



Item 1a

STATE OF CALIFORNIA

GRANT AMENDMENT REQUEST FORM (GARF)

CEC-277 (Revised 10/2019)

CALIFORNIA ENERGY COMMISSION

Original Agreement # ARV-16-025 Amendment # 2

| Division | Agreement Manager: | MS- | Phone |
|---------------------------------------|--------------------|-----|--------------|
| 600 Fuels and Transportation Division | Alex Wan | 27 | 916-654-4880 |

| Recipient's Legal Name | Federal ID Number |
|---|-------------------|
| South Coast Air Quality Management District | 95-3099419 |

| Revisions: (check all that apply) | Additional Requirements |
|--|--|
| <input checked="" type="checkbox"/> Term Extension: New End Date: 06 / 30 / 2022 | Include revised schedule and complete items A, B, C, & F below. |
| <input type="checkbox"/> Budget Augmentation: Amendment Amount: \$ 0 | Include revised budget and complete items A, B, C, D, & F below. |
| <input checked="" type="checkbox"/> Budget Reallocation | Include revised budget and complete items A, B, C, & F below. |
| <input checked="" type="checkbox"/> Scope of Work Revision | Include revised scope of work and complete items A, B, C, E, & F below. |
| <input type="checkbox"/> Change in Project Location or Demonstration Site | Include revised scope of work and complete items A, B, C, E, & F below. |
| <input type="checkbox"/> Novation/Name Change of Prime Contractor/Recipient | Include novation documentation and complete items A, B, C, & F below. |
| <input checked="" type="checkbox"/> Terms and Conditions Modification | Include applicable exhibits with bold/underline/strikeout and complete items A, B, C, & F below. |

A) Business Meeting Information

Business Meeting approval is not required for the following types of Agreements:

Minor amendments delegated to Executive Director per December 2013 Resolution

Proposed Business Meeting Date 11 / 13 / 2019 Consent Discussion

Business Meeting Presenter Alex Wan Time Needed: 5 minutes

Please select one list serve. Altfuels (AB118-ARFVTP)

Agenda Item Subject and Description:

Proposed resolution approving Amendment 2 to Grant ARV-16-025 with the South Coast Air Quality Management District to extend the agreement by 13 months, reallocate its budget, replace a subcontractor, and modify its Scope of Work and terms and conditions, and adopting staff's determination that this action is exempt from CEQA.

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

| Legal Company Name: | Budget |
|---------------------|---------|
| See attached | \$ 0.00 |
| | \$ 0.00 |
| | \$ 0.00 |

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

| Legal Company Name: |
|-------------------------------|
| Total Transportation Services |
| Mayor Logistics Inc. |

D) Budget Information (only include amendment amount information)

| Funding Source | Funding Year of Appropriation | Budget List No. | Amount |
|----------------|-------------------------------|-----------------|--------|
| Funding Source | | | \$ |

R&D Program Area: Select Program Area TOTAL: \$

Explanation for "Other" selection



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Reimbursement Contract #: Federal Agreement #:

E) 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.

Statutory Exemption. List PRC and/or CCR section number:

Categorical Exemption. List CCR section number:
Cal. Code Regs., tit. 14, § 15301 "Existing Facilities"

Cal. Code Regs., tit. 14, § 15303 "New Construction or Conversion of Small Structures"

Cal. Code Regs., tit. 14, § 15304 "Minor Alterations to Land"

Cal. Code Regs., tit. 14, § 15306 "Data Collection"

Common Sense Exemption. 14 CCR 15061 (b) (3)

Explain reason why Agreement is exempt under the above section:

The Energy Commission made CEQA findings pertaining to this project, including finding that it was categorically exempt under 14 CCR sections 15301, 15303, 15304, and 15306, when the project was originally approved by the Commission on May 10, 2017. The changes proposed by this amendment are to build and demonstrate four fuel cell electric vehicles instead of one electric vehicle and three natural gas plug-in hybrid vehicles.

Other aspects of the project will remain unchanged, including building and demonstrating 20 near-zero emission low-NOx natural gas trucks; building and demonstrating an electric top handler; demonstrating wireless electric vehicle charging for cargo handling and drayage trucks; and data collection.

