

**GRANT REQUEST FORM (GRF)**

CEC-270 (Revised 02/13)

CALIFORNIA ENERGY COMMISSION

New Agreement ARV-14-053 (To be completed by CGL Office)

Division	Agreement Manager:	MS-	Phone
600 Fuels and Transportation Division	Larry Rillera	27	916-651-6178

Recipient's Legal Name	Federal ID Number
Transportation Power, Inc.	27-355766

Title of Project
Advanced Battery-Electric Port Vehicles

Term and Amount	Start Date	End Date	Amount
	6 / 1 / 2015	5 / 31 / 2019	\$ 3,000,000

**Business Meeting Information**
 ARFVTP agreements under \$75K delegated to Executive Director.

Proposed Business Meeting Date	5 / 13 / 2015	<input type="checkbox"/> Consent	<input checked="" type="checkbox"/> Discussion
Business Meeting Presenter	Larry Rillera	Time Needed:	5 minutes

Please select one list serve. Altfuels (AB118- ARFVTP)**Agenda Item Subject and Description**

Proposed resolution approving Agreement ARV-14-053 with Transportation Power, Inc. for a \$3,000,000 grant to conduct an advanced battery-electric port vehicles demonstration project.

**California Environmental Quality Act (CEQA) Compliance**

1. Is Agreement considered a "Project" under CEQA?  
 Yes (skip to question 2)  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:  
 a) Agreement **IS** exempt. (Attach draft NOE)  
 Statutory Exemption. List PRC and/or CCR section number:  
 Categorical Exemption. List CCR 14 CCR 15306 Information Collection section number:  
 Common Sense Exemption. 14 CCR 15061 (b) (3)  
 Explain reason why Agreement is exempt under the above section:  
 The repowering of existing diesel fueled dryage trucks, yard tractors, and reach stackers to all electric drive systems will occur at an existing vehicle technology provider facility. The project will eliminate the use of existing fossil fueled vehicles and will instead use near-zero emission vehicles for demonstration and information collection. The project will not cause either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment because this a demonstration and information collection project.
- b) Agreement **IS NOT** 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 |   |

**List all subcontractors (major and minor) and equipment vendors: (attach additional sheets as necessary)**

Legal Company Name:	Budget
See Attached Sheet	\$
	\$
	\$

**List all key partners: (attach additional sheets as necessary)**

Legal Company Name:
Dole Fresh Fruit Co.
BAE Systems

**GRANT REQUEST FORM (GRF)**

<b>Budget Information</b>			
Funding Source	Funding Year of Appropriation	Budget List No.	Amount
ARFVTF	13/14	601.118F	\$3,000,000
Funding Source			\$
R&D Program Area:	Select Program Area	TOTAL:	\$3,000,000
Explanation for "Other" selection			
Reimbursement Contract #:		Federal Agreement #:	

<b>Recipient's Administrator/ Officer</b>				<b>Recipient's Project Manager</b>			
Name:	Mike Simon			Name:	James Burns		
Address:	13000 Danielson Street, Suite D			Address:	13000 Danielson Street, Suite D		
City, State, Zip:	Poway, CA 92064			City, State, Zip:	Poway, CA 92064		
Phone:	858-248-4255	Fax:	858-408-7457	Phone:	858-248-4359	Fax:	858-408-7457
E-Mail:	mike@transpowerusa.com			E-Mail:	jim@transpowerusa.com		

<b>Selection Process Used</b>	
<input checked="" type="checkbox"/> Competitive Solicitation	Solicitation #: PON-14-605
<input type="checkbox"/> First Come First Served Solicitation	

<b>The following items should be attached to this GRF</b>			
1. Exhibit A, Scope of Work		<input checked="" type="checkbox"/>	Attached
2. Exhibit B, Budget Detail		<input checked="" type="checkbox"/>	Attached
3. CEC 105, Questionnaire for Identifying Conflicts		<input checked="" type="checkbox"/>	Attached
4. Recipient Resolution		<input checked="" type="checkbox"/> N/A	<input type="checkbox"/> Attached
5. CEQA Documentation		<input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Attached

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 Agreement Manager

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 Date

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 Office Manager

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 Date

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 Deputy Director

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 Date

## Subcontractors

1. EPC Power Corp

\$75,000 CEC

\$35,000 Match

2. CarbonBLU

\$50,000 CEC

\$20,000 Match

**Exhibit A  
SCOPE OF WORK**

**TECHNICAL TASK LIST**

<b>Task #</b>	<b>CPR</b>	<b>Task Name</b>
1		Administration
2		Design
3		Procurement
4		Subsystem Assembly
5	X	Integration
6		Commissioning
7		Deployment
8		Outreach
9		Data Collection and Analysis

