STATE OF CALIFORNIA
GRANT REQUEST FORM (GRF)
CEC-270 (Revised 02/13) CALIFORNIA ENERGY COMMISSION

New Agreement ARV-12-059 (To be completed by CGL Office)

Division	Agreement Manager:	MS-	Phone
600 Fuels and Transportation Division	Sarah Williams	27	916-651-9866

Recipient's Legal Name	Federal ID Number
Air Products and Chemicals, Inc.	23-1274455

Title of Project
Hydrogen Refueling Station Network Deployment (Mission Viejo and Woodland Hills, CA)

Term and Amount	Start Date	End Date	Amount
	6 / 12 / 2013	9 / 30 / 2016	$ 2,999,172

Business Meeting Information

☐ ARFVTP agreements under $75K delegated to Executive Director.

Proposed Business Meeting Date	6 / 12 / 2013	☐ Consent	☒ Discussion
Business Meeting Presenter	Sarah Williams	Time Needed:	5 minutes

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

Agenda Item Subject and Description

Possible approval of Agreement ARV-12-059 with Air Products and Chemicals, Inc. for a $2,999,172 grant to install two innovative, low cost hydrogen fueling stations and to automate trailer loading operations at the Southern California Fill System. The agreement will include $1,614,927 in match funding.

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 section number: 15303
   ☐ Common Sense Exemption. 14 CCR 15061 (b) (3)
   Explain reason why Agreement is exempt under the above section:
   This project will add hydrogen storage, compression, and dispensing equipment. The additional equipment will not exceed 2500 square feet in floor area. PLACE HOLDER FOR CEQA
   ☐ b) Agreement **IS NOT** exempt. (Consult with the legal office to determine next steps.)
   Check all that apply
   ☐ Initial Study ☐ Environmental Impact Report
   ☐ Negative Declaration ☐ Statement of Overriding Considerations
   ☐ Mitigated Negative Declaration

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

Legal Company Name:	Budget
SINA Green Fuels	$ 11,253
	$ 0
	$ 0

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

Legal Company Name:

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Budget Information			
Funding Source	**Funding Year of Appropriation**	**Budget List No.**	**Amount**
ARFVTF			$2,999,172
Funding Source			$
Funding Source			$
Funding Source			$
Funding Source			$
R&D Program Area: Select Program Area		TOTAL:	$2,999,172
Explanation for "Other" selection			
Reimbursement Contract #:		Federal Agreement #:	

Recipient's Administrator/ Officer				Recipient's Project Manager			
Name:	Edward C. Heydorn			Name:	same		
Address:	7201 Hamilton Blvd.			Address:			
City, State, Zip:	Allentown, PA 18195-1501			City, State, Zip:			
Phone:	610-481-7099	Fax:	610-706-4871	Phone:	- -	Fax:	- -
E-Mail:	heydorec@airproducts.com			E-Mail:			

Selection Process Used

☒ Competitive Solicitation
☐ First Come First Served Solicitation

Solicitation #: PON-12-606

The following items should be attached to this GRF		
1. Exhibit A, Scope of Work		☒ Attached
2. Exhibit B, Budget Detail		☒ Attached
3. CEC 105, Questionnaire for Identifying Conflicts		☒ Attached
4. Recipient Resolution	☒ N/A	☐ Attached
5. CEQA Documentation	☐ N/A	☒ Attached

Agreement Manager	Date	Office Manager	Date	Deputy Director	Date

EXHIBIT A
SCOPE OF WORK

TECHNICAL TASK LIST

Task #	Task Name
1	Administration
2	Fueling Station Equipment Evaluation and Design
3	Equipment Procurement and Fueling Station Installation
4	Fueling Station Testing, Commissioning, and Start-up and Operation
5	Southern California Fill system Automation Equipment Evaluation and Design
6	Southern California Fill System Equipment Procurement, Construction, and Installation
7	Southern California Fill System Automation Written Notification of Completion
8	Data Collection and Analysis