Cal. Code Regs., tit. 14, sec. 15301 (Existing Facilities) - Because four fuel cell vehicles instead of one electric vehicle and three natural gas plug-in hybrid vehicles will be built and demonstrated under Agreement Scope of Work Task 3, electric vehicle chargers will no longer be installed. Instead, the four newly-proposed vehicles under Task 3 will use existing hydrogen refueling stations located at the Port of Long Beach. The demonstration of low-NOx natural gas trucks and electric top handler will also use existing fueling equipment in the South Coast Air Basin. The project as amended will involve the operation of existing facilities and thus fits within section 15301.

Cal. Code Regs., tit. 14, sec 15303 (New Construction or Conversion of Small Structures) – For the demonstration of wireless electric vehicle charging for cargo handling and drayage trucks, the project will still make minor modifications to on-site transformers to accommodate wireless charging.

New construction associated with installation of the 4 electric vehicle chargers is no longer applicable. The four hydrogen trucks will be built on an existing manufacturing line and no alterations will be made.

Cal. Code Regs., tit. 14, sec. 15304 (Minor Alterations of Land) – For the demonstration of wireless electric vehicle charging for cargo handling and drayage trucks, the project will contain trenching related to installation of electrical lines for wireless charging. The trenching will be minor.



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No trees will be removed and the surface will be restored. The project falls within section 15304 and will not have a significant effect on the environment.

Trenching associated with installation of the 4 electric vehicle chargers is no longer applicable.

Cal. Code Regs., tit. 14, sec. 15306 (Data Collection) – The project will continue to involve data collection and analysis, including laboratory testing, paper studies, data gathering and analysis of electricity use, and on-road demonstrations of low/zero-emission vehicles and therefore still falls within 15306.

- b) Agreement **IS NOT** exempt. (Consult with the legal office to determine next steps.)

Check all that apply

- Initial Study
- Negative Declaration
- Mitigated Negative Declaration
- Environmental Impact Report
- Statement of Overriding Considerations

F) The following items should be attached to this ARF (as applicable)

- 1. Exhibit A, Scope of Work N/A Attached
- 2. Exhibit B, Budget Detail N/A Attached
- 3. CEQA Documentation N/A Attached
- 4. Novation Documentation N/A Attached
- 5. CEC 105, Questionnaire for Identifying Conflicts Attached

Agreement Manager

Date

Office Manager

Date

Deputy Director

Date

ALL CONTRACTORS AND SUBCONTRACTORS:

| Subcontractor Name (Legal Company Name) | Budget |
|--|---------------|
| Clean Energy | \$5,995,000 |
| Cummins Inc. | \$4,985,665 |
| Hyster-Yale Group | \$3,678,007 |
| Cummins Westport | \$1,895,000 |
| Subcontracted Trucking Companies | \$2,500,000 |
| Amerit Fleet Services- California | \$30,000 |
| CALSTART (Sub for Hyster-Yale) | \$337,727 |
| WAVE | \$1,601,631 |
| Thales | \$53,193 |
| O'Neill | \$10,639 |
| Engine Fuel and Emission Engineering, Inc. | \$26,000 |
| Law Director | \$4,000 |
| UC Riverside CE-CERT | \$95,500 |
| CALSTART (sub for Cummins, Inc.) | \$90,000 |

**Exhibit A
SCOPE OF WORK**

TECHNICAL TASK LIST

| Task# | CPR | Task Name |
|--------------|------------|--|
| 1 | | Administration |
| 2 | X | Build and Demonstrate 20 Near Zero-Emission 12 Liter Natural Gas Trucks |
| 3 | X | Build and Demonstrate 4 Fuel Cell 1 Electric Vehicle and 3 Natural Gas Plug-In Hybrid Electric Vehicles |
| 4 | X | Build, Deploy, and Demonstrate 1 Electric Top Handler and Wireless Charger |
| 5 | | Data Collection and Analysis |

KEY NAME LIST

| Task# | Key Personnel | Key Subcontractor(s) | Key Partner(s) |
|--------------|------------------------|--|-----------------------|
| 1 | Brian Choe (SCAQMD) | Clean Energy, Efficient Drivetrains, Inc. <u>Cummins Inc.</u> , Hyster-Yale Group, Inc. | |
| 2 | Brian Choe (SCAQMD) | Clean Energy | |
| 3 | Brian Choe (SCAQMD) | Velocity Vehicle Group, Efficient Drivetrains, Inc. <u>Cummins Inc.</u> | |
| 4 | Brian Choe (SCAQMD) | Hyster-Yale Group, Inc. | |
| 5 | Brian Choe (SCAQMD) | Clean Energy, Efficient Drivetrains, Cummins Inc., Hyster-Yale Group, Inc. | |

