

GRANT REQUEST FORM (GRF)

CEC-270 (Revised 10/2015)

CALIFORNIA ENERGY COMMISSION

New Agreement ARV-18-028 (To be completed by CGL Office)

Division	Agreement Manager:	MS-	Phone
600 Fuels and Transportation Division	Hieu Nguyen	27	916-654-4774

Recipient's Legal Name	Federal ID Number
Technikon LLC	81-2298613

Title of Project
Hyper-Philic AD Demonstration of Green Waste Conversion to Renewable Natural Gas for fueling station

Term and Amount	Start Date	End Date	Amount
	06 / 12 / 2019	12 / 31 / 2022	\$ 1,125,000

Business Meeting Information

<input type="checkbox"/> ARFVTP agreements \$75K and under delegated to Executive Director.			
Proposed Business Meeting Date	06 / 12 / 2019	<input type="checkbox"/> Consent	<input checked="" type="checkbox"/> Discussion
Business Meeting Presenter	Hieu Nguyen	Time Needed:	5 minutes
Please select one list serve. Altfuels (AB118- ARFVTP)			

Agenda Item Subject and Description

b. TECHNIKON LLC. Proposed resolution approving Agreement ARV-18-028 with Technikon LLC for a \$1,125,000 grant to demonstrate an innovative technology, the Hyper-Philic anaerobic digestion (AD) system, at a waste processing facility, and adopting staff's determination that this action is exempt from CEQA.

California Environmental Quality Act (CEQA) Compliance

- 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 .
- 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: §15301 – "Existing Facilities, Structures", §15304 – "Minor Alterations to Land"
 - ☐ Common Sense Exemption. 14 CCR 15061 (b) (3)

Explain reason why Agreement is exempt under the above 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 use beyond that existing at the time of the lead agency's determination, are categorically exempt from the provisions of the California Environmental Quality Act. This project consists of demonstration of anaerobic digestion technology equipment which will involve the operation, maintenance, and minor alteration of an existing waste processing facility and will involve negligible expansion use beyond that already existing and the square footage of equipment installation is relatively small.

Cal. Code Regs., tit. 14, sec. 15304 provides that projects which consist of minor public or private alterations in the condition of land, water, and/or vegetation which do not involve removal of healthy, mature, scenic trees except for forestry or agricultural purposes, are categorically exempt from the provisions of the California Environmental Quality Act. For installation of the equipment in this project there may be minor trenching and backfilling. No trees will be removed and the surface will be restored. This reflects exactly the example given in section 15304(f). Therefore, the project falls within section 15304 and will not have a significant effect on the environment.
 - ☐ 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

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CALIFORNIA ENERGY COMMISSION

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

Legal Company Name:	Budget
	\$ 0
	\$ 0
	\$ 0

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

Legal Company Name:
Atlas Disposal
VERDE

Budget Information

Funding Source	Funding Year of Appropriation	Budget List No.	Amount
ARFVTP	2017/2018	601.118J	\$1,125,000
Funding Source			\$
Funding Source			\$
Funding Source			\$
Funding Source			\$
R&D Program Area:	Select Program Area	TOTAL:	\$1,125,000
Explanation for "Other" selection			
Reimbursement Contract #:	Federal Agreement #:		

Recipient's Administrator/ Officer

Name:	William C. Walden	Name:	George Crandell
Address:	1170 National Drive Suite 70	Address:	1170 National Drive Suite 70
City, State, Zip:	Sacramento, CA 95834	City, State, Zip:	Sacramento, CA 95834
Phone:	916-929-8001	Fax:	- -
E-Mail:	bwalden@technikon.us	E-Mail:	gcrandell@technikon.us

Selection Process Used

<input checked="" type="checkbox"/> Competitive Solicitation	Solicitation #: GFO-18-602
<input type="checkbox"/> First Come First Served Solicitation	

The following items should be attached to this GRF

1. Exhibit A, Scope of Work	<input checked="" type="checkbox"/> Attached
2. Exhibit B, Budget Detail	<input checked="" type="checkbox"/> Attached
3. CEC 105, Questionnaire for Identifying Conflicts	<input checked="" type="checkbox"/> Attached
4. Recipient Resolution	<input checked="" type="checkbox"/> N/A <input type="checkbox"/> Attached
5. CEQA Documentation	<input type="checkbox"/> N/A <input checked="" type="checkbox"/> Attached

