

EXHIBIT A
Scope of Work

TECHNICAL TASK LIST

Task #	Task Name
1	Administration
2	Electric Vehicle International: Range-Extended Electric Vehicle Shuttle Bus Demonstration
3	Caterpillar: Off-Road Large-size Hybrid Excavator
4	Odyne: Advanced Diesel Plug-In Hybrid Electric Truck
5	Motiv: Battery-Electric Truck Pilot on a Traditional Truck Assembly Line
6	Caterpillar: Electric diesel Hybrid mini (5-ton) Hydraulic Excavator
7	City and county of San Francisco, Airport Commission: SFO Fuel Cell Bus Project
8	Volvo Technology of America, Inc.: Hybrid Wheel Loaders in Landfill Applications
9	Proterra Inc.: The Comparative Analysis of Battery Electric Buses in Varying Transit Applications Project
10	Transportation Power, Inc.: Electric Drayage Demonstration (EDD) Project

KEY NAME LIST

Task #	Key Personnel	Subgrantee	Key Partner(s)
1	Michael Ippoliti		
2	Jasna Tomic	Electric Vehicle International	Bauer's Intelligent Transportation, SFO Shuttle Bus Company, AMPCO Parking, Enterprise Holdings, Tectrans, UC San Diego, Creative Bus Sales
3	Steve Sokolsky	Caterpillar, Inc.	Teichert, Kiewit Corporation
4	Jasna Tomic	Odyne Systems LLC	Johnson Controls, Inc., Remy International, Inc., Terex Corporation, City of San Francisco, LADWP, County of Los Angeles
5	Jasna Tomic	Motiv Power Systems	Lico Technology Corporation, Bauer's Transportation, City of Bakersfield, Detroit Chassis, EVO Electric
6	Steve Sokolsky	Caterpillar, Inc.	Holt of California, Pacific Gas and Electric

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Task #	Key Personnel	Subgrantee	Key Partner(s)
7	Larry Wnuk	City and County of San Francisco, Airport Commission	BAE Systems, Ballard, El Dorado National
8	Steve Sokolsky	Volvo Technology of America, Inc.	Waste Management
9	Fred Silver	Proterra, Inc.	San Joaquin Regional Transit District
10	Mike Ippoliti	Transportation Power, Inc.	Navistar, Quantum, EPC Power, Flux, Total Transportation Services

GLOSSARY

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

Term/ Acronym	Definition
ARFVT	Alternative and Renewable Fuel and Vehicle Technology
CLEAN	Commercial-path, Low-carbon, Efficient, Alternative-fuel Next-generation technology
CPR	Critical Project Review
FTD	Fuels and Transportation Division
GHG	Greenhouse Gas Emissions
LPG	Liquid Propane Gas
PHEV	Plug-In Hybrid Electric Vehicle
REEV	Range Extended Electric Vehicle
SFO	San Francisco International Airport
ZEV	Zero Emission Vehicle

Background

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 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;

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- 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.

The California Energy Commission issued solicitation PON-10-603 to provide funding opportunities under the ARFVT Program for projects to demonstrate and enhance market viability acceptance of near-term commercial applications of alternative technologies and alternative fueled vehicles for use in California's commercial goods movement, transit, and other sectors. To be eligible for funding under PON-10-603, the projects must also be consistent with the Energy Commission's ARFVT Investment Plan updated annually.

In response to PON-10-603, Recipient submitted application #6 which was proposed for funding in the Energy Commission's Notice of Proposed Awards revised April 27, 2012, and is incorporated by reference to this Agreement in its entirety.

Problem Statement:

Medium- and heavy-duty on and off road vehicles fueled by diesel continue to be a major contributor to California's extreme air quality problem. These work vehicles consume substantial amounts of fuel and emit excess emissions of criteria pollutants and GHGs in California fleets. The emissions from these vehicles are responsible for causing premature deaths and respiratory diseases. Hybrid and other technologically advanced vehicles have not yet been widely commercialized despite fuel savings potential primarily because of the added cost results in customer payback periods extending beyond typical ownership periods.

Goal of the Agreement:

The goal of this Agreement is to provide a state-wide portfolio of high-impact demonstration projects for advanced, alternative technology medium- and heavy-duty vehicles for near commercial on- and off-road applications.