GLOSSARY

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

| Term/ Acronym | Definition |
|------------------------------------|--|
| ARFVTP | Alternative and Renewable Fuel and Vehicle Technology Program |
| BMS | Battery Management System |
| BOM | Bill of Materials |
| CAD | Computer Aided Design |
| CAM | Commission Agreement Manager |
| CARB | California Air Resources Board |
| CPR | Critical Project Review |
| CW | Cummins Westport, Inc. |
| DAC | Disadvantaged Communities |
| EDI | Efficient Drivetrains, Inc. |
| FTD | Fuels and Transportation Division |
| GHG | Greenhouse Gas |
| HD | Heavy-Duty |
| HYG | Hyster-Yale Group, Inc. |
| NG | Natural Gas |
| NOx | Nitrogen oxides |
| <u>PHEV</u> <u>FCEV</u> | Plug-In Hybrid <u>Fuel Cell</u> Electric Vehicle |
| Recipient | South Coast Air Quality Management District |

| Term/ Acronym | Definition |
|--------------------------|---|
| SCAB | South Coast Air Basin |
| SCAQMD | South Coast Air Quality Management District |
| UCR CE- CERT | University of California, Riverside - College of Engineering/Center for Environmental Research and Technology |
| WAVE | Wireless Advanced Vehicle Electrification |
| ZE | Zero-Emission |

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 of 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 GFO-16-604 entitled “Sustainable Freight Transportation Projects” under the ARFVTP on November 29, 2016. This competitive grant solicitation was an offer to cost share the development of medium- and heavy-duty (MHD) advanced technology vehicle demonstrations. To be eligible for funding under GFO-16-604, the projects must also be consistent with the Energy Commission’s ARFVTP Investment Plan as updated annually. In response to GFO-16-604, the Recipient submitted Application #02 which was proposed for funding in the Energy Commission’s Notice of Proposed Awards on February 22, 2017. GFO-16-604 and Recipient’s Application #02 are hereby incorporated by reference into this Agreement in their 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:

The South Coast Air Basin (SCAB) is classified as an “extreme” nonattainment area for ozone under the federal Clean Air Act and substantial reductions in oxides of nitrogen (NOx) emissions will be needed to meet the upcoming federal ozone standard deadlines by 2023 and 2031. Wide-scale deployment of low- and zero-emission (ZE) technologies is critical for achieving the air quality standards with considerable public health benefits for our region, especially in disadvantaged communities (DAC) that are disproportionately exposed to harmful diesel emissions. There are multiple clean and sustainable freight technologies in development that can help California and SCAB to meet its goals but these technologies will not achieve significant market penetration without real-world demonstrations to prove their capabilities and provide manufacturers with the customer feedback necessary to refine their products.

Goals of the Agreement:

The goals of this Agreement are to demonstrate: 1) the technical viability and product acceptance of advanced technologies for near-ZE 12-liter (12L) natural gas (NG) engines, heavy-duty (HD) drayage truck electrification, electric top handler, and wireless charging systems; and 2) in-use testing that will lead to commercially available products e.g ZEV drayage trucks, cargo handling equipment, wireless charging; and 3) reduced greenhouse gas (GHG) emissions and reduced petroleum use while benefitting disadvantaged communities (DAC).

Objectives of the Agreement:

The objectives of this Agreement are to: 1) build and demonstrate at least 20 HD trucks equipped with near ZE NG Cummins Westport (CW) ISX12-G engines; 2) build and

demonstrate ~~4 fuel cell at least 1 electric truck and at least 3 plug-in hybrid electric~~ vehicles (~~PHEV/FCEV~~) Class 8 drayage trucks; 3) build and demonstrate at least 1 electric top handler and 1 wireless charging system; and 4) conduct field demonstration for at least 12 months; and 4) collect and analyze data including from vehicle builds, commissioning, through field demonstration.

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:

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

TECHNICAL TASKS

TASK 2 BUILD AND DEMONSTRATE 20 NEAR ZE 12L NG TRUCKS

The goal of this task is to build and demonstrate at least 20 near-ZE 12L NG trucks.