**KEY NAME LIST**

<b>Task #</b>	<b>Key Personnel</b>	<b>Key Subcontractor(s)</b>	<b>Key Partner(s)</b>
1	Dr. James Burns, Michael Simon	-	-
2	Dr. Paul Scott	-	-
3	-	-	Navistar, Cargotec
4	Harold Meyer	-	-
5	Frank Falcone	-	-
6	Ameya Jathar	-	-
7	Joshua Goldman	-	BAE Systems, Dole Fresh Fruit Co., Terminalift
8	Michael Simon	CarbonBLU	BAE Systems, Dole Fresh Fruit Co., Terminalift
9	Dr. James Burns	CarbonBLU	BAE Systems, Dole Fresh Fruit Co., Terminalift

## GLOSSARY

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

<b>Term/ Acronym</b>	<b>Definition</b>
ABEPV	Advanced Battery-Electric Port Vehicles
ARFVTP	Alternative and Renewable Fuel and Vehicle Technology Program
BMS	Battery Management System
CAM	Commission Agreement Manager
CPR	Critical Project Review
DR	Deployment Report
FTD	Fuels and Transportation Division
ICU	Inverter-Charger Unit
Recipient	Transportation Power, Inc. or TransPower
SCR	Subsystem Completion Report

## BACKGROUND

Assembly Bill (AB) 118 (Núñez, Chapter 750, Statutes of 2007), created the Alternative and Renewable Fuel and Vehicle Technology Program (ARFVTP). The statute 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, clean air, and alternative energy policies. AB 8 (Perea, Chapter 401, Statutes of 2013) re-authorizes the ARFVTP through January 1, 2024. The ARFVTP has an annual budget of approximately \$100 million and provides financial support for projects that:

- Reduce California's use and dependence on petroleum transportation fuels and increase the use of alternative and renewable fuels and advanced vehicle technologies.
- Produce sustainable alternative and renewable low-carbon fuels in California.
- Expand alternative fueling infrastructure and fueling stations.
- Improve the efficiency, performance and market viability of alternative light-, medium-, and heavy-duty vehicle technologies.
- Retrofit medium- and heavy-duty on-road and non-road vehicle fleets to alternative technologies or fuel use.

- Expand the alternative fueling infrastructure available to existing fleets, public transit, and transportation corridors.
- Establish workforce training programs and conduct public outreach on the benefits of alternative transportation fuels and vehicle technologies.

The Energy Commission issued Solicitation PON-14-605 entitled “Medium- and Heavy-Duty Advanced Vehicle Technology Demonstration” under the ARFVTP on December 19, 2014. This competitive grant solicitation was an offer to cost share the development of truck demonstrations. To be eligible for funding under PON-14-605, the projects must also be consistent with the Energy Commission’s ARFVTP Investment Plan as updated annually. In response to PON-14-605, the Recipient submitted Application #04 which was proposed for funding in the Energy Commission’s Notice of Proposed Awards on March 24, 2015. PON-14-605 is hereby incorporated by reference into this Agreement in its entirety.

In the event of any conflict or inconsistency between the terms of the Solicitation and the terms of the Recipient’s Application, the Solicitation shall control. In the event of any conflict or inconsistency between the Recipient’s Application and the terms of the Energy Commission’s Award, the Energy Commission’s Award shall control. Similarly, in the event of any conflict or inconsistency between the terms of this Agreement and the Recipient’s Application, the terms of this Agreement shall control.

**Problem Statement:**

Port vehicles, such as heavy-duty drayage trucks, yard tractors, and reach stackers are commonly used at warehouses, distribution centers, ports, rail yards, and other commercial and industrial locations around the world and are high petroleum consumers and high pollution emitters. Because these sites are usually embedded within large populations and/or within disadvantaged communities, the yard tractors have a disproportionate negative effect on the health and welfare of thousands of individuals.

This project, the Advanced Battery-Electric Port Vehicles (ABEPV), addresses this problem by utilizing battery-electric drive systems to power such yard tractors, thus eliminating petroleum consumption and emissions at the point of operation. Battery-electric powers is an ideal solution for heavy-duty drayage trucks, yard tractors, and reach stackers, but its widespread use in such applications has been hindered by a variety of barriers, unresolved issues, and knowledge gaps in science and technology, marketing, and costs.

