



**CALIFORNIA
ENERGY COMMISSION**



**California Energy Commission
April 12, 2023 Business Meeting
Backup Materials for Agenda Item No 03j:
Linde Inc.**

The following backup materials for the above-referenced agenda item are available in this PDF packet as listed below:

1. Proposed Resolution.
2. Grant Request Form.
3. Scope of Work.

STATE OF CALIFORNIA
STATE ENERGY RESOURCES
CONSERVATION AND DEVELOPMENT COMMISSION

RESOLUTION: Linde Inc.

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 Agreement ARV-22-010 with Linde Inc. for a \$3,000,000 grant to expand the supply of renewable hydrogen for the California market by integrating polymer electrolyte membrane electrolysis technology at its existing Ontario, California hydrogen facility; and

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

CERTIFICATION

The undersigned Secretariat to the CEC 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 April 12, 2023.

AYE:
NAY:
ABSENT:
ABSTAIN:

Dated:

Liza Lopez
Secretariat



GRANT REQUEST FORM (GRF)

A. New Agreement Number

IMPORTANT: New Agreement # to be completed by Contracts, Grants, and Loans Office.

New Agreement Number: ARV-22-010

B. Division Information

1. Division Name: Fuels and Transportation Division
2. Agreement Manager: Rose Strauss
3. MS-:
4. Phone Number: 916-908-7493

C. Recipient's Information

1. Recipient's Legal Name: Linde Inc.
2. Federal ID Number: 06-1249050

D. Title of Project

Title of project: Production Capacity for Renewable Hydrogen Transportation Fuel

E. Term and Amount

1. Start Date: 4/12/2023
2. End Date: 3/30/2026
3. Amount: \$ 3,000,000

F. Business Meeting Information

1. Are the ARFVTP agreements \$75K and under delegated to Executive Director? No
2. The Proposed Business Meeting Date: 04/12/2023
3. Consent or Discussion? Consent
4. Business Meeting Presenter Name: Rose Strauss
5. Time Needed for Business Meeting: 0 minutes.
6. The email subscription topic is: Altfuel

Agenda Item Subject and Description:

Linde Inc. Proposed resolution approving Agreement ARV-22-010 with Linde Inc. for a \$3,000,000 grant to expand the supply of renewable hydrogen for the California market by integrating polymer electrolyte membrane electrolysis technology at its existing Ontario, California hydrogen facility, and adopting staff's determination that this action is exempt from CEQA. (CTP Funding) Contact: Rose Strauss

G. California Environmental Quality Act (CEQA) Compliance

1. Is Agreement considered a "Project" under CEQA?

Yes

If yes, skip to question 2.

If no, complete the following (PRC 21065 and 14 CCR 15378) and 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: If Agreement is considered a "Project" under CEQA skip to question 2. Otherwise, provide explanation.

2. If Agreement is considered a "Project" under CEQA answer the following questions.

a) Agreement **IS** exempt?

Yes

Statutory Exemption?

No

If yes, list PRC and/or CCR section number(s) and separate each with a comma. If no, enter "None" and go to the next question.

PRC section number: None

CCR section number: None

Categorical Exemption?

Yes

If yes, list CCR section number(s) and separate each with a comma. If no, enter "None" and go to the next question.

CCR section number: Cal. Code Regs., tit. 14, sec. 15301

If yes, explain reason why Agreement is exempt under the above section. If no, enter "Not applicable" and go to the next section.

Cal. Code Regs., tit. 14, sec. 15301 provides that projects which consist of the operation, repair, maintenance, permitting, leasing, licensing, or minor alteration of existing public or private structures, facilities, mechanical equipment, or topographical features, and which involve negligible or no expansion of existing or former use, are categorically exempt from the provisions of the California Environmental Quality Act. This project involves installing equipment at an existing outdoor chemical plant with no walls. No floor areas are being increased. The equipment comes in four (4) skids, two have HVAC controls for internal equipment. The total space (including clearances between equipment) is approximately 70' x 120'. The four skids will be installed on four independent foundations.

The project will not impact an environmental resource of hazardous or critical concern where designated, precisely mapped, and officially adopted pursuant to law by federal, state, or local agencies; does not involve any cumulative impacts of successive projects of the same type in the same place that might be considered significant; does not involve unusual circumstances that might have a significant effect on the environment; will not result in damage to scenic resources within a highway officially designated as a state scenic highway; the project site is not included on any list compiled pursuant to Government Code section 65962.5; and the project will not cause a substantial adverse change in the significance of a historical resource. Therefore, none of the exceptions to categorical exemptions listed in CEQA Guidelines section 15300.2 apply to this project, and this project will not have a significant effect on the environment.