The Recipient shall:

- Purchase at least 20 drayage trucks and equip them with near ZE ISX12-G NG engines.
- Provide a copy of all sale documents and vehicle information including: vehicle identification numbers, make, model, year, and gross vehicle weight rating.
- For each engine provided, provide copy of the engine replacement documents and California Air Resources Board (CARB) compliance documentation. (See also Task 1.7)
- Deliver trucks for field demonstration to end-user fleet partners.
- Support in-use demonstration of trucks through existing support and maintenance networks.
- Develop data collection test plan and communicate requirements to fleet partners to ensure adherence to plan requirements. Secure required waivers from CARB if required for field demonstration of the trucks. (See also Task 1.7)

- Conduct 12 month field demonstration of at least 20 trucks.
- Prepare Natural Gas Vehicle Summary Report.

Products:

- Sale Documents
- ARB Compliance Documentation
- Natural Gas Vehicle Summary Report

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

TASK 3 BUILD AND DEMONSTRATE ~~1-4 FUEL CELL ELECTRIC VEHICLES AND 3 NG PHEVS~~

The goals of this task are to build and demonstrate ~~4 FCEV at least 1 EV and 3 NG PHEV~~ Class 8 drayage trucks.

Task 3.1 Design, Procure, and Build

The goals of this task are to design and build the ~~fuel cell power EV system and NG PHEV~~, procure materials and equipment, and build ~~4 at least 1 FCEV and 3 NG PHEV~~ Class 8 drayage trucks in sequential order.

The Recipient shall:

- Select base truck platforms that meet end-user fleet requirements.
- Develop performance specifications that meet or exceed end-user fleets and truck **OEM** requirements.
- Develop computer aided design (CAD) drawings package, design documents, and Bill of Materials (BOM) for purchase of equipment and materials.
- Prepare summary ~~truck EV and PHEV~~ specifications and design drawings, in which the specifications and design drawings for ~~both the FCEV and NG PHEV~~ trucks are summarized.
- Procure materials and equipment to build ~~1-4 FCEV and 3 NG PHEV~~ Class 8 drayage trucks.
- Prepare base trucks for ~~EDI fuel cell power~~ system integration and build ~~and integrate at least 14 fuel cell power EV systems and 3 NG PHEV systems.~~
- Test system functionality in all operating and charging modes for each truck.

- Calibrate the ~~EDI-fuel cell power~~ systems and tune the integration of the ~~3 PHEV~~electric drivetrain systems with the ~~NG-fuel cell~~ engines.
- Prepare Advanced Drayage Truck Summary Report.

Products:

- ~~EV and PHEV~~FCEV Specifications
- Advanced Drayage Truck Summary Report

Task 3.2 Performance and Reliability Testing

The goals of this task are to perform chassis dynamometer testing and multi-week, on-road reliability testing with loaded trailers of the ~~FCEV and NG PHEV~~ Class 8 drayage trucks.

The Recipient shall:

- Plan and conduct performance, ~~emissions,~~ and ~~NG hydrogen~~ and electricity consumption testing at the HD Chassis Dynamometer laboratory of the University of California at Riverside, College of Engineering Center for Environmental Research and Technology (UCR CE-CERT).
- Test one ~~EV and one NG PHEV~~FCEV Class 8 drayage trucks ~~each~~ with a loaded trailers in operation closely simulating the drive cycles typically taken by the end-user fleets for a period of 4 weeks.
- Identify and characterize the maximum driving range of the ~~FCEV~~ design in real-world operation and validate ~~the its~~ performance ~~of the NG PHEV~~ design over existing road conditions found in Southern California.
- Prepare Chassis Dynamometer Test Report for inclusion in the On-Road Test Report that includes but is not limited to emissions and any resultant anomalies noted during testing.

Products:

- Chassis Dynamometer Test Report
- On-Road Test Report

Task 3.3 Deployment and Field Demonstration

The goals of this task are to procure access to local H2 refueling stations, ensure adequate available H2 storage capacity, install ~~at least 4~~ EV chargers with accompanying charging infrastructure to support field demonstration, deploy ~~at least 4 EV and 3 NG PHEVs~~4 FCEVs, and field demonstrate ~~the~~ at least 4 trucks for a 12 month period.

