

**CONTRACT REQUEST FORM (CRF)**

CEC-94 (Revised 01/13)

CALIFORNIA ENERGY COMMISSION

A) New Agreement 600-12-011 (To be completed by CGL Office)

B) Division	Agreement Manager:	MS-	Phone
600 Fuels and Transportation Division	Isaiah Larsen	27	916-653-6010

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

D) Title of Project
Electric Truck Pantograph Retrofit

E) Term and Amount	Start Date	End Date	Amount
	6 / 30 / 2013	3 / 31 / 2017	\$ 1,600,000

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	6 / 12 / 2013	<input type="checkbox"/> Consent	<input checked="" type="checkbox"/> Discussion
Business Meeting Presenter	Isaiah Larsen	Time Needed:	5 minutes
Please select one list serve. Altfuels (AB118- ARFVTP)			

Agenda Item Subject and Description
Possible approval of Agreement 600-12-011 with South Coast Air Quality Management District for a \$1,600,000 contract to retrofit five (5) Class 8 heavy duty electric trucks for use with the proprietary Siemens pantograph system.

G) California Environmental Quality Act (CEQA) Compliance
1. Is Agreement considered a "Project" under CEQA? <input type="checkbox"/> Yes (skip to question 2) <input checked="" 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 the electric truck retrofit project will not alter or affect the physical environment.
2. If Agreement is considered a "Project" under CEQA: <input 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 type="checkbox"/> Common Sense Exemption. 14 CCR 15061 (b) (3) Explain reason why Agreement is exempt under the above section: _____ <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
Siemens AG	\$ 1,600,000	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	\$ 0	<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:
TransPower
Volvo



J) Budget Information			
Funding Source	Funding Year of Appropriation	Budget List No.	Amount
ARFVTF	2011-2012		\$1,000,000
ARFVTF	2012-2013		\$600,000
Funding Source			\$
Funding Source			\$
Funding Source			\$
R&D Program Area:	Select Program Area	TOTAL:	\$1,600,000
Explanation for "Other" selection			
Reimbursement Contract #:		Federal Agreement #:	

K) Contractor's Administrator/ Officer				Contractor's Project Manager			
Name:	Nancy Cole			Name:	Joe Impullitti		
Address:	21865 Copley Drive			Address:	21865 Copley Drive		
City, State, Zip:	Diamond Bar, CA 91765			City, State, Zip:	Diamond Bar, CA 91765		
Phone:	909-396-2767	Fax:	- -	Phone:	909-396-2025	Fax:	909-396-3252
E-Mail:	ncole@aqmd.gov			E-Mail:	jimpullitti@aqmd.gov		

L) Selection Process Used (For amendments, address amendment exemption or NCB, do not identify solicitation type of original agreement.)			
<input type="checkbox"/>	Solicitation	Select Type	Solicitation #: - - # of Bids: Low Bid? <input type="checkbox"/> No <input type="checkbox"/> Yes
<input type="checkbox"/>	Non Competitive Bid (Attach CEC 96)		
<input checked="" type="checkbox"/>	Exempt Other Governmental Entity		

M) Contractor Entity Type	
<input type="checkbox"/>	Private Company (including non-profits)
<input type="checkbox"/>	CA State Agency (including UC and CSU)
<input checked="" type="checkbox"/>	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?		<input type="checkbox"/> No	<input type="checkbox"/> Yes
If yes, check appropriate box:		<input type="checkbox"/> SB	<input type="checkbox"/> MB <input type="checkbox"/> DVBE

O) Civil Service Considerations	
<input type="checkbox"/>	Not Applicable (Agreement is with a CA State Entity or a membership/co-sponsorship)
<input type="checkbox"/>	Public Resources Code 25620, et seq., authorizes the Commission to contract for the subject work. (PIER)
<input checked="" type="checkbox"/>	The Services Contracted: <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> are not available within civil service</li> <li><input type="checkbox"/> cannot be performed satisfactorily by civil service employees</li> <li><input checked="" type="checkbox"/> are of such a highly specialized or technical nature that the expert knowledge, expertise, and ability are not available through the civil service system.</li> </ul>
<input type="checkbox"/>	The Services are of such an: <ul style="list-style-type: none"> <li><input type="checkbox"/> urgent</li> <li><input type="checkbox"/> temporary, or</li> <li><input type="checkbox"/> occasional nature</li> </ul> that the delay to implement under civil service would frustrate their very purpose.
<b>Justification:</b>	
South Coast Air Quality Management District (SCAQMD) has the requisite expertise to manage the electric truck pantograph retrofit project since they are the primary proponent of the concept. SCAQMD has been in close contact with Siemens and project partners to coordinate work efforts and ensure the project proceeds in a timely manner. As the administrator of the project, SCAQMD is best suited to manage all aspects of the project and ensure a successful outcome.	