Common Sense Exemption?

No

If yes, explain reason why Agreement is exempt under the above section. If no, enter "Not applicable" and go to the next section.

Not Applicable

b) Agreement **IS NOT** exempt.

B) IMPORTANT: consult with the legal office to determine next steps.

No

If yes, answer yes or no to all that applies. If no, list all as "no" and "None" as "yes".

Additional Documents	Applies
Initial Study	No
Negative Declaration	No
Mitigated Negative Declaration	No
Environmental Impact Report	No
Statement of Overriding Considerations	No
None	Yes

H. Subcontractors

List all Subcontractors listed in the Budget (s) (major and minor). Insert additional rows if needed. If no subcontractors to report, enter "No subcontractors to report" and "0" to funds.

Delete any unused rows from the table

Subcontractor Legal Company Name	CEC Funds	Match Funds
No subcontractors to report	\$ 0	\$0

I. Vendors and Sellers for Equipment and Materials/Miscellaneous

List all Vendors and Sellers listed in Budget(s) for Equipment and Materials/Miscellaneous.

Insert additional rows if needed. If no vendors or sellers to report, enter "No vendors or sellers to report" and "0" to funds. **Delete** any unused rows from the table.

Vendor/Seller Legal Company Name	CEC Funds	Match Funds
TBD	\$0	\$ 3,972,397
TBD	\$3,000,000	

J. Key Partners

List all key partner(s). Insert additional rows if needed. If no key partners to report, enter "No key partners to report." **Delete** any unused rows from the table.



Key Partner Legal Company Name
The Center for Hydrogen Safety
California Fuel Cell Partnership
California Hydrogen Business Council
Southern California Edison

K. Budget Information

Include all budget information. Insert additional rows if needed. If no budget information to report, enter "N/A" for "Not Applicable" and "0" to Amount. **Delete** any unused rows from the table.

Funding Source	Funding Year of Appropriation	Budget List Number	Amount
ARFVTP	FY 19/20	601.118L	\$3,000,000

TOTAL Amount: \$3,000,000

R&D Program Area: Enter R&D Program Area. Example: EDMFO: EDMF

Explanation for "Other" selection Enter explanation for "Other"

Reimbursement Contract #: Enter Reimbursement Contract Number

Federal Agreement #: Enter Federal Agreement Number

L. Recipient's Contact Information

1. Recipient's Administrator/Officer

Name: Christian Lenci

Address: 1950 Loveridge Road

City, State, Zip: Pittsburg, CA 94565

Phone: 480) 784-4112

E-Mail: Christian.Lenci@linde.com

2. Recipient's Project Manager

Name: Wladimir Sarmiento-Darkin

Address: 1620 W Fountainhead Parkway, Suite 119

City, State, Zip: Temple, AZ

Phone: 716-507-3382

E-Mail: wladimir.sarmiento-darkin@linde.com

M. Selection Process Used

There are three types of selection process. List the one used for this GRF.



Selection Process	Additional Information
Competitive Solicitation #	GFO-20-609
First Come First Served Solicitation #	Not Applicable
Other	Not Applicable

N. Attached Items

- List all items that should be attached to this GRF by entering “Yes” or “No”.

Item Number	Item Name	Attached
1	Exhibit A, Scope of Work/Schedule	Yes
2	Exhibit B, Budget Detail	Yes
3	CEC 105, Questionnaire for Identifying Conflicts	Yes
4	Recipient Resolution	No
5	Awardee CEQA Documentation	Yes

Approved By

Individuals who approve this form must enter their full name and approval date in the MS Word version.

Agreement Manager: Rose Strauss

Approval Date: 2/23/2023

Office Manager: Elizabeth John

Approval Date: 2/24/2023

Deputy Director: Deputy Director Name

Approval Date: Deputy Director's Approval Date

Exhibit A SCOPE OF WORK

TECHNICAL TASK LIST

Task #	CPR	Task Name
1		Administration
2		Project Design Finalization and Procurement of 100 Percent Renewable Hydrogen Production Technology and Equipment
3	X	Installation of 100 Percent Renewable Hydrogen Production Technology and Equipment
4	X	Commissioning and Monitoring of 100 Percent Renewable Hydrogen Production Technology and Equipment
5		Data Collection and Analysis
6		Project Fact Sheet

KEY NAME LIST

Task #	Key Personnel	Key Subcontractor(s)	Key Partner(s)
1	Linde: Richard Craighead	N/A	N/A
2	Linde: Richard Craighead; Jennifer Dray; Christian Lenci; Jose A Galindo	N/A	N/A
3	Linde: Richard Craighead; Jennifer Dray; Christian Lenci; Jose A Galindo	TBD	The Center for Hydrogen Safety
4	Linde: Jose A Galindo	TBD	The Center for Hydrogen Safety; Southern California Edison
5	Linde: Richard Craighead	N/A	N/A
6	Linde: Richard Craighead	N/A	The Center for Hydrogen Safety; the California Fuel Cell Partnership; and the California Hydrogen Business Council.