Agreement Manager

Date

Office Manager

Date

Deputy Director

Date

Exhibit A SCOPE OF WORK

TECHNICAL TASK LIST

Task #	CPR	Task Name
1		Administration
2	X	Design, Engineering, and Procurement
3		Site Preparation
4		Equipment Installation
5	X	System Start-up and Optimization
6		Data Collection and Analysis

KEY NAME LIST

Task #	Key Personnel	Key Subcontractor(s)	Key Partner(s)
1	George Crandell / Bill Walden	None	None
2	George Crandell	TBD	TBD
3	George Crandell	TBD	TBD
4	George Crandell	TBD	TBD
5	George Crandell	TBD	TBD
6	George Crandell	TBD	TBD

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
CAM	Commission Agreement Manager
CPR	Critical Project Review
FTD	Fuels and Transportation Division
Recipient	Technikon LLC
IBR	Induced Bed Reactor
DGE	Diesel Gallon Equivalent
AD	Anaerobic Digestion

Background

Assembly Bill (AB) 118 (Núñez, Chapter 750, Statutes of 2007), created the Alternative and Renewable Fuel and Vehicle Technology Program (ARFVTP). The statute authorizes the California Energy Commission (Energy Commission) to develop and deploy alternative and renewable fuels and advanced transportation technologies to help attain the state's climate change, clean air, and alternative energy policies. AB 8 (Perea, Chapter 401, Statutes of 2013) re-authorizes the ARFVTP through January 1, 2024. The ARFVTP has an annual budget of approximately \$100 million and provides financial support for projects that:

- Reduce California's use and dependence on petroleum transportation fuels and increase the use of alternative and renewable fuels and advanced vehicle technologies.
- Produce sustainable alternative and renewable low-carbon fuels in California.
- Expand alternative fueling infrastructure and fueling stations.

- Improve the efficiency, performance and market viability of alternative light-, medium-, and heavy-duty vehicle technologies.
- Retrofit medium- and heavy-duty on-road and non-road vehicle fleets to alternative technologies or fuel use.
- Expand the alternative fueling infrastructure available to existing fleets, public transit, and transportation corridors.
- Establish workforce training programs and conduct public outreach on the benefits of alternative transportation fuels and vehicle technologies.

The Energy Commission issued solicitation GFO-18-602 for demonstration-scale biofuels production facilities. To be eligible for funding under GFO-18-602, projects must also be consistent with the Energy Commission's ARFVTP Investment Plan, updated annually. In response to GFO-18-602, Technikon LLC (Recipient) submitted application 2, which was proposed for funding in the Energy Commission's Notice of Proposed Awards on January 18, 2019. GFO-18-602 and Recipient's aforementioned application is 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:

California has a legislative goal of producing sustainable alternative and renewable low-carbon fuels. This goal is supported by California Health and Safety Code, Section 44272 et seq., and the ARFVTP 2017-2018 Investment Plan Updates that encourage the production of renewable transportation fuels that can significantly reduce greenhouse gas emissions. Additionally, there is a need for a recycling solution for organic wastes, such as green waste. This is driven by California's Senate Bill 1383 legislation that requires diversion of 50% organics going to landfills starting as soon as 2020.

Goals of the Agreement:

The goal of this Agreement is to demonstrate the modular "Hyper-Philic" anaerobic digestion (AD) technology that can convert up to 90% of municipal organic waste (green waste, food waste, and soiled paper) into renewable biomethane in a 3- to 5-day conversion cycle.

Objectives of the Agreement:

The objectives of this Agreement are to demonstrate that the Hyper-Philic AD system technology can:

- Process 8 tons per day of mixed organic lignocellulosic waste.
- Produce up to 200 DGE per day of fuel grade biomethane, and at rate of 48,000 DGE per year if plant operated continuously for year.
- Demonstrate that the biogas produced contains 70% to 80% methane content.
- Validate low operational cost per DGE of \$8.38 per DGE.