Objectives of the Agreement:

The objectives of this Agreement are to:

- Develop agreements with projects identified by the California Energy Commission representing low and zero emission alternative fuel and hybrid trucks, advanced alternative fuel transit vehicles, and hybrid and alternative fuel off-road equipment

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- Create and retain over 400 jobs with commercialization of the identified projects by 2015
- Create over 1,500 jobs associated with the identified projects by 2020
- Generate more than \$15 million in estimated new annual sales
- Reduce up to 99 percent of NOx, 61 percent of CO, 61 percent of hydrocarbons, and 100 percent of particulate matter
- Reduce petroleum use by up to 6,000 gallons per year per vehicle depending on project application
- Task 2
 - Demonstrate predominately zero-emission electric vehicle medium-duty shuttle bus prototypes with flexibility to use a gasoline generator for range extended use
- Task 3
 - Demonstrate large off-road excavators equipped with (a) swing energy and (b) swing & boom energy recovery hybrid technologies
- Task 4
 - Demonstrate and evaluate fuel neutral modular plug-in hybrid electric systems which are optimized to customer needs and offer two different battery size options
- Task 5
 - Demonstrate and evaluate a battery-electric powertrain with 100 mile electric range and wireless real-time data collection
- Task 6
 - Demonstrate an electric-diesel hybrid mini (5 ton) excavator for utility work
- Task 7
 - Demonstrate the reliability and operational performance of a ZEV hydrogen fuel cell bus in intensive service carrying passengers and luggage at a major international gateway airport
- Task 8
 - Demonstrate the reliability and operational performance of the Hybrid-Electric Wheel Loader in landfill operations
- Task 9
 - Demonstrate the viability of quick-charge battery electric buses designed to replace diesel and CNG buses and compare operational data with electric buses currently operating in other urban areas
- Task 10
 - Demonstrate the viability, operational performance and reliability of battery-electric Class 8 trucks placed into trial service transporting containers at the Ports of Long Beach and Los Angeles

TASK 1 ADMINISTRATION

Task 1.1 Attend Kick-off Meeting

Revised 4/9/12

ARV-11-xxx
CalStart, Inc.

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

The Recipient shall:

- Attend a “Kick-Off” meeting with the Commission Agreement Manager, the Grants Officer, and/or a representative of the Accounting Office. The Recipient shall bring its Project Manager, Agreement Administrator, Accounting Officer, and others designated by the Commission Agreement Manager to this meeting. The administrative and technical aspects of this Agreement will be discussed at the meeting. Prior to the kick-off meeting, the Commission Agreement Manager will provide an agenda to all potential meeting participants.

The administrative portion of the meeting shall include, but not be limited to, the following:

- Discussion of the terms and conditions of the Agreement, including the special terms and conditions
- Discussion of Critical Project Review (Task 1.2)
- Match fund documentation (Task 1.6)
- Permit documentation (Task 1.7)
- Discussion of subgrant agreements needed to carry out project(s) (Task 1.8)
- Discussion of any amendments to this Agreement to include new technical tasks and subgrants, if the Commission makes additional funding available for additional projects (Task 1.9)
- Discussion of responsibility to review and validate invoices submitted by subgrantees (Task 1.10).
- Discussion of each approved project and related administrative processes.

The technical portion of the meeting shall include, but not be limited to, the following:

- The Commission Agreement Manager’s expectations for accomplishing the Recipient and Subgrantee tasks described in the Scope of Work
- An updated Master Schedule of Products
- Discussion of Progress Reports (Task 1.4)
- Discussion of Technical Products (Product Guidelines located in Section 5 of the Terms and Conditions, and Special Terms and Conditions).
- Discussion of the Final Report (Task 1.5)

The Commission Agreement Manager shall designate the date and location of this meeting.

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Recipient Products:

- Updated Schedule of Products
- Updated List of Match Funds
- Updated List of Permits

Commission Agreement Project Product:

- Kick-Off Meeting Agenda

Task 1.2 Critical Project Review (CPR) Meetings

The goal of this task is to determine if the Recipient's project(s) should continue to receive Energy Commission funding to complete this Agreement and to identify any needed modifications to the tasks, products, schedule or budget.