GLOSSARY

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

Term/ Acronym	Definition
CAM	Commission Agreement Manager
CEC	California Energy Commission
CPR	Critical Project Review
CTP	Clean Transportation Program
FTD	Fuels and Transportation Division
GFO	Grant Funding Opportunity
kg/day	Kilograms per day

Recipient	Linde Inc.
-----------	------------

Background

Assembly Bill (AB) 118 (Núñez, Chapter 750, Statutes of 2007), created the Clean Transportation Program. The statute authorizes the California Energy Commission (CEC) 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 Clean Transportation Program through January 1, 2024. The Clean Transportation Program 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.

On April 9, 2021, the CEC released a Grant Funding Opportunity (GFO) entitled “Renewable Hydrogen Transportation Fuel Production.” This competitive grant solicitation was to increase in-state production of 100 percent renewable hydrogen for on-road fuel cell electric vehicles. In response to GFO-20-609, the Recipient submitted application #02 which was proposed for funding in the CEC’s Notice of Proposed Awards on February 3, 2022. GFO-20-609 and Recipient’s application 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 CEC’s Award, the CEC’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:

California is the foremost leader in the United States when it comes to the deployment of zero-emission vehicles. California roads are home to more zero-emission vehicles than any other state and Governor Gavin Newsom’s Executive Order N-79-20 requiring all new cars and light-duty trucks sold in the state to be zero-emission vehicles starting in 2035 charts a sustainable path forward toward reducing the greenhouse gas emissions related to transportation in California.

Yet, in a state that covers 163,000 square miles, the availability of fuel to power these zero-emission vehicles – particularly hydrogen fuel – is scarce. The hydrogen shortage is well documented in California; a March 2023 search of hydrogen fuel availability at California’s

existing 54 hydrogen stations through the California Fuel Cell Partnership website found 29 stations (about 50 percent) online with available hydrogen for drivers.

Goals of the Agreement:

The goal of this Agreement is to increase California’s 100 percent renewable hydrogen production capacity by installing and operating a world-class 4MW Proton Exchange Membrane (PEM) electrolyzer system that will be integrated into Linde’s existing distribution supply system at its Ontario, California facility.

Objectives of the Agreement:

The objectives of this Agreement are to:

- Procure and install technologies to allow for the production of 100 percent renewable hydrogen for the California mobility market.
- Produce 1,728 kg/day of 100 percent renewable hydrogen for transportation fuel.
Produce 630,720 kg/year of 100 percent renewable hydrogen for transportation fuel.

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 CEC 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.
- Provide a written statement of project activities that have occurred after the notice of proposed awards but prior to the execution of the agreement using match funds. If none, provide a statement that no work has been completed using match funds prior to the execution of the agreement. All pre-execution match expenditures must conform to the requirements in the Terms and Conditions of this Agreement.
- Discuss the following administrative and technical aspects of this Agreement:
 - Agreement Terms and Conditions
 - Critical Project Review (Task 1.2)
 - Match fund documentation (Task 1.7) No reimbursable work may be done until this documentation is in place.
 - Permit documentation (Task 1.8)
 - Subawards needed to carry out project (Task 1.9)
 - The CAM’s expectations for accomplishing tasks described in the Scope of Work
 - An updated Schedule of Products and Due Dates
 - Monthly Calls (Task 1.4)
 - Quarterly Progress Reports (Task 1.5)
 - Technical Products (Product Guidelines located in Section 5 of the Terms and Conditions)

- Final Report (Task 1.6)

Recipient Products:

- Updated Schedule of Products
- Updated List of Match Funds
- Updated List of Permits
- Written Statement of Match Share Activities

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 CEC and the Recipient. The goal of this task is to determine if the project should continue to receive CEC 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 CAO, the Fuels and Transportation Division (FTD) program lead, other CEC staff and Management as well as other individuals selected by the CAM to provide support to the CEC.

