

**CONTRACT REQUEST FORM (CRF)**

CEC-94 (Revised 01/13)

CALIFORNIA ENERGY COMMISSION

A) New Agreement 600-13-008 (To be completed by CGL Office)

B) Division	Agreement Manager:	MS-	Phone
600 Fuels and Transportation Division	Phil Cazel	27	916-653-1590

C) Contractor's Legal Name	Federal ID Number
South Coast Air Quality Management District	93-3099419

D) Title of Project
Near Zero Emission Natural Gas Engine Demonstration

E) Term and Amount	Start Date	End Date	Amount
	6 / 1 / 2014	6 / 30 / 2017	\$ 2,000,000

F) Business Meeting Information			
<input type="checkbox"/> Operational agreement (see CAM Manual for list) to be approved by Executive Director			
<input type="checkbox"/> ARFVTP agreements under \$75K delegated to Executive Director.			
Proposed Business Meeting Date	5 / 14 / 2014	<input type="checkbox"/> Consent	<input checked="" type="checkbox"/> Discussion
Business Meeting Presenter	Phil Cazel	Time Needed:	5 minutes
Please select one list serve. Altfuels (AB118- ARFVTP)			

Agenda Item Subject and Description
Possible approval of Agreement 600-13-008 with South Coast Air Quality Management District for \$2,000,000 to demonstrate prototype heavy-duty natural gas engines and after-treatment technologies in on-road heavy-duty vehicles. These vehicles are expected to lower emissions of nitrous oxides, carbon monoxide, particulate matter, and non-methane hydrocarbons. This agreement funds the integration and demonstration portion of the project and follows the Energy Commission's Energy Research and Development Division's award that funded engine research and development.

G) California Environmental Quality Act (CEQA) Compliance
1. Is Agreement considered a "Project" under CEQA? <input checked="" type="checkbox"/> Yes (skip to question 2) <input type="checkbox"/> No (complete the following (PRC 21065 and 14 CCR 15378)): Explain why Agreement is not considered a "Project": Agreement will not cause direct physical change in the environment or a reasonably foreseeable indirect physical change in the environment because .
2. If Agreement is considered a "Project" under CEQA: <input checked="" type="checkbox"/> a) Agreement <b>IS</b> exempt. (Attach draft NOE) <input type="checkbox"/> Statutory Exemption. List PRC and/or CCR section number: _____ <input type="checkbox"/> Categorical Exemption. List CCR section number: _____ <input checked="" type="checkbox"/> Common Sense Exemption. 14 CCR 15061 (b) (3) Explain reason why Agreement is exempt under the above section: there is no possibility that the activity in question may have a significant effect on the environment <input type="checkbox"/> b) Agreement <b>IS NOT</b> exempt. (Consult with the legal office to determine next steps.) Check all that apply <input type="checkbox"/> Initial Study <input type="checkbox"/> Environmental Impact Report <input type="checkbox"/> Negative Declaration <input type="checkbox"/> Statement of Overriding Considerations <input type="checkbox"/> Mitigated Negative Declaration

H) List all subcontractors (major and minor) and equipment vendors: (attach additional sheets as necessary)				
Legal Company Name:	Budget	SB	MB	DVBE
Cummins, Inc.	\$ 1,438,942	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cummins Westport, Inc.	\$ 561,059	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	\$ 0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

I) List all key partners: (attach additional sheets as necessary)
Legal Company Name:



J) Budget Information			
Funding Source	Funding Year of Appropriation	Budget List No.	Amount
ARFVTF	2013/14	601.118F	\$2,000,000
Funding Source			\$
R&D Program Area: N/A		TOTAL:	\$2,000,000
Explanation for "Other" selection			
Reimbursement Contract #:		Federal Agreement #:	

K) Contractor's Administrator/ Officer				Contractor's Project Manager			
Name:	Benigna Taylor			Name:	Jeff Cox		
Address:	21865 Copley Drive			Address:	21865 Copley Drive		
City, State, Zip:	Diamond Bar, CA 91765			City, State, Zip:	Diamond Bar, CA 91765		
Phone:	909-396-2113	Fax:	909-396-3252	Phone:	909-396-3092	Fax:	909-396-3252
E-Mail:	btaylor@aqmd.gov			E-Mail:	jcox@aqmd.gov		

**L) Selection Process Used** (For amendments, address amendment exemption or NCB, do not identify solicitation type of original agreement.)

