected to deliver updated files by December 2016 for 2014 NEI version 2.

Methodology:

This proposal would concentrate on collecting, analyzing, and delivering improved MOVES and SMOKE-MOVES input data for vehicle distributions & temporal profiles for vehicle miles traveled (VMT) and speed, for on-road activity in 3 representative counties.

Research from this project should improve the process to develop and implement updates for the MOVES defaults with actual hour-by-hour inputs instead of “average” inputs and would use actual emission locations instead of surrogates. For example, hour-by-hour speed data is available on a daily basis from Google Maps, Google Earth, Waze, etc. for all road links all the time. Feeding this information into MOVES could have a significant impact on NOx and VOC emissions. The contractor shall compare the activity and emissions estimated with the new inputs to those from the inputs estimated using MOVES defaults.

The scope of these updates would be for 3 representative counties, and the results would be available to be used in EPA’s subsequent inventory and air quality work. To begin with, the scope is to make improvements to the 3 representative counties for MOVES defaults. Then, those improvements could be used in every county in the US when state/local agencies do not submit those particular inputs. An assessment of the comparison between the NEI2011v2 and NEI2014v1 should be included. Especially as it relates to the data’s ability to show distributions around the mean values versus the MOVES defaults mean distributions.

Project Deliverables:

Specific deliverables are:

1. Work plan with details on the tables the contractor plans to modify, how the table will be modified (which fields and records) and the source of data for the modification.
 - a. The proposal should include a rough outline of the data collection and analysis techniques, and any expected impediments to the analysis.
 - b. QA analysis of pilot database modifications.
 - i. All products should have data formatted properly by running it through the MOVES QA checker and be able to be integrated into the NEI county databases with minimal work. The QA script as of 2/29/2016 is located at: ftp://ftp.epa.gov/EmisInventory/2014/doc/onroad/MOVES_Input_QA_Checks_2014_v7.zip. Note that version may be updated at a future date.
 - ii. Additionally, any improved inputs will be formatted to work in EPA’s SMOKE-MOVES framework.
 - c. Appropriate temporal and spatial granularity should be included in these products even if this means creating day and month specific versions of the input files to realize the full temporal variability of the source data.
2. Pilot database with populated modified tables for 3 counties.
3. Tool that runs MOVES with pilot database for the 3 counties.
4. Comparison of pilot MOVES emissions activity results to default output for the 3 representative counties by hour.
5. Complete database for entire US.
 - a. Produce a database that consolidates the new individual county specific information into a single national database from which unique county-level information can be extracted into MOVES-ready and SMOKE-MOVES ready county-level databases.
 - b. Provide a script or other tool that automates this extraction process, allowing MOVES2014a and SMOKE-MOVES runs using the appropriate subsets of the modified tables.

- c. Products should reflect the pilot area's attribute delineations for urban and rural areas based on the current representative county groupings in the 2014 NEI version 2. National averages are not an acceptable work product for this contract.
 - d. Outputs must include the current county group definitions in the V1 2011 modeling framework. In this, the contractor would provide the county IDs for the primary county of each group. If only state defaults are available, then data should be reproduced for each county group in that state. This would require no change in county ID coding.
 - e. QA analysis of the new database.
6. Emissions results for VOC, NOx, & PM from modified database
 7. Comparison of results of:
 - a. Complete modified database and MOVES default database.
 - b. AQ results from MOVES 2014 NEIv1 database and modified database for VOC, NOx, and PM by hour for typical days and for sample NAAQS exceedance days.

Monthly status reports and a final report suitable for journal publication are required.

The proposal should factor the purchase of any data into the cost.

It is not the responsibility of CRC to provide or purchase data.

CRC's preference is for tables in CSV format, with the column headings matching the corresponding MOVES and SMOKE-MOVES variables that appear in the MOVES and SMOKE-MOVES default or county databases.

If any computer code is developed as part of this project, the code should be made available without any licensing restrictions.

If there is any reason the contractor cannot complete the project by December, 2016, it should be explained clearly in the proposal.

Utilization of Deliverables: The National Emissions Inventory is the foundation of other air quality inventories, including those used in the development of air quality regulations. Improved inventories provide more accurate information on the impact of regulations, activity changes and other measures on air quality.

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.

FINAL REPORT

The contractor shall submit to or distribute for CRC an electronic (Microsoft Word) 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. Reports submitted to CRC shall be written with a degree of skill and care customarily required by professionals engaged in the same trade and /or profession.

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 thirty (30) hardcopies including a reproducible master copy of the final report. The final report shall also be submitted as electronic copies in a pdf and Microsoft Word 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 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.