The CAM shall:

- Determine the location, date, and time of each CPR meeting with the Recipient. These meetings generally take place at the CEC, but they may take place at another location or remotely.
- 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 CEC 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 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 about the following Agreement closeout items:

- What to do with any equipment purchased with CEC funds (Options)
- CEC 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 Calls

The goal of this task is to have calls at least monthly between CAM and Recipient to 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 verbally 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, to verify match funds are being proportionally spent concurrently or in advance of CEC funds or are being spent in accordance with an approved Match Funding Spending Plan, to form the basis for determining whether invoices are consistent with work performed, and to answer any other questions from the CAM. Monthly calls might not be held on those months when a quarterly progress report is submitted, or the CAM determines that a monthly call is unnecessary.

The CAM shall:

- Schedule monthly calls.
- Provide questions to the Recipient prior to the monthly call.
- Provide call summary notes to Recipient of items discussed during call.

The Recipient shall:

- Review the questions provided by CAM prior to the monthly call
- Provide verbal answers to the CAM during the call.

Product:

- Email to CAM concurring with call summary notes.

Task 1.5 Quarterly 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 Quarterly 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. Progress reports are due to the CAM the 10th day of each January, April, July, and October. The Quarterly Progress Report template can be found on the ECAMS Resources webpage available at <https://www.energy.ca.gov/media/4691>.

Product:

- Quarterly Progress Reports

Task 1.6 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 and is limited to 25-pages. If the Recipient has obtained confidential status from the CEC 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.

In addition to any other applicable requirements, the Final Report must comply with the Americans with Disabilities Act (ADA) of 1990 (42 U.S.C. 12101 et seq.), which prohibits discrimination on the basis of disability; all applicable regulations and guidelines issued pursuant to the ADA; Cal. Gov. Code sects. 7405 and 11135; and Web Content Accessibility Guidelines 2.0, or a subsequent version, as published by the Web Accessibility Initiative of the World Wide Web Consortium at a minimum Level AA success criteria.

The Recipient shall:

- Prepare an Outline of the Final Report, if requested by the CAM.
- Prepare a Final Report complying with ADA requirements and 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 Final Report in Microsoft Word format or similar electronic format as approved by the CAM.

Products:

- Outline of the Final Report, if requested
- Draft Final Report
- Final Report

Task 1.7 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 CEC budget for this task will be zero dollars, the Recipient may utilize match funds for this task. 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 CEC 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 CEC 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 1.8 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 CEC budget for this task will be zero dollars, the Recipient may 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)
- A copy of each final approved permit (if applicable)

Task 1.9 Obtain and Execute Subawards

The goal of this task is to ensure quality products and to procure subrecipients 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.

The Recipient shall:

- Manage and coordinate subrecipient activities.
- If requested by the CAM, submit a draft of each subaward required to conduct the work under this Agreement to the CAM for review.
- If requested by the CAM, submit a final copy of the executed subaward.
- If Recipient intends to add new subrecipients or change subrecipients, then the Recipient shall notify the CAM.

Products:

- Letter describing the subawards needed, or stating that no subawards are required
- Draft subcontracts (if requested)
- Final subcontracts (if requested)

TECHNICAL TASKS

TASK 2 PROJECT DESIGN FINALIZATION AND PROCUREMENT OF 100 PERCENT RENEWABLE HYDROGEN PRODUCTION TECHNOLOGY AND EQUIPMENT

The goal of this task is to finalize the on-site facility design and engineering needed to the install the 100 percent renewable hydrogen production technology and equipment at Linde’s existing Ontario, California hydrogen facility.

Once the design for this project is finalized, all technology, equipment, and materials will be procured. All technology and equipment is drop-in ready and manufactured specifically for the United States market; specifications unique to Linde will be designed to ensure project success.

The Recipient shall:

- Finalize the on-site facility design and engineering needed to the install the 100 percent renewable hydrogen production technology and equipment at Linde’s existing Ontario, California hydrogen facility.
- Secure final equipment and installation quotations/bids.
- Secure preliminary schedule for equipment delivery and installation.
- Prepare a *Site Preparation and Technology/Equipment Procurement Memo* that shall include, but not be limited to:
 - Summary of the steps to prepare the site(s);
 - Copies of the procurement documents and purchase orders noting the description and costs estimates for each item; and
 - Status of the planned installation including preliminary schedule for equipment delivery and installation for each site.
- Provide a copy of the *Site Preparation and Technology/Equipment Procurement Memo* to the CAM.
- Procure all technology, equipment, and supplies for installation of equipment and confirm delivery date.

Products:

- Site Preparation and Technology/Equipment Procurement Memo

TASK 3 INSTALLATION OF 100 PERCENT RENEWABLE HYDROGEN PRODUCTION TECHNOLOGY AND EQUIPMENT

The goal of this task is to complete the installation of all technology and equipment needed to produce 100 percent renewable hydrogen for the mobility market (light duty, transit, heavy duty).