Solicitation Select Type Solicitation #: \_\_\_\_\_ - \_\_\_\_\_ # of Bids: \_\_\_\_\_ Low Bid?  No  Yes  
 Non Competitive Bid (Attach CEC 96)  
 Exempt Other Governmental Entity

**M) Contractor Entity Type**

Private Company (including non-profits)  
 CA State Agency (including UC and CSU)  
 Government Entity (i.e. city, county, federal government, air/water/school district, joint power authorities, university from another state)

**N) Is Contractor a certified Small Business (SB), Micro Business (MB) or DVBE?**  No  Yes

If yes, check appropriate box:  SB  MB  DVBE

**O) Civil Service Considerations**

Not Applicable (Agreement is with a CA State Entity or a membership/co-sponsorship)  
 Public Resources Code 25620, et seq., authorizes the Commission to contract for the subject work. (PIER)  
 The Services Contracted:  
      are not available within civil service  
      cannot be performed satisfactorily by civil service employees  
      are of such a highly specialized or technical nature that the expert knowledge, expertise, and ability are not available through the civil service system.  
 The Services are of such an:  
      urgent  
      temporary, or  
      occasional nature  
     that the delay to implement under civil service would frustrate their very purpose.

**Justification:**  
 The South Coast Air Quality Management District (SCAQMD), California Energy Commission, and SoCalGas are collaborating to support the development, integration, and demonstration of production-intent or production on-road heavy-duty natural gas engines capable of achieving 0.02 g/bhp-hr or lower NOx emission in a variety of heavy-duty vehicle applications in the South Coast Air Basin. The SCAQMD has unique expertise and specialized knowledge to evaluate the performance of the vehicles in a variety of heavy-duty vehicle applications in the South Coast Air Basin.

**P) Payment Method**

A. Reimbursement in arrears based on:  
      Itemized Monthly  Itemized Quarterly  Flat Rate  One-time  
 B. Advanced Payment  
 C. Other, explain:



<b>Q) Retention</b>			
1. Is Agreement subject to retention?	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes	
If Yes, Will retention be released prior to Agreement termination?	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes	

<b>R) Justification of Rates</b>

<b>S) Disabled Veteran Business Enterprise Program (DVBE)</b>			
1. <input checked="" type="checkbox"/> Exempt (Interagency/Other Government Entity)			
2. <input type="checkbox"/> Meets DVBE Requirements	DVBE Amount:\$ 0	DVBE %:	
<input type="checkbox"/> Contractor is Certified DVBE			
<input type="checkbox"/> Contractor is Subcontracting with a DVBE:	Name of DVBE Company _____		
3. <input type="checkbox"/> Contractor selected through CMAS or MSA with no DVBE participation.			
4. <input type="checkbox"/> Requesting DVBE Exemption (attach CEC 95)			

<b>T) Miscellaneous Agreement Information</b>			
1. Will there be Work Authorizations?	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes	
2. Is the Contractor providing confidential information?	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes	
3. Is the contractor going to purchase equipment?	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes	
4. Check frequency of progress reports			
<input checked="" type="checkbox"/> Monthly <input type="checkbox"/> Quarterly <input type="checkbox"/> Other...			
5. Will a final report be required?	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes	
6. Is the Agreement, with amendments, longer than a year? If yes, why?	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes	
Contractor must develop, release, and manage a competitive solicitation(s).			

<b>U) The following items should be attached to this CRF (as applicable)</b>			
1. Exhibit A, Scope of Work	<input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Attached	
2. Exhibit B, Budget Detail	<input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Attached	
3. CEC 96, NCB Request	<input checked="" type="checkbox"/> N/A	<input type="checkbox"/> Attached	
4. CEC 30, Survey of Prior Work	<input checked="" type="checkbox"/> N/A	<input type="checkbox"/> Attached	
5. CEC 95, DVBE Exemption Request	<input checked="" type="checkbox"/> N/A	<input type="checkbox"/> Attached	
6. CEQA Documentation	<input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Attached	
7. Resumes	<input checked="" type="checkbox"/> N/A	<input type="checkbox"/> Attached	
8. CEC 105, Questionnaire for Identifying Conflicts	<input checked="" type="checkbox"/> N/A	<input checked="" type="checkbox"/> Attached	

Agreement Manager	Date	Office Manager	Date	Deputy Director	Date
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## EXHIBIT A Scope of Work

### Near Zero Emission Natural Gas Engine Demonstration

#### TASK LIST

Task #	Task Name
1	Administration
2	8.9 Liter Engine Integration and Demonstration
3	15 Liter Engine Integration and Demonstration
4	Data Collection and Analysis