CPRs provide the opportunity for frank discussions between the Energy Commission and the Recipient. The Commission Agreement Manager may schedule CPRs as necessary, and CPR costs will be borne by the Recipient.

Participants include the Commission Agreement Manager and the Recipient and may include the Commission Grants Officer, the Fuels and Transportation Division (FTD) team lead, other Energy Commission staff and Management as well as other individuals selected by the Commission Agreement Manager to provide support to the Energy Commission.

The Commission Agreement Manager shall:

- Determine the location, date, and time of each CPR meeting with the Recipient. These meetings generally take place at the Energy Commission, but they may take place at another location.
- Send the Recipient the agenda and a list of expected participants in advance of each CPR. If applicable, the agenda shall include a discussion on both match funding and permits.
- Conduct and make a record of each CPR meeting. One of the outcomes of this meeting will be a schedule for providing the written determination described below.
- Determine whether to continue the project(s), and if continuing, whether or not modifications are needed to the tasks, schedule, products, and/or budget for the remainder of the Agreement. Modifications to the Agreement may require a formal amendment (please see section 8 of the Terms and Conditions). If the Commission Agreement Manager concludes that satisfactory progress is not being made, this conclusion will be referred to the Lead Commissioner for FTD for concurrence.

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- Provide the Recipient with a written determination in accordance with the schedule. The written response may include a requirement for the Recipient to revise one or more product(s) that were included in the CPR.

The Recipient shall:

- Prepare a CPR Report for each CPR that discusses the progress of the Agreement toward achieving its goals and objectives. This report shall include recommendations and conclusions regarding continued work of the projects. This report shall be submitted along with any other products identified in this scope of work. The Recipient shall submit these documents to the Commission Agreement Manager and any other designated reviewers at least 15 working days in advance of each CPR meeting.
- Present the required information at each CPR meeting and participate in a discussion about the Agreement.

Commission Agreement Manager Products:

- Agenda and a list of expected participants
- Schedule for written determination
- Written determination

Recipient Product:

- CPR Report(s)

Task 1.3 Final Meeting

The goal of this task is to closeout this Agreement.

The Recipient shall:

- Meet with Energy Commission staff to present the findings, conclusions, and recommendations. The final meeting must be completed during the closeout of this Agreement.

This meeting will be attended by, at a minimum, the Recipient, the Commission Grants Office Officer, and the Commission Agreement Manager. The technical and administrative aspects of Agreement closeout will be discussed at the meeting, which may be two separate meetings at the discretion of the Commission Agreement Manager.

The technical portion of the meeting shall present an assessment of the degree to which project and task goals and objectives were achieved, findings, conclusions, recommended next steps (if any) for the Agreement,

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and recommendations for improvements. The Commission Agreement Manager will determine the appropriate meeting participants.

The administrative portion of the meeting shall be a discussion with the Commission Agreement Manager and the Grants Officer about the following Agreement closeout items:

- What to do with any equipment purchased with Energy Commission funds (Options)
- Energy Commission's request for specific "generated" data (not already provided in Agreement products)
- Need to document Recipient's disclosure of "subject inventions" developed under the Agreement
- "Surviving" Agreement provisions
- Final invoicing and release of retention
- Prepare a schedule for completing the closeout activities for this Agreement.

Products:

- Written documentation of meeting agreements
- Schedule for completing closeout activities

Task 1.4 Monthly Progress Reports

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

The objectives of this task are to summarize activities performed by the Recipient and subgrantees during the reporting period, to identify activities planned for the next reporting period, to identify issues that may affect performance and expenditures, and to form the basis for determining whether invoices are consistent with work performed.

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The Recipient shall:

- Prepare a Monthly Progress Report which summarizes all Agreement activities conducted by the Recipient 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 to the Commission Agreement Manager within 10 days of the end of the reporting period agreed to at the Kick-Off Meeting. The recommended specifications for each progress report are contained in Section 6 of the Terms and Conditions of this Agreement.
- Collect and submit monthly reports from each of subgrantee, which shall individually summarize the same factors described herein for each individual project.
- In the first Monthly Progress Report and first invoice, document and verify match expenditures and provide a synopsis of project progress, if match funds have been expended or if work funded with match share has occurred after the notice of proposed award but before execution of the grant agreement. If no match funds have been expended or if no work funded with match share has occurred before execution, then state this in the report. All pre-execution match expenditures must conform to the requirements in the Terms and Conditions of this Agreement.