The Recipient shall:

- **Procure access to local H2 refueling stations and ensure adequate available storage capacity throughout the project demonstration period.**
- **Work with each end-user fleet to install the charging infrastructure.**
- **Deliver 4 FCEVs to end-user fleets and prepare documentation including but not limited to photos of delivered vehicles.**
- **Train truck operators on vehicle operations.**
- **Train fleet and dealership mechanics with vehicle inspection, service, maintenance procedures, and troubleshooting.**
- **Prepare Operator's Manual and a Service and Maintenance Manual.**
- **Support the 4 trucks for the 12-month demonstration period, work with the end-user fleets to detect and prevent issues, and document downtime.**
- **Collect vehicle performance data for 4 trucks for the 12-month demonstration period using telematics systems to record vehicle and drivetrain data.**
- **Develop and distribute surveys to gather driver and mechanic feedback.**
- **Perform interviews with operators, mechanics and fleet managers for user acceptance evaluation.**
- **Prepare Vehicle Performance Evaluation Report.**

Products:

- **Delivery Documentation for the Vehicles**
- **Operator's Manual**
- **Service and Maintenance Manual**
- **Vehicle Performance Evaluation Report**

The Recipient shall:

- **Deliver at least 1 EV and 3 NG PHEVs to end-user fleets and prepare documentation including but not limited to photos of delivered vehicles.**

- ~~Train truck operators on vehicle operations.~~
- ~~Train fleet and dealership mechanics with vehicle inspection, service, maintenance procedures, and troubleshooting.~~
- ~~Prepare Operator's Manual and a Service and Maintenance Manual.~~
- ~~Support the 4 trucks for the 12-month demonstration period, work with the end-user fleets to detect and prevent issues, and document downtime.~~
- ~~Collect vehicle performance data for 4 trucks for the 12-month demonstration period using telematics systems to record vehicle and drivetrain data.~~
- ~~Develop and distribute surveys to gather driver and mechanic feedback.~~
- ~~Perform interviews with operators, mechanics and fleet managers for user acceptance evaluation.~~
- ~~Prepare Vehicle Performance Evaluation Report.~~

Products:

- ~~Delivery Documentation for the Vehicles~~
- ~~Operator's Manual~~
- ~~Service and Maintenance Manual~~
- ~~Vehicle Performance Evaluation Report~~

Task 3.4 Technology Commercialization Roadmap

The goal of this task is to develop a detailed roadmap to commercialize Cummins' zero-emission fuel cell electric power system technology and establish strong relationships throughout the hydrogen ecosystem to support future commercialization efforts.~~a technology commercialization roadmap.~~

The Recipient shall:

- Organize and conduct technical review meetings to scope the roadmap, review project results, analyze successes and failures, and identify next steps.
- Develop technology commercialization roadmap outline that identifies roles and responsibilities, schedule for development, technology commercialization phases, markets for the demonstrated technology, financing issues, and partnership requirements.

- Develop and prepare a roadmap that includes a manufacturing plan, a technology integration plan, a service and support plan, marketing strategies, and commercialization financing plan.
- Establish a truck technology commercialization work group:
 - Composed of relevant industry stakeholders, project partners, and the CAM;
 - To identify issues and barriers to, e.g., financing, staffing, technology, customer procurement, and time- and path-to-market strategies;
 - To identify barriers and discuss strategies for commercialization and required partnerships, estimate revenue and capital needs to accommodate projected growth;
 - To create strategies and recommendations to accelerate the commercialization of ~~FCEV and NG-PHEV~~ technologies through this demonstration.
- Prepare a Technology Commercialization Roadmap Report, to include but not be limited to barrier identification, work group discussion and findings, capital needs, time-to-market and path-to-market strategies.

Products:

- Technology Commercialization Roadmap Report

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

TASK 4 BUILD, DEPLOY, AND DEMONSTRATE 1 ELECTRIC TOP HANDLER AND WIRELESS CHARGER

Task 4.1 Build and Test Electric Top Handler

The goals of this task are to build, deploy, and demonstrate at least 1 electric top handler and wireless charging system.

The Recipient shall:

- Procure and install all necessary materials and equipment needed to demonstrate 1 electric top handler including, but not limited to, battery management system (BMS), electric powertrain, electrically-driven hydraulic pumps, control systems, energy management system, system run-in, secondary coils integrated under frame, integrated high-voltage electrical system, and development of an automatic charging procedure.
- Develop testing protocol.

- Ensure integration and compatibility of top handler and vehicle charging technologies/systems.
- Procure all materials, equipment, and components for secondary vehicle assembly and testing.
- Verify vehicle performance.
- Integrate secondary assemblies on top handler, high-voltage electrical systems, and automatic charging procedure.
- Develop system validation test protocol and test and validate according to validation test protocol.
- Test and adjust existing control strategies and energy management systems.
- Ensure vehicle integration of on-board wireless power transfer and validation testing report.
- Provide comparative analysis, information, costs of construction and operation, and identifies barriers and challenges associated with common existing charging practices and wireless charging for the demonstrated electric top handler.
- Prepare Electric Top Handler Report.