**Goals of the Agreement:**

The goals of this Agreement are to:

- Demonstrate TransPower’s electric drayage truck and yard tractor technologies.
- Refine reach stacker technologies.

- Enable improvements in TransPower's ElecTruck™ battery-electric drive system using new lithium-iron phosphate battery technology.
- Demonstrate these vehicles at the Port of San Diego with significant fleet partners; and
- Broaden the visibility of the demonstration and project results.

**Objectives of the Agreement:**

The objectives of this Agreement are to demonstrate:

- Reduced cost of manufacturing electric trucks and yard tractors, measured by number of labor hours required to manufacture the vehicles, average cost per hour, and material costs.
- Load-carrying capability equivalent to the most capable drayage trucks and yard tractors (up to about 130,000 lb. of gross vehicle weight towing capacity).
- Increased operating range, targeted at up to 150 miles for loaded drayage trucks and up to 24 hours of continuous use for yard tractors. Reach stacker range to be extended from two hours of continuous use to ten hours of continuous use.
- Availability levels and mean times between failures comparable to those of conventional diesel trucks and yard tractors.
- Energy cost savings, measured as the cost of electricity used to recharge the trucks and tractors deducted from the cost of fuel that would have been incurred to do the same work with diesel trucks and tractors.
- Significant emissions benefits, measured as the amount of greenhouse gases and criteria pollutants that would have been produced with diesel trucks and tractors performing equivalent work.
- Significant displacement of fossil fuels, measured as the amount of fuel that would have been used by diesel trucks and tractors performing equivalent work.
- Overall customer satisfaction with the electric drayage trucks, yard tractors, and reach stacker.

**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 Commission Agreement Manager (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, the Commission Agreement Officer (CAO), and a representative of the Energy Commission Accounting Office. The Recipient shall bring their Project Manager, Agreement Administrator, Accounting Officer, and any others determined necessary by the Recipient or specifically requested 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

**Commission Agreement Manager 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 Commission Agreement Officer, the Fuels and Transportation Division (FTD) program 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 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, 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 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 Commission Agreement Manager 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 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, and 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 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 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 Commission Agreement Manager 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 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)
- A copy of each final approved permit (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 Commission Agreement Manager 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 DESIGN**

The goals of this task are to design an upgraded energy storage subsystem and to improve the ElecTruck™ drayage truck and yard tractor designs.

**The Recipient shall:**

- Design new battery enclosures, battery management system (BMS) interfaces, and cell connection methods to accommodate cylindrical 60290 cells within the ElecTruck™ energy storage subsystem for electric drayage trucks and yard tractors.
- Review the performance of existing prototype electric drayage trucks and yard tractors and identify additional incremental design changes that could enhance performance.
- Review operating requirements and desired yard tractor specifications provided by the ABEPV fleet operators and identify any drive system design changes required to accommodate their needs.
- Document new designs and projected benefits of the design changes. The Recipient shall prepare summary of design changes and benefits.

**Products:**

- Summary Report

**TASK 3 PROCUREMENT**

The goal of this task is to acquire two diesel-powered drayage trucks and two diesel-powered yard tractors to be repowered with electric drive systems

**The Recipient shall:**

- Work with fleet operator partners to define specifications for vehicle procurements.
- Submit truck and yard tractor orders to vendors reflecting the specifications generated in consultation with the fleet operators.
- Negotiate prices and payment terms with vendors.

**Products:**

- Specifications List

**TASK 4 SUBSYSTEM ASSEMBLY**

The goal of this task is to build each of the major subsystems to be installed into the four drayage trucks and yard tractors to be converted to electric drive, and into the reach stacker to be retrofitted with advanced batteries.

**The Recipient shall:**

- Procure all materials required to build and install subsystems for the demonstration vehicles.
- Assemble ElecTruck™ subsystems, including motive drive, energy storage, and power control and accessory.
- When necessary perform basic subsystem and component-level bench-testing to assure proper functionality.
- Store completed subsystems in inventory until needed for truck and yard tractor installation.
- Prepare a Subsystem Completion Report upon completing assembly of the subsystems.

**Products:**

- Subsystem Completion Report

**TASK 5 INTEGRATION**

The goals of this task are to: 1) install ElecTruck™ drive systems into the four drayage trucks and yard tractors; 2) upgrade battery and charging subsystems into the reach stacker; and 3) validate the updated design concepts developed under Task 2

**The Recipient shall:**

- Remove the engines, transmissions, and components from the trucks and yard tractors and sell them, reinvesting the proceeds from the sales as cost sharing.
- Remove existing batteries from the reach stacker.
- Install ElecTruck™ subsystems, components, and parts into the first truck and yard tractor.
- Identify and document lessons learned during integration of the first truck and yard tractor, and modify drive system packaging and installation procedures as appropriate.