TASK 1 ADMINISTRATION

Task 1.1 Attend Kick-off Meeting

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

The Recipient shall:

- Attend a “Kick-Off” meeting with the Commission Agreement Manager, 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 Commission Agreement Manager 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 Commission Agreement Manager 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) 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, then state such in the letter. If match funds were a part of the proposal that led to the Energy Commission awarding this Agreement, then provide in the letter a list of the match funds that identifies the:
 - Amount of each cash match fund, its source, including a contact name, address and telephone number and the task(s) to which the match funds will be applied.
 - Amount of each in-kind contribution, a description, documented market or book value, and its source, including a contact name, address and telephone number and the task(s) to which the match funds will be applied. If the in-kind contribution is equipment or other tangible or real property, the Recipient shall identify its owner and provide a contact name, address and telephone number, and the address where the property is located.
- Provide a copy of the letter of commitment from an authorized representative of each source of cash match funding or in-kind contributions that these funds or contributions have been secured. For match funds provided by a grant a copy of the executed grant shall be submitted in place of a letter of commitment.
- Discuss match funds and the implications to the Agreement if they are reduced or not obtained as committed, at the kick-off meeting. If applicable, match funds will be included as a line item in the progress reports and will be a topic at CPR meetings.
- Provide the appropriate information to the Commission Agreement Manager if during the course of the Agreement additional match funds are received.
- Notify the Commission Agreement Manager within 10 days if during the course of the Agreement existing match funds are reduced. Reduction in match funds must be approved through a formal amendment to the Agreement and may trigger an additional CPR meeting.

Products:

- A letter regarding match funds or stating that no match funds are provided
- Copy(ies) of each match fund commitment letter(s) (if applicable)
- Letter(s) for new match funds (if applicable)
- Letter that match funds were reduced (if applicable)

Task 1.7 Identify and Obtain Required Permits

The goal of this task is to obtain all permits required for work completed under this Agreement in advance of the date they are needed to keep the Agreement schedule on track.

Permit costs and the expenses associated with obtaining permits are not reimbursable under this Agreement. Although the Energy Commission budget for this task will be zero dollars, the Recipient shall budget match funds for any expected expenditures associated with obtaining permits. Permits must be identified in writing and obtained before the Recipient can make any expenditure for which a permit is required.

The Recipient shall:

- Prepare a letter documenting the permits required to conduct this Agreement and submit it to the Commission Agreement Manager at least 2 working days prior to the kick-off meeting. If there are no permits required at the start of this Agreement, then state such in the letter. If it is known at the beginning of the Agreement that permits will be required during the course of the Agreement, provide in the letter:
 - A list of the permits that identifies the:
 - Type of permit
 - Name, address and telephone number of the permitting jurisdictions or lead agencies
 - The schedule the Recipient will follow in applying for and obtaining these permits.
- Discuss the list of permits and the schedule for obtaining them at the kick-off meeting and develop a timetable for submitting the updated list, schedule and the copies of the permits. The implications to the Agreement if the permits are not obtained in a timely fashion or are denied will also be discussed. If applicable, permits will be included as a line item in the Progress Reports and will be a topic at CPR meetings.
- If during the course of the Agreement additional permits become necessary, provide the appropriate information on each permit and an updated schedule to the Commission Agreement Manager.
- As permits are obtained, send a copy of each approved permit to the Commission Agreement Manager.
- If during the course of the Agreement permits are not obtained on time or are denied, notify the Commission Agreement Manager within 5 working days. Either of these events may trigger an additional CPR.

Products:

- Letter documenting the permits or stating that no permits are required
- A copy of each approved permit (if applicable)
- Updated list of permits as they change during the term of the Agreement (if applicable)
- Updated schedule for acquiring permits as changes occur during the term of the Agreement (if applicable)
- A copy of each final approved permit (if applicable)

Task 1.8 Obtain and Execute Subcontracts

The goal of this task is to ensure quality products and to procure subcontractors required to carry out the tasks under this Agreement consistent with the Agreement Terms and Conditions and the Recipient's own procurement policies and procedures. It will also provide the Energy Commission an opportunity to review the subcontracts to ensure that the tasks are consistent with this Agreement, and that the budgeted expenditures are reasonable and consistent with applicable cost principles.

The Recipient shall:

- Manage and coordinate subcontractor activities.
- Submit a draft of each subcontract required to conduct the work under this Agreement to the Commission Agreement Manager for review.

- Submit a final copy of the executed subcontract.
- If Recipient decides to add new subcontractors, then the Recipient shall notify the CAM.

Products:

- Draft subcontracts
- Final subcontracts

TECHNICAL TASKS

TASK 2 DESIGN, ENGINEERING, AND PROCUREMENT

The goal of this task is to complete detailed design and engineering plans for the modular Hyper-Philic AD technology system that will be demonstrated, create specifications for major components, place orders for equipment, and enter into installation contracts for the system.

