



**COORDINATING RESEARCH COUNCIL, INC.**

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**April 22, 2024**

In reply, refer to:

CRC Project No. E-145

Dear Prospective Bidder:

The Coordinating Research Council (CRC) invites you to submit a written proposal to provide services for “Effect of Diesel Contamination on PM Emissions” (CRC Project No. E-145). A description of the project is presented in Exhibit A, “Statement of Work.”

Please indicate your intention to bid at [this link](#) on or before **May 7, 2024** 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 at least one week before the proposal submission deadline here: [Q & A Link](#). CRC will then return written answers to all of the bidders, along with a copy of the original questions. Questions submitted within a week of the deadline may not be answered before the proposal submission deadline.

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:

Amber Leland  
Coordinating Research Council  
5755 North Point Parkway, Suite 265  
Alpharetta, GA 30022

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

The deadline for receipt of your proposal is **April 23, 2024.**

Yours truly,

Amber B. Leland  
Deputy Director

## EXHIBIT A

### CRC PROJECT STATEMENT OF WORK “EFFECT OF DIESEL CONTAMINATION ON PM EMISSIONS:

#### CRC PROJECT NO. E-145

##### Background

Small amounts of diesel contamination into gasoline may occur during transport to refueling sites since fuel transport trucks are rarely dedicated to diesel service or gasoline service. . The higher boiling and aromatic compounds found in diesel could have an impact on PMI if found in sufficient quantities.

##### Objective

Determine whether the diesel contamination that may occur in the distribution of gasoline leads to a significant impact on PMI/PME. Prepare a fuel set including a range of diesel contamination approximating the level of contamination that occurs and including diesel fuels with low and high aromatics and gasolines with low and high PMI/PME. Measure PMI/PME on fuel blend and assess significance of contamination on PMI/PME. Assess which test methods are effective at detecting contamination, and determine the criteria and detection threshold for each.

##### Scope of Work

###### Fuels

- Gasoline
  - Sourced direct from refinery (Handblend E10?)
  - Low PMI
  - High PMI
- Diesel
  - CARB Diesel (target high CN (~55), low aromatics (~10%))
  - Lower Cetane ULSD (target low CN (40-43), high aromatics (30-35%))
- Blends
  - 5 levels of contamination: 0.0, 0.5, 1.0, 1.5, and 2.0 v%
    - 5 low PMI + CARB
    - 4 low PMI + ULSD (0 contamination not repeated)
    - 5 high PMI + CARB
    - 4 high PMI + ULSD (0 contamination not repeated)

###### Laboratory Testing

Contractor should prepare the matrix of 18 blends and arrange for the following testing on each fuel:

- ASTM D4052 API Gravity
- ASTM D86 Distillation
- ASTM D7096 Determination of the Boiling Range Distribution of Gasoline (SIMDIS)
- ASTM D6730 Determination of Individual Components in Spark Ignition Engine Fuels (DHA)
- ASTM D8369 Determination of Hydrocarbon Group Types and Select Hydrocarbon and Oxygenate Compounds in Automotive Spark-Ignition Engine Fuel (VUV)
- GCMS (conditions provided by Marathon or samples sent to Marathon)
- D2887 simulated distillation method

## Analysis

Contractor shall compile and analyze the testing results, including the following:

- Compute PMI/PME from results of laboratory testing
- Identify any outlier or invalid data points, using statistical analysis or best industry practices
- Compile all fuel properties into a unified table in XLS format including bulk properties and component group totals (e.g. C10 aromatics) from component test results
- Perform statistical analysis and discussion of results answering questions identified in the objective

## Deliverables

- The contractor should submit monthly reports in addition to the draft and final reports. Monthly reports should contain all data acquired during the report month. The final report should thoroughly document the analysis conducted including assumptions, sources of error, or selection of methods which could alter the findings significantly.
- A robust analysis of fuel results is a key deliverable from this project. The contractor will submit an outline of the proposed approach to analyzing results once testing has progressed far enough to develop such an approach.
- All data collected on the fuels will be delivered to CRC, including the chromatograms of DHA analysis.
- Further, an “easy to digest” executive summary is another key deliverable of the final report.
- The final deliverable should include an excel worksheet with the compiled laboratory and analysis results for each fuel blend.

## Schedule and Cost Estimate

As part of proposal submission, the contractor should include a schedule for the tasks outlined above, along with an overall estimate of the timing to complete all of the testing and analysis. Contractor should put timeline and pricing in terms of per-fuel blend as fuels may be added or removed from the study based on pricing received. Contractor may assume that the gasoline and diesel base fuels used to make the blends will be provided by CRC, and contractor will be understanding if fuel sourcing creates delays. The contractor should submit the cost proposal on a per-fuel basis such that the technical panel can determine the costs to add or subtract fuels from the scope.

## References

Amara, A.B., et al., “Study of Simple Detection of Gasoline Fuel Contaminants Contributing to Increasing Particulate Matter Emissions,” SAE International, 2020-01-0384, April 14, 2020

APPENDIX

Fuels Table

Blend	Diesel Contamination Level				
	0.0%	0.5%	1.0%	1.5%	2.0%
1	LoPMI				
2		LoPMI + CARB			
3			LoPMI + CARB		
4				LoPMI + CARB	
5					LoPMI + CARB
6		LoPMI + ULSD			
7			LoPMI + ULSD		
8				LoPMI + ULSD	
9					LoPMI + ULSD
10	HiPMI				
11		HiPMI + CARB			
12			HiPMI + CARB		
13				HiPMI + CARB	
14					HiPMI + CARB
15		HiPMI + ULSD			
16			HiPMI + ULSD		
17				HiPMI + ULSD	
18					HiPMI + ULSD

## **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 ten (10) 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.