#### KEY NAME LIST

Task #	Key Personnel	Key Subcontractor(s)	Key Partner(s)
1	Jeff Cox, SCAQMD		
2	Jeff Cox, SCAQMD	Cummins Westport, Inc.	
3	Jeff Cox, SCAQMD	Cummins, Inc.	
4	Jeff Cox, SCAQMD		

#### ACRONYMS/GLOSSARY

*Specific acronyms and terms used throughout this scope of work are defined as follows:*

Term/ Acronym	Definition
ARFVT	Alternative and Renewable Fuel and Vehicle Technology
CARB	California Air Resources Board
CCM	Commission Contract Manager
EFTO	Emerging Fuels and Technology Office
Energy Commission	California Energy Commission
EPA	Environmental Protection Agency
ERDD	Energy Research and Development Division
g/bhp-hr	Grams per brake horsepower hour
NOx	Nitrous Oxides
SCAQMD	South Coast Air Quality Management District

#### BACKGROUND

This demonstration project contract supplements existing contract 500-12-012 between the California Energy Commission (Energy Commission) and South Coast Air Quality Management District (SCAQMD).

Assembly Bill 118 (Núñez, Chapter 750, Statutes of 2007), created the Alternative and Renewable Fuel and Vehicle Technology Program (ARFVT) Program. The statute, subsequently amended by AB 109 (Núñez, Chapter 313, Statutes of 2008), authorizes the California Energy Commission (Energy Commission) to develop and deploy alternative and renewable fuels and advanced transportation technologies to help attain the state's climate change policies. The Energy Commission has an annual program budget of approximately \$100 million and provides financial support for projects that:

- Develop and improve alternative and renewable low-carbon fuels;
- Optimize alternative and renewable fuels for existing and developing engine technologies;
- Produce alternative and renewable low-carbon fuels in California;
- Decrease, on a full fuel cycle basis, the overall impact and carbon footprint of alternative and renewable fuels and increase sustainability;
- Expand fuel infrastructure, fueling stations, and equipment;
- Improve light-, medium-, and heavy-duty vehicle technologies;
- Retrofit medium- and heavy-duty on-road and non-road vehicle fleets;
- Expand infrastructure connected with existing fleets, public transit, and transportation corridors; and
- Establish workforce training programs, conduct public education and promotion, and create technology centers.

### Joint Funding

The Energy Commission's Energy Research and Development Division (ERDD) and Emerging Fuels and Technology Office (EFTO) are jointly funding an overall project through two separate agreements. ERDD contract 500-12-012 is for heavy-duty engine technology development and the preparation of a report describing the performance specifications of the prototype natural gas engines and exhaust after-treatment technology. This EFTO contract 600-13-008 is to integrate those engines and technology into prototype heavy-duty vehicles for on-road demonstration.

### **PROBLEM STATEMENT**

The California Air Resources Board (CARB) 2010 emission standards for heavy-duty engines establish a limit for Nitrogen Oxide (NO<sub>x</sub>) emissions of 0.2 grams per brake horsepower hour (g/bhp-hr) which constitutes a 90 percent reduction of emissions compared to the previous standard (CARB 2007) of 2.0 g/bhp-hr. However, even with the entire on-road fleet of heavy-duty vehicles compliant with the 2010 standards, the upcoming National Ambient Air Quality Standards requirements for ozone will not be reached in California's worst air basins without further significant reductions in NO<sub>x</sub> emissions from heavy-duty fleets.

Natural gas vehicle technology currently has a high potential for greenhouse gas reductions of 11 to 23 percent on a well-to-wheels basis in heavy-duty vehicles using conventional natural gas. Collaborative research funded by federal, state, and local agencies and private technology developers is expected to produce key strategic breakthroughs in a broad range of natural gas vehicle technologies.

Original equipment manufacturers indicate that a near-zero emission target of 0.05 g/bhp-hr has been demonstrated on a bench-scale basis and could be integrated into prototype vehicles through additional research and development efforts. Development of production-intent combustion systems and exhaust after-treatment technologies may lead to near zero NOx emissions with minimal effect on fuel economy compared to similar U.S. Environmental Protection Agency (EPA) and CARB certified diesel engines.

The on-road demonstration of these prototype natural gas engines is an important step toward commercialization of near-zero emission technology. The reductions in NOx emissions from heavy-duty vehicles is necessary for California's worst air basins to attain National Ambient Air Quality Standards for ozone and will support the state's climate change policies.