Product:

- Monthly Progress Reports from Recipient and each subgrantee.

Task 1.5 Final Report

The goal of the Final Report is to assess Recipient's success in achieving its goals and objectives, advancing science and technology, and providing energy-related and other benefits to California.

The objectives of the Final Report are to clearly and completely describe the project(s) administered by the Recipient project(s), including the purpose, approach, activities performed, results, and advancements in science and technology; to present a public assessment of the success of the project(s) as measured by the degree to which goals and objectives were achieved; to make insightful observations based on results obtained; to draw conclusions; and to make recommendations for further projects and improvements to the FTD project management processes.

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

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The Recipient shall:

- Prepare an Outline of the Final Report.
- Prepare a Final Report following the approved outline and the latest version of the Final Report guidelines which will be provided by the Commission Project Manager. The Commission Agreement Manager shall provide written comments on the Draft Final Report within fifteen (15) working days of receipt. The Final Report must be completed at least 60 days before the end of the Agreement Term.
- Submit one bound copy of the Final Report with the final invoice.

Products:

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

Task 1.6 Identify and Obtain Matching Funds

The goal of this task is to ensure that the match funds planned for each project under this Agreement are obtained for and applied to this Agreement during the term of this Agreement.

The costs to obtain and document match fund commitments are not reimbursable through this Agreement. Although the Energy Commission budget for this task will be zero dollars, the Recipient and/or subgrantee may utilize match funds for this task. Match funds shall be spent concurrently or in advance of Energy Commission funds for each task during the term of this Agreement. Match funds must be identified in writing and the associated commitments obtained before the Recipient and/or subgrantee can incur any costs sought to be reimbursed.

The Recipient shall:

- Prepare a letter documenting the match funding committed to this Agreement and submit it to the Commission Agreement Manager at least 2 working days prior to the kick-off meeting. If no match funds were part of the proposal that led to the Energy Commission awarding this Agreement and none have been identified at the time this Agreement starts, then state such in the letter. If match funds were a part of the proposal that led to the Energy Commission awarding this Agreement, then provide in the letter a list of the match funds that identifies the:
 - Amount of each cash match fund, its source, including a contact name, address and telephone number and the task(s) to which the match funds will be applied.
 - Amount of each in-kind contribution, a description, documented market or book value, and its source, including

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a contact name, address and telephone number and the task(s) to which the match funds will be applied. If the in-kind contribution is equipment or other tangible or real property, the Recipient shall identify its owner and provide a contact name, address and telephone number, and the address where the property is located.

- Provide a copy of the letter of commitment from an authorized representative of each source of cash match funding or in-kind contributions that these funds or contributions have been secured. For match funds provided by a grant a copy of the executed grant shall be submitted in place of a letter of commitment.
- Discuss match funds and the implications to the Agreement if they are reduced or not obtained as committed, at the kick-off meeting. If applicable, match funds will be included as a line item in the progress reports and will be a topic at CPR meetings.
- Provide the appropriate information to the Commission Agreement Manager if during the course of the Agreement additional match funds are received.
- Notify the Commission Agreement Manager within 10 days if during the course of the Agreement existing match funds are reduced. Reduction in match funds must be approved through a formal amendment to the Agreement and may trigger an additional CPR.

Products:

- A letter regarding match funds or stating that no match funds are provided
- Copy(ies) of each match fund commitment letter(s) (if applicable)
- Letter(s) for new match funds (if applicable)
- Letter that match funds were reduced (if applicable)

Task 1.7 Identify and Obtain Required Permits

The goal of this task is to obtain 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. Although the Energy Commission budget for this task will be zero dollars, the Recipient shall budget match funds for any expected expenditures associated with obtaining permits. Permits must be identified in writing and obtained before the Recipient can make any expenditure for which a permit is required.