KEY NAME LIST

Task #	Key Personnel	Key Subcontractor(s)	Key Partner(s)
1	Ed Heydorn		
2	Renay Jacob Anthony Kyvelos Joseph Cohen	SINA Green Fuels	Structural Composites Inc. (supplier)
3	Renay Jacob Anthony Kyvelos		Structural Composites Inc. (supplier)
4	Renay Jacob Joseph Cohen		Structural Composites Inc. (supplier)
5	John Aliquo		
6	John Aliquo		
7	John Aliquo		
8	Ed Heydorn Brian Bonner	SINA Green Fuels	

GLOSSARY

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

Term/ Acronym	Definition
ARFVT	Alternative and Renewable Fuel and Vehicle Technology
CAM	Commission Agreement Manager
CPR	Critical Project Review
FCV	Fuel Cell Vehicle
FTD	Fuels and Transportation Division
Recipient	Air Products and Chemicals, Inc.

BACKGROUND

Assembly Bill 118 (Nùñez, Chapter 750, Statutes of 2007), created the Alternative and Renewable Fuel and Vehicle Technology (ARFVT) Program. The statute, subsequently amended by AB 109 (Nùñez 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.

The California Energy Commission issued solicitation PON-12-606 to provide funding opportunities under the ARFVT Program for projects which expand the network of publicly accessible hydrogen fueling stations to serve the current population of fuel cell vehicles (FCVs) and to accommodate the planned large-scale roll-out of FCVs commencing in the 2015 – 2016 timeframe.

In response to PON-12-606, the Recipient submitted applications #5 and #6 which were proposed for funding in the Energy Commission's Notice of Proposed Awards on April 11, 2013. The solicitation PON-12-606 and the Recipient's applications are all incorporated by reference to 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 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:
Hydrogen distribution and dispensing infrastructure is not readily available to meet projected commercial targets for the deployment of FCVs. As FCVs are deployed in greater quantities, a program is needed to ensure ample fuel supply via a network of fueling stations that provides coverage which takes advantage of the range of the vehicle and a means to transport and store/dispense the hydrogen.

Goals of the Agreement:
The goal of this Agreement is to install two hydrogen fueling stations by October 30, 2014 and to automate a centralized hydrogen production facility by October 30, 2014. Furthermore, the goal is to provide hydrogen for light-duty vehicles at consumer pricing that can be sustained in the next 3-5 years without government funding programs for infrastructure.

Objectives of the Agreement:
The objectives of this Agreement are to install two hydrogen fueling stations, to automate trailer loading operations at the Southern California Fill System, and to integrate these stations and equipment with the existing fueling infrastructure, with the result that the network will reduce the capital and operating cost at the point-of-use of the fuel and provide hydrogen at pricing that is attractive for a number of fuel cell-based transportation applications.

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 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 at the meeting:

- 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 Commission Grants Officer, the Fuels and Transportation Division (FTD) team lead, other Energy Commission staff and management as well as other individuals selected by the 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 of 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 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 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 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 (a public document) are to clearly and completely describe the project's purpose (2 hydrogen fueling stations and automation enhancements and additions at a centralized hydrogen production facility), 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 also include a plan for dispensing at least 33% renewable hydrogen through physical pathways. This should include:

- A description of how the two hydrogen fueling stations dispense at least 33% renewable hydrogen, on a per kilogram basis.
- A description of the physical pathway for the hydrogen fuel from "well to wheel".
- Information about the source of the feedstock(s) and/or process electricity; how the feedstocks will be processed into fuel; and how the fuel will be transported, stored, and dispensed at the stations. If the primary process energy for hydrogen production is electricity (e.g., for electrolysis), a description of a direct source of eligible renewable electricity or source of renewable energy certificates (RECs) that are registered and verifiable through Western Renewable Energy Generation Information System (WREGIS) (www.wecc.biz/WREGIS) or an equivalent tracking and verification system.

- Year, name of pathway, amount of hydrogen dispensed annually per station (in kilograms), biogas/renewable feedstock (in standard cubic feet), and renewable electricity (in kilowatt hours).

The Final Report shall also include the results of the execution of the plan for dispensing at least 33% renewable hydrogen through physical pathways with reference to the above bullets.

The Final Report shall also include greenhouse gas emissions reductions related to water efficiency measures, and impacts on natural resources and overall environmental impact resulting from the project.