### **PURPOSE AND GOALS OF THE CONTRACT**

The purpose of this contract is to award \$2,000,000 of Energy Commission ARFVT Program funds to the South Coast Air Quality Management District (SCAQMD) for funding and management of competitively selected subcontractors to integrate and demonstrate prototype heavy-duty natural gas engines and exhaust after-treatment technologies in on-road heavy-duty vehicles.

The goal of this contract is to demonstrate near zero emissions natural gas engine technology in various heavy-duty vehicle applications. The prototype engines and associated exhaust after-treatment technologies should be capable of achieving or beating the following performance and emissions targets:

- 0.02 g/bhp-hr NOx
- 0.01 g/bhp-hr particulate matter
- 0.14 g/bhp-hr non-methane hydrocarbon
- 15.5 g/bhp-hr carbon monoxide as determined by the heavy-duty engine federal test procedure.
- Ammonia emissions as low as achievable, preferably 10 parts per million or lower
- 20% or less loss of engine thermal efficiency or fuel economy relative to 2010 U.S. EPA and CARB certified diesel engines in similar duty cycle

### **FORMAT/REPORTING REQUIREMENTS**

#### **Deliverables/Reports**

When creating reports, the Contractor shall use and follow, unless otherwise instructed in writing by the Commission Contract Manager (CCM), the latest version of the Consultant Reports Style Manual published on the Energy Commission's website:

[http://www.energy.ca.gov/contracts/consultant\\_reports/index.html](http://www.energy.ca.gov/contracts/consultant_reports/index.html)

Each final deliverable shall be delivered as one original, reproducible, 8 ½" by 11" camera-ready master in black ink. Illustrations and graphs shall be sized to fit an 8 ½" by 11" page and readable if printed in black and white.

## **Electronic File Format**

The Contractor shall deliver an electronic copy (CD ROM or memory stick or as otherwise specified by the CCM) of the full text in a compatible version of Microsoft Word (.doc).

The following describes the accepted formats of electronic data and documents provided to the Energy Commission as contract deliverables and establishes the computer platforms, operating systems and software versions that will be required to review and approve all software deliverables.

- Data sets shall be in Microsoft (MS) Access or MS Excel file format.
- PC-based text documents shall be in MS Word file format.
- Documents intended for public distribution shall be in PDF file format, with the native file format provided as well.
- Project management documents shall be in MS Project™ file format.

## **TASK 1- CONTRACT MANAGEMENT**

### **TASK 1.1 Kick-off Meeting**

The goal of this task is to establish the lines of communication and procedures for implementing this Agreement.

#### **The Contractor shall:**

- Attend a “kick-off” meeting with the CCM, the Contracts Officer, and a representative of the Accounting Office. The Contractor shall include their Project Manager, Contracts Administrator, Accounting Officer, and others designated by the CCM in this meeting. The administrative and technical aspects of this Agreement will be discussed at the meeting.
- Prepare a Schedule of Deliverables based on the decisions made in the kick-off meeting.

#### **The CCM shall:**

- Arrange the meeting including scheduling the date and time.
- Provide an agenda to all potential meeting participants prior to the kick-off meeting.

#### **Deliverables:**

- A Schedule of Deliverables

### **TASK 1.2 Invoices**

#### **The Contractor shall:**

- Prepare invoices for all reimbursable expenses incurred performing work under this Agreement in compliance with the Exhibit B of the Terms and Conditions of the Agreement. Invoices shall be submitted with the same frequency as progress reports (Task 1.4). Invoices shall be submitted to the Energy Commission’s Accounting Office.

**Deliverables:**

- Invoices

**TASK 1.3 Manage Subcontractors**

The goal of this task is to ensure quality products, to enforce subcontractor Agreement provisions, and in the event of failure of the subcontractor to satisfactorily perform services, recommend solution to resolve the problem.

**The Contractor shall:**

- Manage and coordinate subcontractor activities. The Contractor is responsible for the quality of all subcontractor work and the Energy Commission will assign all work to the Contractor. If the Contractor decides to add new subcontractors, they shall 1) comply with the Terms and Conditions of the Agreement, and 2) notify the CCM who will follow the Energy Commission's process for adding or replacing subcontractors.

**TASK 1.4 Progress Reports**

The goal of this task is to periodically verify that satisfactory and continued progress is made towards achieving the objectives of this Agreement.

**The Contractor shall:**

- Prepare monthly progress reports which summarize all Agreement activities conducted by the Contractor for the reporting period, including an assessment of the ability to complete the Agreement within the current budget and any anticipated cost overruns. Each progress report is due within 15 calendar days after the end of the reporting period. The CCM will provide the format for the progress reports.