The Recipient shall:

- Prepare and provide a *Design and Engineering Report* to the CAM. The report shall include engineering specifications for the following elements of the Hyper-Philic AD technology system:
 - Mechanical
 - Electrical
 - Foundations
 - Site Preparation
- The Hyper-Philic AD technology system shall be designed to produce eligible biofuel for transportation use consisting of one or more of the following:
 - Diesel substitutes, including renewable diesel, biodiesel, Dimethyl Ether (DME), or other suitable substitutes as approved by the CAM.
 - Gasoline substitutes, including ethanol, biobutanol, renewable gasoline, or other suitable substitutes as approved by the CAM; or
 - Biomethane which is a renewable natural gas produced from organic material.
- Prepare and provide *Equipment List* to the CAM that will be used to develop bid packages to be sent to vendors.
- Prepare and provide *Installation Services Plan* to the CAM that will be used to develop bid packages to be sent to vendors.
- Prepare and provide an *Equipment Procurement and Installation Report* for the facility to the CAM that will detail the selection process and justification for the service providers selected. The report shall include, but is not limited to:
 - A description of the bid packages to be assembled
 - A methodology for receiving and evaluating responses
 - A description of the vendor selection process
 - A list of respondents to bid packages
 - A rationale for the selected service providers
 - A timeline for equipment procurement
 - A timeline for equipment installation
- Enter into installation contract(s) with selected vendor(s) pursuant to *Installation Services Plan*.
- Procure equipment pursuant to Equipment List.
- Prepare and provide a *Written Notification of Completion of Equipment Procurement* to the CAM.

Products:

- Design and Engineering Report
- Equipment List
- Installation Services Plan
- Equipment Procurement and Installation Report
- Written Notification of Completion of Equipment Procurement

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

TASK 3 SITE PREPARATION

The goal of this task is to prepare demonstration site for installation of the Hyper-Philic AD technology system equipment and bring in necessary utilities to connection points at an existing waste processing facility located in California and approved by the CAM.

The Recipient shall:

- Prepare and provide a *Site Preparation Plan* to the CAM for the facility that will outline the budget and schedule for the items necessary to complete construction and installation activities. The *Site Preparation Plan* will include, but is not limited to:
 - A list of site preparation milestones, such as site grading, excavation, and pouring and curing foundations for three tank systems; and
 - A Gantt chart and detailed project schedule
- Implement *Site Preparation Plan*.
- Prepare and provide *Written Notification of Site Preparation* to the CAM.

Products:

- Site Preparation Plan
- Written Notification of Site Preparation

TASK 4 EQUIPMENT INSTALLATION

The goal of this task is to install all major components for the Hyper-Philic AD technology system and finish all facility and field piping and wiring.

The Recipient shall:

- Prepare and provide an *Equipment Installation Plan* to the CAM, which shall include, but not be limited to the following:
 - A list of construction and installation milestones.
 - A Gantt chart and detailed project schedule
- Prepare and provide an *Equipment Installation Report* to the CAM for the demonstration facility that will evaluate the actual construction and installation activities for the Hyper-Philic AD technology system. The report shall include, but is not limited to:
 - A final schedule of completed milestones;
 - A description of lessons learned; and
 - A summary of major project changes, if any.
- Prepare and provide *Written Notification of Completion of Installation* to the CAM for the Hyper-Philic AD technology system that will notify the CAM that construction and installation activities have been completed.

- Provide photographs of the installed Hyper-Philic AD technology system equipment to the CAM.

Products:

- Equipment Installation Plan
- Equipment Installation Report
- Written Notification of Completion of Installation
- Photographs of completed installation

TASK 5 SYSTEM START-UP AND OPTIMIZATION

The goal of this task is start the modular Hyper-Philic AD technology system and bring up to operational status. Collect data on operational variables and optimize system for most efficient conversion of green waste into biogas (biomethane). Feedstock must be organic material not derived from fossil fuels or inorganic greenhouse gases, including, but not limited to: pre-landfilled waste-based biomass; alternative purpose-grown crops; agricultural residues; biocrude; woody biomass and forest residues; and animal manures as defined in GFO-18-602 solicitation manual Section II.B. Biofuel produced must have a calculated carbon intensity below the California Air Resources Board Low Carbon Fuel Standard reference baselines for corn ethanol for gasoline substitutes (80.7gCO₂e/MJ) or soy biodiesel substitutes (83.25 gCO₂e/MJ) as applicable (biomethane is considered to meet this requirement).