Greenhouse gas emission reductions shall be quantified in grams of CO_2-equivalent per mega joule, total metric tons per annum, and total metric tons over the design life of the project. In quantifying the greenhouse gas emissions reductions, the Final Report shall include: 1) a method for assessing carbon intensity values that conforms to the California Air Resources Board's (ARB) Low Carbon Fuel Standard (LCFS) or an alternative methodology approved by the Energy Commission; 2) all assumptions and calculations; and 3) comparisons of the greenhouse gas emissions reductions with the appropriate petroleum baseline listed on the LCFS website: www.arb.ca.gov/fuels/lcfs/lcfs.htm.

The Recipient shall:

- Prepare an Outline of the Final Report, if requested by the CAM.
- Prepare a Draft 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.
- Prepare a Final Report addressing the CAM's written comments. The Final Report must be completed at least 60 days before the end of the Agreement Term.
- Submit one bound copy and one electronic copy in the formats allowable in the PON-12-606 solicitation of the Final Report with the final invoice. These include CD-ROM or USB™ memory stick along with paper submittal. Electronic files must be in Microsoft Word XP (.doc format) and/or Excel Office Suite formats. Completed Budget Forms must be in Excel format.

Products:

- Outline of the Final Report, if requested
- Draft Final Report
- Final Report
  - Bound paper copy
  - Electronic files (in formats listed above)

Task 1.6 Identify and Obtain Matching Funds

The goal of this task is to ensure that the match funds 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 subcontracts required to carry out the tasks under this Agreement consistent with the terms and conditions of this Agreement and the Recipient's own procurement policies and procedures. It will also provide the Energy Commission an opportunity to review the subcontracts to ensure that the tasks are consistent with this Agreement, 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, it shall notify the Commission Agreement Manager.

Products:

- Draft subcontracts
- Final subcontracts

TECHNICAL TASKS

Task 2 Fueling Station Equipment Evaluation and Design

The goal of this task is to evaluate equipment and to finalize a design based on cost effectiveness and efficiency specific to the two hydrogen fueling station locations. Equipment will be sized based on anticipated demand and potential growth in demand over time using as much standardized equipment as possible. Equipment is expected to include storage, compression, and dispensing for fueling.

The Recipient shall:

- Evaluate systematic options (storage, compression, and dispensing) for the fueling stations.
- Design hydrogen fueling station equipment to applicable codes and standards for hydrogen fuel quality, production, compression, purification, fueling, storage devices and construction/operation. The hydrogen fueling station will be capable of delivering a minimum of 100kg/day.
- Design hydrogen fueling station equipment to provide hydrogen that meets SAE J2799.
- Design retail SAE J2601 / J2719 compliant 350/700 bar dispensers with back to back refueling capability.
- Complete fueling station operating and hazard reviews.
- Develop and assemble all necessary engineering drawings and documentation (including site safety plan).
- Prepare and submit an Equipment List for the hydrogen fueling stations.

Product:

- Equipment List for Each Fueling Station

Task 3 Equipment Procurement and Fueling Station Installation

The goal of this task is to procure the required fueling station components and assemble these components into skid-mounted engineered systems for delivery to the sites for installation.

The Recipient shall:

- Procure fueling station components.
- Fabricate components into skids as appropriate.
- Perform site preparation services, including foundations, piping, electrical systems or underground services, as needed.
- Provide written notification regarding completion of the fueling stations, including written documentation that the hydrogen fueling stations are ready for operation, the proposed date such operation shall begin, and photographs of the fueling stations.
- Prepare and submit an updated budget for actual contractor labor and materials.

Product:

- Fueling Station Written Notification Notice of Completion for each station
- Updated budget for contractor labor and materials

Task 4 Fueling Station Testing, Commissioning, and Start-up and Operation

The goal of this task is to test, commission and start-up the hydrogen fuel stations; to provide the appropriate training to the station operator who shall, in-turn, train authorized users of the fueling station; and to verify refueling protocols with authorized users and provide local support and training for questions and problems arising from authorized users.

The Recipient shall:

- Perform operational readiness inspection for the hydrogen fueling stations.
- Commission and start-up the hydrogen fueling stations.
- Test and verify performance of the hydrogen fueling stations.
- Provide training for station operators.
- Provide written notification of start-up of hydrogen fueling stations, including time and date of start-up, tests performed, and test results.