**Deliverables:**

- Monthly Progress Reports

**TASK 1.5 Final Report**

The goal of this task is to prepare a comprehensive written Final Report that describes the original purpose, approach, results and conclusions of the work completed under this Agreement. The Final Report shall be prepared in language easily understood by the public or layperson with a limited technical background.

The Final Report must be completed before the termination date of the Agreement in accordance with the Schedule of Deliverables.

The Final Report shall be a public document. If the Contractor has obtained confidential status from the Energy Commission and will be preparing both a public and a confidential version of the Final Report, the Contractor shall perform the following subtasks for both the public and confidential versions of the Final Report.

### **TASK 1.5.1 Final Report Outline**

#### **The Contractor shall:**

- Prepare and submit a draft outline of the Final Report for review and approval. The CCM will provide written comments to the Contractor on the draft outline. The Contractor shall review the comments and discuss any issues with the recommended changes with the CCM.
- Prepare and submit the final outline of the Final Report, incorporating CCM comments.

#### **Deliverables:**

- Draft Outline of the Final Report
- Final Outline of the Final Report

### **TASK 1.5.2 Final Report**

#### **The Contractor shall:**

- Prepare the draft Final Report for this Agreement in accordance with the approved outline.
- Submit the draft Final Report for review and comment. The CCM will provide written comments to the Contractor. The Contractor shall review the comments and discuss any issues with the recommended changes with the CCM.
- Prepare and submit the Final Report, incorporating CCM comments.

#### **Deliverables:**

- Draft Final Report
- Final Report

### **TASK 1.6 Identify and Obtain Required Permits**

The goal of this task is to verify all permits required for work completed under this Agreement in advance of the date they are needed to keep the Agreement schedule on track.

Permit costs and the expenses associated with obtaining permits are not reimbursable under this Agreement. While the budget for this task will be zero dollars, the Contractor may show match funds for this task. Permits must be identified in writing and obtained before the Contractor can incur any costs related to the use of the permits for which the Contractor will request reimbursement.

No sub-award can be approved or executed until CEQA is satisfied.

#### **The Contractor shall:**

- Prepare a letter documenting the permits required to conduct this Agreement and submit it at least 2 working days prior to the kick-off meeting. Provide in the letter:

- A list of the permits that identifies the:
  - Type of permit
  - Name, address and telephone number of the permitting jurisdictions or lead agencies
- A schedule the Contractor will follow in applying for and obtaining these permits.
- Discuss the list of permits and the schedule for obtaining them at the kick-off meeting. The implications to the Agreement if the permits are not obtained in a timely fashion or are denied will also be discussed. If applicable, permits will be included as a line item in the progress reports.
- If during the course of the Agreement additional permits become necessary, then provide the appropriate information on each permit and an updated schedule to the CCM.
- As permits and CEQA compliance are obtained, send a copy of each approved permit to the CCM if requested.
- If during the course of the Agreement permits are not obtained on time or are denied, notify the CCM within 5 working days.

**Deliverables:**

- A letter documenting the permits and schedule
- Updated list of permits and schedule (as necessary)
- A copy of each approved permit (if requested)

**TASK 1.7 Obtain and Execute Subcontracts**

The goal of this task is to ensure quality products and to procure subcontractors required to carry out the tasks under this Agreement consistent with the Agreement Terms and Conditions and the Contractor's own procurement policies and procedures. It will also provide the Energy Commission an opportunity to review the subcontracts to ensure that the tasks are consistent with this Agreement, and that the budgeted expenditures are reasonable and consistent with applicable cost principles.

**The Contractor shall:**

- Manage and coordinate subcontractor activities.
- Submit a draft of each subcontract required to conduct the work under this Agreement to the CCM for review.
- Submit a final copy of the executed subcontract.
- Notify the CCM if new subcontractors are added.

**Deliverables:**

- Draft subcontracts
- Final subcontracts

## **TECHNICAL TASKS**

### **TASK 2 - 8.9 LITER ENGINE INTEGRATION AND DEMONSTRATION**

The goal of this task is to integrate the prototype heavy-duty 8.9 liter natural gas engine developed in ERDD Contract 500-12-012 into prototype heavy-duty vehicles and demonstrate the engine and exhaust after-treatment technology in on-road conditions. The subcontractor will install the engine(s) into on-road heavy-duty prototype vehicles suitable for goods movement, refuse, transit, or school bus and drayage truck applications to measure performance and ensure drivability. Vehicles will be deployed and demonstrated in commercial services to evaluate performance, reliability, and emissions expectations. This task requires a series of on-road tests to ensure that the production-intent or production vehicles are drivable, safe, and meet performance and emissions expectations. A heavy-duty chassis dynamometer will be used for validation of product specifications, and to confirm performance and emissions expectations,