The Recipient shall:

- Prepare a letter documenting the permits required to conduct this Agreement and submit it to the Commission Agreement Manager at least

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2 working days prior to the kick-off meeting. If there are no permits required at the start of this Agreement, then state such in the letter. If it is known at the beginning of the Agreement that permits will be required during the course of the Agreement, 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
- The schedule the Recipient 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 and develop a timetable for submitting the updated list, schedule and the copies of the permits. 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 and will be a topic at CPR meetings.
- If during the course of the Agreement additional permits become necessary, provide the appropriate information on each permit and an updated schedule to the Commission Agreement Manager.
- As permits are obtained, send a copy of each approved permit to the Commission Agreement Manager.
- If during the course of the Agreement permits are not obtained on time or are denied, notify the Commission Agreement Manager within 5 working days. Either of these events may trigger an additional CPR.

Products:

- Letter documenting the permits or stating that no permits are required
- A copy of each approved permit (if applicable)
- Updated list of permits as they change during the term of the Agreement (if applicable)
- Updated schedule for acquiring permits as changes occur during the term of the Agreement (if applicable)

Task 1.8 Obtain and Execute Subcontracts and Subgrant Agreements

The goal of this task is for Recipient to identify any subcontracts required to carry out the tasks under this Agreement and to procure them consistent with the terms and conditions of this Agreement and the Recipient'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 goal of this task is also for Recipient to also execute subgrant agreements for each project under this Agreement, and to execute them consistent with the proposed goals,

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objects and tasks of each project as described in Recipient's application and with the terms and conditions of this Agreement including any special terms and conditions and other provisions required to be flowed down to subgrantees.

The Recipient shall:

- Prepare a letter documenting the subcontracts required to conduct this Agreement, and submit it to the Commission Agreement Manager at least 2 working days prior to the kick-off meeting. If there are no subcontracts required at the start of this Agreement, then state such in the letter. If it is known at the beginning of the Agreement that subcontracts will be required during the course of the Agreement, provide in the letter:
 - A list of the subcontracts that describes the anticipated maximum budget and general scope of work for each,
 - A description of the procurement process to be used, and
 - The schedule the Recipient will follow in applying for and obtaining these subcontracts
- Submit a draft of each subcontract and subgrant agreement that will include a budget with the information required in the budget details to the Commission Agreement Manager for review and approval, and incorporate any changes recommended by the Commission Agreement Manager.
- Submit a final copy of each executed subcontract and subgrant agreement.

Products:

- Letter describing the subcontracts needed, or stating that no subcontracts are required
- Draft subcontracts and subgrant agreements
- Final subcontracts and subgrant agreements

1.9 Steps to Add Subgrantee

The goal of this task is to provide an optional procedure that enables the Energy Commission and Recipient to amend this Agreement consistent with any revised Notice of Proposed Awards which may allocate funding for a project proposed by the Recipient but not funded under the original Agreement.

The Recipient shall:

- Upon publication of any revised Notice of Proposed Awards, review and execute an amended Agreement proposed by the Commission.
- After execution of amended Agreement, Recipient shall carry out Task 1.8 to prepare a new subgrant agreement for the new project.

Products:

- Executed amended Agreement.

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- Draft and final subgrant agreements.

1.10 Review and Validate Subgrantee Invoices

The goal of this task to ensure that the Recipient is actively reviewing and validating all invoices submitted by any subgrantee for their compliance with the Payment of Funds provision (Terms and Conditions, Section 17.)

The Recipient shall:

- Review and validate all invoices for reimbursements from subgrantees for compliance with the Payment of Funds provisions in this Agreement.
- Confirm that subgrantee is meeting the match share requirements.

Products:

- Invoice accompanied by Recipient certification that the subgrantee invoice complies with all Payment of Funds provisions in this Agreement.

TECHNICAL TASKS

Each technical task is for a single subgrantee project. Subgrants executed by Recipient shall include sufficient detail as reflected in subgrantee's application to adequately reflect products proposed. Recipient will provide demonstration of deliverables identified in each of the subtasks identified here.

TASK 2 ELECTRIC VEHICLES INTERNATIONAL: RANGE-EXTENDED ELECTRIC VEHICLE SHUTTLE BUS DEMONSTRATION

The goal of this task is to successfully administer an agreement with Electric Vehicles International to build and demonstrate range-extended electric vehicle (REEV) shuttle buses. The agreement tasks should include at a minimum REEV shuttle bus design, assembly, and demonstration consistent with Electric Vehicles International's proposal submitted in the CALSTART California CLEAN Truck Demonstration Program.