The Recipient shall:

- Conduct site preparation for new technology and equipment.
- Develop *Site Specific Installation Plan* and provide a copy to the CAM.
- Formalize process control and safety protocols in a Hydrogen Safety Plan, in collaboration with the Center for Hydrogen Safety.
- Provide a copy of the *Hydrogen Safety Plan* to the CAM.
- Provide a *Technology and Equipment Installation Memo* that shall include, but not be limited to:
 - Summary of the technology and equipment installation requirements at Linde;

- Identification of barriers involved during installation and discuss the steps taken to overcome those barriers; and
- Discuss results of equipment start-up and commissioning with respect to whether the equipment as installed meets the stated performance specifications.

Products:

- Site Specific Installation Plan
- Technology and Equipment Installation Memo
- Hydrogen Safety Plan
-

[CPR WILL OCCUR DURING THIS TASK. See task 1.2 for details.]

TASK 4 COMMISSIONING AND MONITORING OF 100 PERCENT RENEWABLE HYDROGEN PRODUCTION TECHNOLOGY AND EQUIPMENT

The goal of this task is to commission all 100 percent renewable hydrogen production technology and equipment at Linde’s existing hydrogen production facility in Ontario, California.

The Recipient shall:

- Conduct start-up and commissioning of 100 percent renewable hydrogen production technology and equipment, making needed adjustments to meet stated performance specifications.
- Provide *Start-Up and Commissioning Report* to the CAM.
- Conduct safety review with all Linde personnel.
- Provide a copy of *Safety Review Training Material* to the CAM.

Products:

- Start-Up and Commissioning Report
- Safety Review Training Material

[CPR WILL OCCUR DURING THIS TASK. See task 1.2 for details.]

TASK 5 DATA COLLECTION AND ANALYSIS

The goal of this task is to collect operational data from the project and to analyze that data for economic and environmental impacts.

The Recipient shall:

- Troubleshoot any issues identified.
- Develop a data collection plan and collect at least six months of data, including, at a minimum, the following:
 - Throughput, usage, and operations data
 - Normal operating hours, up time, down time, and explanations of variations
 - Feedstock supply summary, including volumes and cost
 - Maximum capacity of the new hydrogen fuel production system in kilograms per day
 - Monthly volumes of renewable and non-renewable hydrogen produced and sold by the project facility.
 - List of hydrogen refueling stations served.

- Record of co-products from production processes, including quantity
- Record of wastes from production processes (waste water, solid waste, criteria emissions, etc.)
- Electricity consumption
- Expected air emissions reduction from the production facility, for example:
 - Non-methane hydrocarbons
 - Oxides of nitrogen
 - Non-methane hydrocarbons plus oxides of nitrogen
 - Particulate Matter
 - Formaldehyde
- For any expected medium- and heavy-duty vehicle fleet use, duty cycle of the current fleet and the expected duty cycle of future vehicle acquisitions
- Specific jobs and economic development resulting from this project
- Finished hydrogen fuel price
- Analysis of total facility costs, operation and maintenance costs, marginal abatement costs
- Provide a written record of registering with the Low Carbon Fuel Standard and Renewable Fuel Standard programs.
- Identify any current and planned use of renewable energy at the facility.
- 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 or provide an Air Resources Board approved pathway carbon intensity.
- Estimate annual life-cycle greenhouse gas emission reduction.
- Compare any project performance and expectations provided in the proposal to CEC with actual project performance and accomplishments.
- Collect data, information, and analysis described above and provide to the CAM.

Products:

- Written record of registering with the Low Carbon Fuel Standard and Renewable Fuel Standard programs
- Draft data collection plan
- Data collection information and analysis

TASK 6 PROJECT FACT SHEET

The goal of this task is to develop an initial and final project fact sheet that describes the CEC-funded project and the benefits resulting from the project for the public and key decision makers.

The Recipient shall:

- Prepare an Initial Project Fact Sheet at start of the project that describes the project and the expected benefits. Use the format provided by the CAM.
- Prepare a Final Project Fact Sheet at the project’s conclusion that describes the project, the actual benefits resulting from the project, and lessons learned from implementing the project. Use the format provided by the CAM.
- Provide at least (6) six High Quality Digital Photographs (minimum resolution of 1300x500 pixels in landscape ratio) of pre and post technology installation at the project sites or related project photographs.

Products:

- Initial Project Fact Sheet
- Final Project Fact Sheet
- High Quality Digital Photographs