#### **The Contractor shall:**

- Upon completion of the detailed design and the initial prototype vehicle evaluation, require each subcontractor to:
  - Build a minimum of one (1) production-intent or production vehicle for final performance and emissions validation (total quantity shall be defined by the Contractor based upon the Contractor's internal product validation requirements). The prototype vehicle may also serve as the production-intent or production vehicle should it be sufficiently refined.
  - Utilize their internal product development and validation procedures to establish minimum quantities and specific validation requirements. At a minimum, the subcontractor must perform a full validation of the product specifications and document the results. The subcontractor is encouraged to conduct an initial vehicle emissions tests to confirm performance and emissions expectations.
- Obtain a production or production-intent vehicle from each of the subcontractors available for independent chassis dynamometer emissions and performance testing during this project, as directed by the Contractor. In addition, each subcontractor shall provide a complete vehicle system and any required appurtenance necessary to conduct the testing and arrange for on-site engineering support to facilitate the testing, if requested by the Contractor.
- Deploy to the field up to three (3) vehicles per subcontractor, preferably in multiple applications, in the South Coast Air Basin.
- Conduct at least six (6) months of field demonstration for each vehicle, including monitoring and support.
- Identify, characterize, and resolve operational and/or performance issues prior to commercial product launch.
- Document the in-service performance of the demonstration fleet, including mileage accumulation, vehicle downtime, maintenance and repair frequency, and operating costs.

- Validate vehicle fuel efficiency for each vehicle to within 20% or lower of comparable diesel vehicles over comparable duty cycles.

**Deliverables:**

- Final prototype performance and emissions validation report.
- Independent dynamometer emissions and performance report.
- Written vehicle deployment plan, including types of vehicle applications and locations.
- Written report describing any operational or performance barriers to commercial product launch.
- Written summary report of in-service performance of the demonstration fleet, including mileage accumulation, vehicle downtime, maintenance and repair frequency, operating costs, and fuel efficiency.

**TASK 3 - 15 LITER ENGINE INTEGRATION AND DEMONSTRATION**

The goal of this task is to integrate the prototype heavy-duty 15 liter natural gas engine developed in ERDD Contract 500-12-012 into prototype heavy-duty vehicles and demonstrate the engine and exhaust after-treatment technology in on-road conditions. The subcontractor will install the engine(s) into on-road heavy-duty prototype vehicles suitable for goods movement, refuse, transit, or school bus and drayage truck applications to measure performance and ensure drivability. Vehicles will be deployed and demonstrated in commercial services to evaluate performance, reliability, and emissions expectations. This task requires a series of on-road tests to ensure that the production-intent or production vehicles are drivable, safe, and meet performance and emissions expectations. A heavy-duty chassis dynamometer will be used for validation of product specifications, and to confirm performance and emissions expectations,

**The Contractor shall:**

- Upon completion of the detailed design and the initial prototype vehicle evaluation, require each subcontractor to:
  - Build a minimum of one (1) production-intent or production vehicle for final performance and emissions validation (total quantity shall be defined by the Contractor based upon the Contractor's internal product validation requirements). The prototype vehicle may also serve as the production-intent or production vehicle should it be sufficiently refined.
  - Utilize their internal product development and validation procedures to establish minimum quantities and specific validation requirements. At a minimum, the subcontractor must perform a full validation of the product specifications and document the results. The subcontractor is encouraged to conduct an initial vehicle emissions tests to confirm performance and emissions expectations.

- Obtain a production or production-intent vehicle from each of the subcontractors available for independent chassis dynamometer emissions and performance testing during this project, as directed by the Contractor. In addition, each subcontractor shall provide a complete vehicle system and any required appurtenance necessary to conduct the testing and arrange for on-site engineering support to facilitate the testing, if requested by the Contractor.
- Deploy to the field up to three (3) vehicles per subcontractor, preferably in multiple applications, in the South Coast Air Basin.
- Conduct at least six (6) months of field demonstration for each vehicle, including monitoring and support.
- Identify, characterize, and resolve operational and/or performance issues prior to commercial product launch.
- Document the in-service performance of the demonstration fleet, including mileage accumulation, vehicle downtime, maintenance and repair frequency, and operating costs.
- Validate vehicle fuel efficiency for each vehicle to within 20% or lower of comparable diesel vehicles over comparable duty cycles.