P) Payment Method	
<input checked="" type="checkbox"/>	A. Reimbursement in arrears based on: <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Itemized Monthly</li> <li><input type="checkbox"/> Itemized Quarterly</li> <li><input type="checkbox"/> Flat Rate</li> <li><input type="checkbox"/> One-time</li> </ul>
<input type="checkbox"/>	B. Advanced Payment
<input type="checkbox"/>	C. Other, explain:

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**Q) Retention**

1. Is Agreement subject to retention?  No  Yes  
 If Yes, Will retention be released prior to Agreement termination?  No  Yes

**R) Justification of Rates****S) Disabled Veteran Business Enterprise Program (DVBE)**

1.  Exempt (Interagency/Other Government Entity)  
 2.  Meets DVBE Requirements DVBE Amount:\$ 0 DVBE %: \_\_\_\_\_  
 Contractor is Certified DVBE  
 Contractor is Subcontracting with a DVBE: Name of DVBE Company  
 3.  Contractor selected through CMAS or MSA with no DVBE participation.  
 4.  Requesting DVBE Exemption (attach CEC 95)

**T) Miscellaneous Agreement Information**

1. Will there be Work Authorizations?  No  Yes  
 2. Is the Contractor providing confidential information?  No  Yes  
 3. Is the contractor going to purchase equipment?  No  Yes  
 4. Check frequency of progress reports  
 Monthly  Quarterly  Other... \_\_\_\_\_  
 5. Will a final report be required?  No  Yes  
 6. Is the Agreement, with amendments, longer than a year? If yes, why?  No  Yes

**U) The following items should be attached to this CRF (as applicable)**

- |   |   |  |
|---|---|--|
| 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 checked="" type="checkbox"/> N/A | <input 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

## Exhibit A – Scope of Work ELECTRIC TRUCK PANTOGRAPH RETROFIT PROJECT

### TECHNICAL TASK LIST

Task #	CPR	Task Name
1.0		Administration
2.0	X	Interface Adaptation of Pantograph for Different Truck Types (Mechanical, Electrical & Communication)
3.0		Manufacturing, Assembly And Shipment of Pantographs for Different Truck Types
4.0		Integration of Pantographs for Different Truck Types (Testing And Materials)
5.0		UL Certification of Pantographs
6.0		Data Collection and Analysis

### KEY NAME LIST

Task #	Key Personnel	Key Subcontractor(s)	Key Partner(s)
1.0	Joseph Impullitti-SCAQMD	Siemens	
2.0	Martin Birkner-Siemens	Siemens	Volvo, Transpower
3.0	Martin Birkner-Siemens	Siemens	
4.0	Martin Birkner-Siemens	Siemens	Volvo, Transpower
5.0	Martin Birkner-Siemens	Siemens	Volvo, TransPower
6.0	Martin Birkner-Siemens	Siemens	Volvo, Transpower

### GLOSSARY

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

Term/ Acronym	Definition
ARFVTP	Alternative and Renewable Vehicle and Technology Program
CAM	Commission Agreement Manager
CPR	Critical Project Review
Energy Commission	California Energy Commission
FTD	Fuels and Transportation Division
Recipient	
SCAQMD	South Coast Air Quality Management District

<b>Term/ Acronym</b>	<b>Definition</b>
SCAG	Southern California Association of Governments
SJVAPCD	San Joaquin Valley Air Pollution Control District
CARB	California Air Resource Board

## **BACKGROUND**

*Assembly Bill 118 (Núñez, Chapter 750, Statutes of 2007), created the Alternative and Renewable Fuel and Vehicle Technology (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;*
- *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.*

This project will initiate the development and demonstration of an electric truck pantograph retrofit which will facilitate the eventual demonstration of a zero emissions goods movement transportation system along the I-710 corridor.