Product:

- Written Notification of Start-up of Fueling Station Operation for each station

Task 5 Southern California Fill System Automation Equipment Evaluation and Design

The goal of this task is to design an automation system which includes the required equipment for the analytical and trailer filling processes at the Southern California Fill System.

The Recipient shall:

- Evaluate systematic options for the proposed automation equipment to be used at the centralized hydrogen fill system.
- Determine the optimal options for the proposed automation equipment to be used at the centralized hydrogen fill system.
- Design equipment to meet the objectives of providing a safe and reliable automated fill system.
- Complete necessary operating and hazard reviews.
- Develop, assemble, and submit all necessary engineering drawings and documentation, including but not limited to: a description of each item; and cost estimates or bids for each item.
- Prepare and submit an Equipment List for the Southern California Fill System Automation.

Product:

- Equipment List for Automation of Southern California Fill System

Task 6 Southern California Fill System Equipment Procurement, Construction, and Installation

The goal of this task is to procure the components required for automation of the existing fill system and to install this equipment.

The Recipient shall:

- Procure components to automate the Southern California Fill System.
- Install automation hardware for Southern California Fill System.
- Provide a Written Notification regarding completion of the automation of the Southern California Fill System to the CAM. The Written Notification shall include, but is not limited to, written documentation that the automation of the Southern California Fill System is installed, the proposed date that operation shall begin, and photographs of the system.
- Prepare and submit an updated budget for actual contractor labor and materials.

Product:

- Southern California Fill System Automation Written Notification of Completion
- Updated budget for contractor labor and materials

Task 7 Southern California Fill System Automation Commissioning and Start-up

The goal of this task is to perform a pre-operational inspection on the automation hardware for the Southern California Fill System to confirm readiness for operation and to commission and start-up the automation system.

The Recipient shall:

- Perform pre-operational readiness inspection on the automation for the Southern California Fill System.
- Commission and start-up the automation hardware for the Southern California Fill System.
- Verify performance of the automation hardware for the Southern California Fill System.
- Prepare and submit test report on performance of automation of Southern California Fill System that includes tests conducted, test results, and verification of start-up.

Products:

- Test Report for Automation of Southern California Fill System

Task 8 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 a data collection test plan.
- Troubleshoot any issues identified that could possible effect the collection of data.
- Collect a minimum of 12 months of throughput, usage, and operations data from the two hydrogen fueling stations including, but not limited to:
  - Number of hydrogen fills per day per station.
  - Number of days (per month) hydrogen vehicles are fueled at each of the two hydrogen fueling stations.
  - Number of days (per month) the two hydrogen fueling stations are operational.
  - Maximum capacity of the centralized hydrogen generation facility impacted by the automation system covered under this agreement (actual).
  - Gallons of gasoline and/or diesel fuel displaced by the operations of each station.
  - Expected air emissions reduction, for example:
    - Non-methane hydrocarbons
    - Oxides of nitrogen
    - Non-methane hydrocarbons plus oxides of nitrogen
    - Particulate Matter
    - Formaldehyde
- Summarize the use of renewable energy at the two hydrogen fueling facilities.
- Summarize the percentage and source(s) of renewable hydrogen fuel used at the two hydrogen fueling stations.
- Summarize greenhouse gas reduction, water efficiency, and natural resource impacts, and overall environmental impact.
- Summarize the potential impact of the two hydrogen fueling stations in the current network of existing and planned hydrogen fueling stations in the state of California.
- Describe any energy efficiency measures used at the two hydrogen fueling stations and the centralized hydrogen production facility that may exceed Title 24 standards, Part 6 of the California Code Regulations (CCR).
- Provide data about the actual and the potential jobs creation, economic development, and increased state and local revenue.
- Provide a quantified estimate of the project's carbon intensity (CI) values for life-cycle greenhouse gas emissions.
- Summarize project performance and accomplishments.

- Compile the data and information specified above in the Final Report format provided by the California Energy Commission.

Products:

- Data collection information and analysis shall be included in the Final Report in the format provided by the California Energy Commission.