The Recipient shall:

- Prepare and provide a *Start-Up Plan* to the CAM. The plan shall include, but is not limited to the following:
 - Operating parameters for Hyper-Philic AD technology system;
 - Demonstration of the ability to process at least 2 tons of feedstock per day.
- Implement *Start-Up Plan*.
- Prepare and provide a *Feedstock Quality Monitoring Plan* to the CAM. The plan shall include, but is not limited to the following:
 - Assessment of green waste needed for feedstock
 - Operational experience specifications that define acceptable sizing and mix of green waste feedstock
 - Introduction of bacteria into systems
 - Balancing out chemistry of tank systems
- Implement *Feedstock Quality Monitoring Plan*.
- Prepare and provide a *Biogas Quality and Production Analysis Report* to the CAM. The report shall analyze the following input variables:
 - Feedstock total and volatile solids content
 - Effectiveness of pretreatment process
 - Temperatures of pretreatment and IBR tanks
 - Biogas composition variability
 - Gas cleaning system operational limits
 - Sensitivity of individual systems to variations
 - Methane percentage in biogas and volume of biogas produced based on input variables
 - Interim and final configuration for system
- Prepare and provide an *Operations Manual* to the CAM for operators to utilize for daily operations, including steps for feedstock preparation, microbial inoculation and optimization, quality control monitoring.

- Provide training to operators.
- Prepare and provide *Written Notification of Completion of Commissioning* for the Hyper-Philic AD technology system that will notify the CAM that commissioning activities have been completed and that the Hyper-Philic AD technology system is ready to commence operations.

Products:

- Start-Up Plan
- Feedstock Quality Monitoring Plan
- Biogas Quality and Production Analysis Report
- Operations Manual
- Written Notification of Completion of Commissioning

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

TASK 6 DATA COLLECTION AND ANALYSIS

The goal of this task is to collect operational data from the project, demonstration of the Hyper-Philic AD technology system, to analyze that data for economic and environmental impacts, and to include the data and analysis in the Final Report.

The Recipient shall:

- Collect at least 500 hours over a six month period of data after the Hyper-Philic AD technology system becomes operational, including:
 - Throughput, usage, and operations data
 - Normal operating hours, up time, down time, and explanations of variations
 - Feedstock supply summary
 - Maximum capacity of the new fuel production system in diesel gallon equivalents (DGE) and ordinary units
 - Gallons of gasoline and/or diesel fuel displaced (with associated mileage information), along with value converted into DGE
 - Record of wastes from production processes (wastewater, solid waste, criteria emissions, etc.)
 - Estimated reduction of on-road motor vehicle air emission reduction.
 - Estimated air emissions reduction, including one or more of the following:
 - 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
 - Levelized Cost of Fuel and Finished fuel price
 - Analysis of total facility costs, operation and maintenance costs, marginal abatement costs

- Provide (voluntary) feedback on Energy Commission proposed rulemaking under the Petroleum Industry Information Reporting Act (PIIRA), to include biofuels. Feedback includes estimates of the work needed to complete CEC Form M810E and CEC Form M13 on a monthly basis for submission to the California Energy Commission's PIIRA Data Collection Unit.
- 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 for the demonstration.
- Describe any energy efficiency measures used in the demonstration that may exceed Title 24 standards in Part 6 of the California Code of 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 calculated using a method that conforms to California Air Resources Board Low Carbon Fuel Standard, or provide a California 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 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 described in Task 6 will be included in the Final Report

STATE OF CALIFORNIA

STATE ENERGY RESOURCES
CONSERVATION AND DEVELOPMENT COMMISSION

RESOLUTION - RE: TECHNIKON, LLC

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

RESOLVED, that the Energy Commission approves Agreement ARV-18-028 with Technikon LLC for a \$1,125,000 grant to demonstrate an innovative technology, the Hyper-Philic anaerobic digestion (AD) system, at a waste processing facility, and adopting staff's determination that this action is exempt from CEQA; and

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

CERTIFICATION

The undersigned Secretariat to the Commission does hereby certify that the foregoing is a full, true, and correct copy of a Resolution duly and regularly adopted at a meeting of the California Energy Commission held on June 12, 2019.

AYE: [List of Commissioners]

NAY: [List of Commissioners]

ABSENT: [List of Commissioners]

ABSTAIN: [List of Commissioners]

Cody Goldthrite,
Secretariat