### **Problem Statement:**

Despite major advances in emissions performance, heavy duty diesel trucks operating in dense urban areas continue to face pressure to achieve lower emission operation. The SCAQMD has identified the development and deployment of zero emissions goods movement transportation systems as one of the agency's top priorities in order to attain federal air quality standards. Zero emission transportation and goods movement technologies are also being proposed in SCAG's 2012 Goods Movement Appendix to the Regional Transportation Plan as well as the joint CARB, SCAQMD and SJVAPCD

Vision for Clean Air: A Framework for Air Quality and Climate Planning. Zero emission truck lanes are also being considered for the I-710 freeway expansion, which is an approximately 20 mile north-south trade corridor.

**Goals of the Agreement:**

The goal of this Agreement is to promote the implementation of zero emission goods movement technologies, and the secondary goal is to demonstrate the most viable technology to be adopted for a future, regional zero-emissions corridor.

The Electric Truck Pantograph Retrofit Project is designed to achieve the following goal in building a zero emissions goods movement transportation system:

Five (5) adaptable pantographs suitable for use on roads electrified via overhead catenary as well as on non-electrified roads to be provided to Volvo, TransPower and one other vehicle integrator of AQMD's choice.

**Objectives of the Agreement:**

The objectives of this Agreement are to execute a contract with Siemens Industries to design vehicle electrical systems, manufacture electrical and electronic modules and components for the integration of pantographs into a variety of hybrid and electric vehicle architectures. To develop and test the pantograph systems in the laboratory and to facilitate the eventual connection to a catenary system on a test track; to facilitate the eventual demonstration of vehicles and pantograph systems in a real world drayage operations on a catenary system.

**TASK 1 ADMINISTRATION**

**Task 1.1 Attend Kick-off Meeting**

The goal of this task is to establish the lines of communication and procedures for implementing this Agreement. The CAM shall designate the date and location of this meeting and provide an agenda to the Recipient prior to the meeting.

**The Recipient shall:**

- Attend a "Kick-Off" meeting with the CAM (CAM), the Grants Officer, and a representative of the Accounting Office. The Recipient shall bring its Project Manager, Agreement Administrator, Accounting Officer, and others designated by the CAM to this meeting.
- Discuss the following administrative and technical aspects of this Agreement:
  - Agreement Terms and Conditions
  - Critical Project Review (Task 1.2)
  - Match fund documentation (Task 1.6) No reimbursable work may be done until this documentation is in place.
  - Permit documentation (Task 1.7)
  - subcontracts needed to carry out project (Task 1.8)

- The CAM's expectations for accomplishing tasks described in the Scope of Work
- An updated Schedule of Products and Due Dates
- Monthly Progress Reports (Task 1.4)
- Technical Products (Product Guidelines located in Section 5 of the Terms and Conditions)
- Final Report (Task 1.5)

**Recipient Products:**

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

**CAM Product:**

- Kick-Off Meeting Agenda

**Task 1.2 Critical Project Review (CPR) Meetings**

CPRs provide the opportunity for frank discussions between the Energy Commission and the Recipient. The goal of this task is to determine if the project should continue to receive Energy Commission funding to complete this Agreement and to identify any needed modifications to the tasks, products, schedule or budget.

The CAM may schedule CPR meetings as necessary, and meeting costs will be borne by the Recipient.

Meeting participants include the CAM and the Recipient and may include the Energy Commission Grants Officer, the Fuels and Transportation Division (FTD) natural gas fuel lead, other Energy Commission staff and Management as well as other individuals selected by the CAM to provide support to the Energy Commission.

**The CAM 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. Prepare a schedule for providing the written determination described below.

- Determine whether to continue the project, 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 CAM concludes that satisfactory progress is not being made, this conclusion will be referred to the Lead Commissioner for Transportation for his or her concurrence.
- 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 CAM 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.

**CAM 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 Energy Commission Grants Office Officer, and the CAM. 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 CAM.

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, and recommendations for improvements. The CAM will determine the appropriate meeting participants.

The administrative portion of the meeting shall be a discussion with the CAM 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 objectives of this Agreement on time and within budget.

The objectives of this task are to summarize activities performed 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.

**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 CAM within 10 days of the end of the reporting period. The recommended specifications for each progress report are contained in Section 6 of the Terms and Conditions of this Agreement.

- 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

**Task 1.5 Final Report**

The goal of the Final Report is to assess the project's success in achieving the Agreement's 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 purpose, approach, activities performed, results, and advancements in science and technology; to present a public assessment of the success of the project 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.