The Recipient shall:

- Provide substantiation of the achievement of tasks in the project schedule in Electric Vehicles International's application as follows:
 - Design demonstration vehicle based on EVI's medium-duty REEV prototype and prepare and submit Vehicle Design Report
 - Assemble all component parts onto final demonstration vehicles and prepare and submit Vehicle Assembly report
 - Validate the design in the field under uncontrolled application conditions and prepare and submit a Demonstration Report

Products:

- Vehicle Design Report

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- Vehicle Assembly Report
- Demonstration Report

TASK 3 CATERPILLAR INC.: OFF-ROAD LARGE-SIZE HYBRID EXCAVATOR

The goal of this task is to successfully administer an agreement with Caterpillar Incorporated to demonstrate an off-road large-sized (36-ton class) hybrid excavator that captures kinetic and potential energy of the earthmoving implement system and reuses that energy to reduce fuel consumption, noise, and exhaust emissions. The agreement tasks should include at a minimum: Calibrating, tuning, and testing existing prototype excavators which have (Phase 1) swing energy recovery hybrid technology and (Phase 2) swing & boom recovery hybrid technology and integrating the results of into pre-commercial demonstration excavators for each hybrid technology system; building and shipping pre-commercial hybrid excavators for demonstration; field testing the demonstration excavators at California sites consistent with Caterpillar's proposal submitted in the CALSTART California CLEAN Truck Demonstration Program.

The Recipient shall:

- Provide substantiation of the achievement of tasks in the project schedule in Caterpillar's application as follows:
 - Conduct a comparative productivity test of Phase 1 demonstration machines and prepare and submit a Phase 1 comparative performance test report.
 - Submit a summary report of Phase 1 including commercial viability potential
 - Conduct a comparative productivity test of Phase 2 demonstration machines and prepare and submit a Phase 2 comparative performance test report.
 - Submit a summary report of Phase 2 including commercial viability potential

Products:

- Phase 1 Comparative Performance Test Report
- Phase 1 Summary Report
- Phase 2 Comparative Performance Test Report
- Phase 2 Summary Report

TASK 4 ODYNE SYSTEMS LLC: ADVANCED DIESEL PLUG-IN HYBRID ELECTRIC TRUCK

The goal of this task is to successfully administer an agreement with Odyne Systems LLC demonstrate advanced plug-in hybrid electric heavy-duty work trucks in several

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applications while testing different battery sizes matched to duty cycle. The agreement tasks should include at minimum optimizing energy management software, manufacturing and assembling plug-in hybrid electric modular systems, fuel and emission testing, recording diesel and electricity use, and surveying customer satisfaction consistent with Odyne Systems' proposal submitted in the CALSTART California CLEAN Truck Demonstration Program.

The Recipient shall:

- Provide substantiation of the achievement of tasks in the project schedule in Odyne Systems LLC application as follows:
 - Perform third party testing for fuel and emission reductions, and prepare and submit a report on the results
 - Collection and analysis of performance data from demonstration vehicles for inclusion in Final Report
 - Preparation and collection of customer feedback surveys to be summarized in a Customer Feedback Report.

Products:

- Third Party Emission and Fuel testing results report
- Customer Feedback Report

TASK 5 MOTIV POWER SYSTEMS: BATTERY-ELECTRIC TRUCK PILOT ON A TRADITIONAL TRUCK ASSEMBLY LINE

The goal of this task is to successfully administer an agreement with Motiv Power System to demonstrate battery-electric trucks with Motiv's all-electric powertrain and wireless real-time data collection. The agreement tasks should include at a minimum battery-electric vehicle assembly, and demonstration consistent with Motiv Power System's proposal submitted in the CALSTART California CLEAN Truck Demonstration Program.