**Deliverables:**

- Final prototype performance and emissions validation report.
- Independent dynamometer emissions and performance report.
- Written vehicle deployment plan, including types of vehicle applications and locations.
- Written report describing any operational or performance barriers to commercial product launch.
- Written summary report of in-service performance of the demonstration fleet, including mileage accumulation, vehicle downtime, maintenance and repair frequency, operating costs, and fuel efficiency.

**TASK 4 - DATA COLLECTION AND ANALYSIS**

The goal of this task is to collect and analyze information describing the original purpose, approach, results and conclusions of the work completed under this Agreement and include that analysis in the Final Report.

**The Contractor shall:**

- Develop data collection plan.
- Troubleshoot any issues identified.
- Collect a minimum of 6 months of throughput, usage, and operations data from the project including, but not limited to:
  - Gallons of gasoline and/or diesel fuel displaced
  - Expected air emissions reduction, for example:
    - Non-methane hydrocarbons
    - Oxides of nitrogen
    - Ammonia
    - Particulate Matter
    - Carbon Monoxide

- Describe any energy efficiency measures used that may exceed Title 24 standards in Part 6 of the California Code Regulations.
- Summarize greenhouse gas reduction, water efficiency, and natural resource impacts and overall environmental impacts.
- Provide data on actual and potential job creation, economic development, and increased state and local revenue.
- Provide a quantified estimate of the project's carbon intensity values for life-cycle greenhouse gas emissions.
- Compare any project performance and expectations provided in the proposal to Energy Commission with actual project performance and accomplishments.
- Compile the data and information specified above in the Final Report.

**Deliverables:**

- The data collected and information generated shall be evaluated and described in the final report per Task 1.5.

**Exhibit A-1**

***Schedule of Products and Due Dates***

<b>Task Number</b>	<b>Task Name</b>	<b>Product(s)</b>	<b>Due Date</b>
1.1	<b>Attend Kick-off Meeting</b>		
		Updated Schedule of Deliverables Kick-Off Meeting Agenda (CEC)	2 days before the kick-off meeting Commission
1.2	<b>Invoices</b>		
		Prepare and submit invoices for all reimbursable expenses incurred performing work under this Contract	monthly
1.3	<b>Manage Subcontractors</b>		
		Manage and coordinate subcontractors per Task 1.3	15 days prior to subcontract execution date
1.4	<b>Monthly Progress Reports</b>		
		Monthly Progress Reports	The 10th calendar day of each month during the approved term of this Agreement
1.5	<b>Final Report</b>	Draft Outline of Final Report	12/1/2016
		Final Outline of the Final Report	1/9/2017
		Draft Final Report (no less than 60 days before the end term of the agreement)	1/31/2017
		Final Report	3/30/2017
1.6	<b>Identify and Obtain Required Permits</b>		
		Letter documenting the permits and schedule	Within 10 days of receiving each permit
		A copy of each approved permit (if applicable)	Within 10 days of receiving each permit
		Updated list of permits and schedule (if applicable)	Within 10 days of change in list of permits
1.7	<b>Obtain and Execute Subcontracts</b>		
		Draft subcontracts	15 days prior to the scheduled execution date
		Final subcontracts	Within 10 days of execution

**Exhibit A-1**

***Schedule of Products and Due Dates***

<b>Task Number</b>	<b>Task Name</b>	<b>Product(s)</b>	<b>Due Date</b>
<b>2</b>	<b>TASK 2 – 8.9 LITER ENGINE INTEGRATION AND DEMONSTRATION</b>		
		Final prototype performance and emissions validation report	11/2/2015
		Independent dynamometer emissions and performance report	11/2/2015
		Written vehicle deployment plan including types of vehicle applications and locations	11/2/2015
		Written report describing any operational or performance barriers to commercial product launch uncovered during demonstration	9/1/2016
		Written summary report of in-service performance of the demonstration fleet, including mileage accumulation, vehicle downtime, maintenance and repair frequency, operating costs, and fuel efficiency	9/1/2016
<b>3</b>	<b>TASK 3 – 15 LITER ENGINE INTEGRATION AND DEMONSTRATION</b>		
		Final prototype performance and emissions validation report	11/2/2015
		Independent dynamometer emissions and performance report	11/2/2015
		Written vehicle deployment plan including types of vehicle applications and locations	11/2/2015
		Written report describing any operational or performance barriers to commercial product launch uncovered during demonstration	9/1/2016
		Written summary report of in-service performance of the demonstration fleet, including mileage accumulation, vehicle downtime, maintenance and repair frequency, operating costs, and fuel efficiency	9/1/2016
<b>4</b>	<b>TASK 4 - DATA COLLECTION AND ANALYSIS</b>	Data collection information and analysis will be included in the Final Report(s) per Task 1.5	12/1/2016