**The Recipient shall:**

- Prepare an Outline of the Final Report, if requested by the CAM.
- Prepare a Final Report following the latest version of the Final Report guidelines which will be provided by the CAM. The CAM 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:**

- Outline of the Final Report, if requested
- 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 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 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 can incur any costs for which the Recipient will request reimbursement.

### **The Recipient shall:**

- Prepare a letter documenting the match funding committed to this Agreement and submit it to the CAM 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 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 CAM if during the course of the Agreement additional match funds are received.

- Notify the CAM 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 meeting.

**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 CAM at least 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 CAM.

- As permits are obtained, send a copy of each approved permit to the CAM.
- If during the course of the Agreement permits are not obtained on time or are denied, notify the CAM 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**

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 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 Recipient shall:**

- Manage and coordinate subcontractor activities.
- Submit a draft of each subcontract required to conduct the work under this Agreement to the CAM for review.
- Submit a final copy of the executed subcontract.
- If Recipient decides to add new subcontractors, then the Recipient shall notify the CAM.

**Products:**

- Draft subcontracts
- Final subcontracts

**TECHNICAL TASKS**

**TASK 2.0 INTERFACE ADAPTATION OF PANTOGRAPH FOR DIFFERENT TRUCK TYPES (MECHANICAL, ELECTRICAL & COMMUNICATION)**

The goal of this task is to adapt the pantograph design, both for general US requirements and to the individual requirements of each truck type to be used in the project.

**The Recipient shall:**

For the first Volvo Vehicle, TransPower CNG Vehicle, TransPower Battery Vehicle, TBD Vehicle and Second Volvo Vehicle:

- Make the mechanical adaptations.
- Make the pneumatic adaptations.
- Make the electric adaptations.
- Make the communication adaptations.

**Products:**

- Documentation of the final adaptations performed for each pantograph system.

**[CPR will occur during this Task. See Task 1.2 for details.]**

**TASK 3.0 MANUFACTURING, ASSEMBLY AND SHIPMENT OF PANTOGRAPHS FOR DIFFERENT TRUCK TYPES**

The goal of this task is to produce and deliver the pantographs for five vehicles.

**The Recipient shall:**

For the first Volvo Vehicle, TransPower CNG Vehicle, TransPower Battery Vehicle, TBD Vehicle and Second Volvo Vehicle:

- Procure the necessary materials
- Produce the necessary components
- Assemble the complete pantographs
- Ship the completed pantographs

**Products:**

- Documentation of final assembly and shipment of each completed pantograph.

**TASK 4.0 INTEGRATION OF PANTOGRAPHS FOR DIFFERENT TRUCK TYPES (TESTING AND MATERIALS)**

The goal of this task is to integrate the pantographs onto the different truck types, enabling them to be supplied with electric power on the catenary infrastructure.

**The Recipient shall:**

For the first Volvo Vehicle, TransPower CNG Vehicle, TransPower Battery Vehicle, TBD Vehicle and Second Volvo Vehicle:

- Obtain necessary material for integration tests
- Conduct integration tests of the pantograph systems

**Products:**

- Results of integration tests for each pantograph system

## **TASK 5.0 UL CERTIFICATION OF PANTOGRAPHS**

The goal of this task is to have the pantographs certified by UL and allow the vehicles to be homologated for use on public roads in the United States.

### **The Recipient shall:**

For the first Volvo Vehicle, TransPower CNG Vehicle, TransPower Battery Vehicle, TBD Vehicle and Second Volvo Vehicle:

- Ensure a general UL certification for the pantographs to be used on US road vehicles. This effort involves, but is not limited to, material changes to steel plating or cabling and safety features such as isolation and steering as well as the external advisory services of homologation consultants

### **Products:**

- Documentation of UL certification for each pantograph system

## **Task 6.0 DATA COLLECTION AND ANALYSIS**

The goal of this task is to collect operational data from the project, to analyze that data for economic and environmental impacts, and to include the data and analysis in the Final Report.

### **The Recipient shall:**

- Develop data collection test plan.
- Troubleshoot any issues identified.
- Collect 6 months of throughput, usage, and operations data from the project including, but not limited to:
  - Specific jobs and economic development resulting from this project
- Describe any energy efficiency measures used in the facility that may exceed Title 24 standards in Part 6 of the California Code Regulations.
- Provide data on potential job creation, economic development, and increased state revenue as a result of expected future expansion.
- 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.

### **Products:**

- Data collection information and analysis will be included in the Final Report