Products:

- Electric Top Handler Report

Task 4.2 Electric Vehicle Charging System Infrastructure

The goals of this task are to install a wireless electric vehicle charging system infrastructure and install the infrastructure that supports the demonstration.

The Recipient shall:

- Identify specific equipment fueling site to install the charging infrastructure.
- Obtain approvals and permits from applicable jurisdictions to install electric vehicle charging infrastructure and demonstrate charging process. (See also Task 1.7)
- Obtain power connections, excavate wireless charger primary pad site, install and connect wireless charging unit(s), and validate operation in advance of equipment arrival.
- Install and construct 1 wireless charging system that supports the top handler for the duration of the demonstration period.

- Track electricity usage from testing phase through completion of field demonstration.
- Prepare EV Infrastructure Report.

Products:

- EV Infrastructure Report

Task 4.3 Deployment and Field Demonstration

The goals of this task are to deliver 1 electric top handler that utilizes a fully functional wireless charging system to fleet end-user, prepare end users in the operation and maintenance of the top handler, wireless charging system, and to field demonstrate both for 12 months.

The Recipient shall:

- Deliver top handler to Port of Los Angeles' fleet end-user and provide equipment transportation delivery documentation.
- Provide the daily use profile with fleet end-user to develop a baseline equipment operational plan for the electric top handler and the electric charging infrastructure.
- Provide final expected use profile for the top handler and the electric charging infrastructure and the instrumentation necessary for measuring equipment and wireless charging operation during the demonstration, including but not limited to fuel measurement of electricity usage, monitoring and determining energy efficiency, up time, availability and amount of work performed such as container lifts and moves, schedule of equipment use, operation, and daily mileage or hourly operations plan.
- Prepare a test plan for frequency of measurement, data collection intervals and formats, data parameters, data backup plans, analysis goals and emissions measurements, and user feedback.
- Validate equipment on-site operation and charging functionality prior to field testing and demonstration.
- Train and provide training report to end-user operators and drivers on use of equipment, maintenance trouble-checking, electric charging process.
- Demonstrate the equipment as identified in the use profile and test plan.
- Provide technical support and maintenance support to maintain equipment in operation and troubleshoot any issues identified.

- Prepare information for inclusion in the Final Report.

Products:

- Documentation of Top Handler Delivery
- Daily Use Profile
- Test Plan

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

Task 5 DATA COLLECTION AND ANALYSIS

The goals of this task are to collect and evaluate data from the project, to analyze that data for economic and environmental impacts, to compare goals and objectives with actual results, and to include the data and analysis in the Final Report.

The Recipient shall:

- Develop data collection test plan that includes, but is not limited to, how the data will be collected and what type of data will be collected.
- Troubleshoot and document all issues identified during the project.
- Collect at least 12 months of throughput, usage, and operations data from the project including, but not limited to:
 - Maximum capacity of the new fueling system
 - Number of charging/refueling events for each demonstrated vehicle
 - Amount and costs of electricity (actual, averaged, and/or estimated) used per charging event
 - Amount of miles/hours of demonstration for each demonstrated vehicle
 - Plug time, disconnect time, length of time charging, length of time connected, and kW provided
 - Gallons of gasoline and/or diesel fuel displaced (with associated mileage/hourly 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.
- Estimated and actual total cost of ownership for each demonstrated vehicle.
- 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

STATE OF CALIFORNIA

STATE ENERGY RESOURCES
CONSERVATION AND DEVELOPMENT COMMISSION

RESOLUTION - RE: SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

RESOLVED, that the State Energy Resources Conservation and Development Commission (CEC) adopts the staff CEQA findings contained in the Agreement or Amendment Request Form (as applicable); and

RESOLVED, that the CEC approves Amendment 2 to Grant ARV-16-025 with the South Coast Air Quality Management District to extend the agreement by 13 months, reallocate its budget, replace a subcontractor, and modify its scope of work, and terms and conditions; and

FURTHER BE IT RESOLVED, that the Executive Director or his/her designee shall execute the same on behalf of the CEC.

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 CEC held on November 13, 2019.

AYE:

NAY:

ABSENT:

ABSTAIN:

Cody Goldthrite
Secretariat