The Recipient shall:

- Provide substantiation of the achievement of tasks in the project schedule in Motiv Power Systems application as follows:
 - Prepare a detailed production plan and submit a summary report
 - Test the demonstration vehicles prior to delivery and prepare and submit a post-assembly test document
 - Collect, analyze and summarize data collected during demonstration operation of vehicles and submit a field data report

Products:

- Summary of production plan
- Post-assembly test results
- Field data report

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**TASK 6 CATERPILLAR INC.: ELECTRIC DIESEL HYBRID MINI (5-TON)
HYDRAULIC EXCAVATOR**

The goal of this task is to successfully administer an agreement with Caterpillar Incorporated to demonstrate a fully developed, operational, and advanced technology electric diesel hybrid mini (5-ton) hydraulic excavator. The agreement tasks should include at a minimum testing, concept refinement, and limited production of demonstration machines consistent with Caterpillar Incorporated's proposal submitted in the CALSTART California CLEAN Truck Demonstration Program.

The Recipient shall:

- Provide substantiation of the achievement of tasks in the project schedule in Caterpillar's application as follows:
 - Analyze existing prototype unit acceptance testing and customer feedback reporting to determine design optimization upgrades
 - Optimize system design and build demonstration machines with enhanced/refined features and production intent components/design
 - Demonstrate technology by conducting acceptance/endurance testing with customer and prepare and submit a test data/customer feedback report

Products:

- Optimized demonstration machine design
- Testing Results and Data/Customer Feedback Report

**TASK 7 CITY AND COUNTY OF SAN FRANCISCO, AIRPORT COMMISSION: SFO
FUEL CELL BUS PROJECT**

The goal of this task is to successfully administer an agreement with the City and County of San Francisco, Airport Commission, to demonstrate an American Fuel Cell Bus. The agreement tasks should include at a minimum the fuel cell bus assembly and demonstration consistent with City and County of San Francisco, Airport Commission's proposal submitted in the CALSTART California CLEAN Truck Demonstration Program.

The Recipient shall:

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- Provide substantiation of the achievement of tasks in the project schedule in the City and Country of San Francisco, Airport Commission's application as follows:
 - Compile and update various aspects of the bus design, including but not limited to weight reduction, component space claim, vehicle component layout, maintainability and operability and prepare and submit design documentation
 - Put the bus in operation and compile 6, 12, and 18 month in-service reviews and performance reports

Products:

- Documentation to reflect updated bus design
- 6, 12, and 18 month in-service review and report

TASK 8 VOLVO TECHNOLOGY OF AMERICAS, INC.: HYBRID WHEEL LOADERS IN LANDFILL APPLICATIONS

The goal of this task is to successfully administer an agreement with Volvo Technology of America Incorporated to demonstrate Hybrid Wheel Loaders in landfill operations. The agreement tasks should include at a minimum emissions and fuel consumption evaluations, vehicle performance analysis, reliability and maintenance data collection, and user acceptance consistent with Volvo Technology's proposal submitted in the CALSTART California CLEAN Truck Demonstration Program.

The Recipient shall:

- Provide substantiation of the achievement of tasks in the project schedule in Volvo Technology of America's application as follows:
 - Prepare and submit a Field Operation Plan which includes a description of the technology to be demonstrated, demonstration sites, type of testing and monitoring performed and customer feedback mechanisms and method for reporting
 - Complete customer feedback survey to gauge customer satisfaction and prepare and submit results

Products:

- Field Operation Plan
- Customer Feedback Report

TASK 9 PROTERRA INC.: THE COMPARATIVE ANALYSIS OF BATTERY ELECTRIC BUSES IN VARYING TRANSIT APPLICATIONS PROJECT

The goal of this task is to successfully administer an agreement with Proterra, Inc. to demonstrate the viability of fast charge battery electric buses (with charge station) in the San Joaquin Valley operating environment to replace conventional diesel buses on a 1 to 1 conversion rate. The agreement tasks should include at a minimum design

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upgrade, manufacture and delivery of two fast charge buses and one fast charge station, and collection and comparison of pertinent operational data consistent with Proterra Inc.'s proposal submitted in the CALSTART California Clean Truck Demonstration Program.