# Notice of Exemption

Form D

To: Office of Planning and Research  
P.O. Box 3044, Room 113  
Sacramento, CA 95812-3044

From: (Public Agency): California Energy Commission  
1516 Ninth Street

County Clerk  
County of: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Sacramento, CA 95814  
(Address)

Project Title: Contract # 600-13-008, Near Zero Emission Natural Gas Engine Demonstration

Project Applicant: South Coast Air Quality Management District (Contractor)

Project Location - 21865 Copley Drive, Diamond Bar, CA 91765

Project Location - City: Diamond Bar Project Location - County: Orange

### Description of Nature, Purpose and Beneficiaries of Project:

The project funds a demonstration project of prototype heavy-duty natural gas engines and after-treatment technologies in on-road heavy-duty vehicles. These vehicles are expected to lower emissions of nitrous oxides, carbon monoxide, particulate matter, and non-methane hydrocarbons. This contract funds the integration and demonstration portion of the project.

Name of Public Agency Approving Project: California Energy Commission

Name of Person or Agency Carrying Out Project: South Coast Air Quality Management District

### Exempt Status: (check one):

- Ministerial (Sec. 21080(b)(1); 15268);
- Declared Emergency (Sec. 21080(b)(3); 15269(a));
- Emergency Project (Sec. 21080(b)(4); 15269(b)(c));
- Categorical Exemption. State type and section number: \_\_\_\_\_
- Statutory Exemptions. State code number: \_\_\_\_\_
- Common Sense Exemption. 14 CCR 15061 (b) (3)

### Reasons why project is exempt:

The project is an applied research demonstration of near-zero emission technology that will not cause a significant effect on the environment, a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment.

### Lead or Responsible Agency

Contact Person: Phil Cazel Area Code/Telephone/Extension: 916-653-1590

### If filed by applicant:

1. Attach certified document of exemption finding.
2. Has a Notice of Exemption been filed by the public agency approving the project?  Yes  No

Signature: \_\_\_\_\_ Date: \_\_\_\_\_ Title: Energy Commission Specialist

Signed by Responsible Agency

Signed by Lead Agency Date received for filing at OPR: \_\_\_\_\_

Signed by Applicant

STATE OF CALIFORNIA  
STATE ENERGY RESOURCES  
CONSERVATION AND DEVELOPMENT COMMISSION

RESOLUTION REGARDING:  
CONTRACT AWARD to South Coast Air Quality Management District  
600-13-008

**WHEREAS**, the State Energy Resources Conservation and Development Commission (Energy Commission) proposes a contract for applied research in the amount of \$2,000,000 with the South Coast Air Quality Management District (SCAQMD); and

**WHEREAS**, the SCAQMD will manage competitively selected subcontractors to demonstrate prototype heavy-duty natural gas engines and after-treatment technologies in on-road heavy-duty vehicles; and

**WHEREAS** the Energy Commission finds that this contract is a “project” under the California Environmental Quality Act (CEQA);

**WHEREAS** the Energy Commission finds that the project is a demonstration of near-zero emission technology that will not cause a significant effect on the environment, a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment;

**WHEREAS** the Energy Commission has concluded that the project is exempt under CEQA pursuant to the “Common Sense” exemption, CEQA Guideline 15061 (b) (3) (California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15061 (b) (3));

**THEREFORE, BE IT RESOLVED**, that the Energy Commission approves **Contract # 600-13-008** to the South Coast Air Quality Management District, in the amount of **\$2,000,000.00**, to manage competitively selected subcontractors to demonstrate prototype heavy-duty natural gas engines and after-treatment technologies in on-road heavy-duty vehicles.

**BE IT FURTHER RESOLVED**, that this document authorizes the Executive Director or his/her designee to execute the contract on behalf of the Energy Commission.

CERTIFICATION

The undersigned Secretariat to the Commission does hereby certify that the foregoing is a full, true, and correct copy of a RESOLUTION duly and regularly adopted at a meeting of the California Energy Commission held on May 14, 2014:

AYE: [*List Commissioners*]

NAY: [*List Commissioners*]

ABSENT: [*List Commissioners*]  
ABSTAIN: [*List Commissioners*]

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*Harriet Kallemeyn,*  
*Secretariat*