- Install ElecTruck™ subsystems, components, and parts into the four trucks and yard tractors.
- Install upgraded batteries and inverter-charger unit (ICU) into the reach stacker.
- Prepare summary of integration issues and the amount of the proceeds from the sale of removed engines, transmissions, and components.

**Products:**

- Summary Report

**[CPR WILL BE HELD IN THIS TASK. See Task 1.2 for details]**

**TASK 6 COMMISSIONING**

The goal of this task is to commission the two converted trucks, two converted yard tractors, and one upgraded reach stacker, and prepare them for delivery to fleet operator partners.

**The Recipient shall:**

- Validate basic functionality of each vehicle before attempting test drives.
- Perform test driving of each vehicle, monitoring and optimizing ElecTruck™ subsystems, components, and parts throughout the process.
- Validate that each vehicle performs safely and reliably prior to delivering it to its intended fleet operator.
- Prepare summary of commissioning for each tractor.

**Products:**

- Summary Report

**TASK 7 DEPLOYMENT**

The goals of this task are to: 1) complete all preparations at the fleet operator sites required for support of the trucks, yard tractors, and reach stacker; 2) deliver the trucks and tractors to the fleet operator partners; and 3) train each fleet operator's personnel on how to operate and maintain the vehicles.

**The Recipient shall:**

- Assist fleet operators in installing the electrical service required for truck and yard tractor battery charging.
- Deliver trucks and yard tractors to fleet operator partners.
- Train fleet personnel on operation and maintenance of the trucks and tractors.

- Supervise initial test driving of trucks and tractors at each site and adjust electric drive settings as required to achieve acceleration and other performance characteristics desired by each fleet operator.
- Prepare a Deployment Report following the deployment of each vehicle including photos and identification of issues generated during deployment.

**Products:**

- Deployment Report

**TASK 8 OUTREACH**

The goal of this task is to promote electric yard tractors and components through outreach and information sharing to fleet owner/operators.

**The Recipient shall:**

- Continuously update its Business Plan.
- Promote yard tractor products demonstrated under this project including:
  - Presentations at trade shows and technical symposia.
  - Maintenance of a state-of-the-art website and digital media campaign.
  - Direct outreach to major vehicle fleet owners and operators.
  - Demonstration of components and vehicles at trade shows and other industry events involving exhibits.
  - Issuance of news releases.
  - Distribution of product literature.
  - Advertising in industry publications.

**Products:**

- Business Plan
- Presentation Materials

**TASK 9 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 effects, 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:
  - Maximum capacity of the new fueling system
  - Gallons of gasoline and/or diesel fuel displaced (with associated mileage information)
  - Expected air emissions reduction, for example:
    - Non-methane hydrocarbons
    - Oxides of nitrogen
    - Non-methane hydrocarbons plus oxides of nitrogen
    - Particulate Matter
    - Formaldehyde
  - Duty cycle of the current fleet and the expected duty cycle of future vehicle acquisitions
  - Specific jobs and economic development resulting from this project
- Identify any current and planned use of renewable energy at the facility.
- Identify the source of the alternative fuel.
- 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.
- Collect data, information, and analysis described above and include in the Final Report.

**Products:**

- Data collection information and analysis will be included in the Final Report (see Task 1.5)

STATE OF CALIFORNIA

STATE ENERGY RESOURCES  
CONSERVATION AND DEVELOPMENT COMMISSION

RESOLUTION - RE: TRANSPORTATION POWER, INC.

**RESOLVED**, that the State Energy Resources Conservation and Development Commission (Energy Commission) adopts the staff CEQA findings contained in the Agreement Request Form; and

**RESOLVED**, that the Energy Commission approves Agreement ARV-14-053 from PON-14-605 with **Transportation Power, Inc.** for a **\$3,000,000** grant to demonstrate a Class 8 advanced battery-electric truck in disadvantaged communities at the Port of San Diego; and

**FURTHER BE IT RESOLVED**, that the Executive Director or his/her designee shall execute the same 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 13, 2015.

AYE: [List of Commissioners]

NAY: [List of Commissioners]

ABSENT: [List of Commissioners]

ABSTAIN: [List of Commissioners]

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Harriet Kallemeyn,  
Secretariat