The Recipient shall:

- Provide substantiation of the achievement of tasks in the project schedule in Proterra Inc.'s application as follows:
 - Upgrade design drawings and Bill of Materials based on prior prototype bus experience
 - Manufacture and deliver battery electric buses and deliver and install fast charge station to demonstration partner
 - Collect operational data on a daily basis, perform analysis and prepare and submit comprehensive project report

Products:

- Updated Bill of Materials and drawings
- Comprehensive Project Report

TASK 10 TRANSPORTATION POWER, INC.: ELECTRIC DRAYAGE DEMONSTRATION (EDD) PROJECT

The goal of this task is to successfully administer an agreement with Transportation Power, Inc., to demonstrate the reliability and performance of battery electric Class 8 trucks by placing them in trial service transporting containers at the Ports of Long Beach and Los Angeles. The agreements task should include at a minimum refining the drive system design based on prototype results, installation of drive systems into Class 8 vehicles, and data collection and analysis consistent with Transportation Power Inc.'s proposal submitted in the CALSTART California Clean Truck Demonstration Program.

The Recipient shall:

- Provide substantiation of the achievement of tasks in the project schedule in Transportation Power Inc.'s application as follows:
 - Upgrade design based on prior prototype truck experience
 - Manufacture and deliver 2 completed electric drayage trucks
 - Collect operational data, perform analysis and prepare and submit demonstration results report

Products:

- Updated integration drawings and procedures
- Comprehensive demonstration results report

GRANTS/CONTINGENT AWARD REQUEST



To: Grants and Loans Office

Date: May / 1 / 2012

Project Manager: Eric VanWinkle Phone Number: (916) 651-1235 ext.
Office: Emerging Fuels and Technology Office Division: Fuels and Transportation MS- 27
Project Title: California CLEAN Truck Demonstration Program

Type of Request: (check one)

New Agreement: (include items A-F from below) Agreement Number: ARV-11-014
Program: Alternative and Renewable Vehicles and Technologies Program (ARVFT)
Solicitation Name and/or Number: PON-10-603
Legal Name of Recipient: CALSTART, Inc.
Recipient's Full Mailing Address: 48 S. Chester Ave
Pasadena, CA 91106
Recipient's Project Officer: Bill Van Amburg Phone Number: (626) 744-5650 ext.
Agreement Start Date: June / 30 / 2012 Agreement End Date: March / 31 / 2016

Amendment: (Check all that apply) Agreement Number: _____
 Term Extension – New End Date: _____ / _____ / _____
 Work Statement Revision (include Item A from below)
 Budget Revision (include Item B from below)
 Change of Scope (include Items A – F as applicable from below)
 Other: (Specify) _____

ITEMS TO ATTACH WITH REQUEST:

- A. Work Statement
- B. Budget
- C. Recipient Resolution, if applicable. (Resolution may be requested in Special Conditions if not currently available.)
- D. Special Conditions, if applicable.
- E. CEQA Compliance Form
- F. Other Documents as applicable
 - Copy of Score Sheets
 - Copy of Pre-Award Correspondence
 - Copy of All Other Relevant Documents

California Environmental Quality Act (CEQA)

CEC finds, based on recipient's documentation in compliance with CEQA:
 Project exempt: Vehicle Demonstration NOE filed: _____ / _____ / _____
 Environmental Document prepared: _____ NOD filed: _____ / _____ / _____
 Other: _____
 CEC has made CEQA finding described in CEC-280, attached

Funding Information:

*Source #1: ARVFT Amount: \$ 14,469,304.00 Statute: _____ FY: 10/11 Budget List #: 601.118c
*Source #2: _____ Amount: \$ 0.00 Statute: _____ FY: _____ Budget List #: _____
*Source #3: _____ Amount: \$ 0.00 Statute: _____ FY: _____ Budget List #: _____

If federally funded, specify federal agreement number: _____
* Source Examples include ERPA, PIER-E, PIER-NG, FED, GRDA, ARVFT, OTHER.

Business Meeting Approval: (refer to Business Meeting Schedule)

Proposed Business Meeting Date: June / 13 / 2012 Consent Discussion
Business Meeting Participant: Eric VanWinkle Time Needed: 5 minutes

Agenda Notice Statement: (state purpose in layperson terms)

Possible approval of a Grant / Contingent Award to...
CalStart for \$14,469,304.00 to demonstrate 9 different types of vehicles included in the California CLEAN truck program, which is a state-wide portfolio of high-impact demonstration projects for advanced, alternative technology medium- and heavy-duty vehicles for near commercial on- and off-road applications.