

GRANT AMENDMENT REQUEST FORM (GARF)

CEC-277 (Revised 02/13)

CALIFORNIA ENERGY COMMISSION



Original Agreement #	ARV-10-016	Amendment #	1
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Division	Agreement Manager:	MS-	Phone
600 Fuels and Transportation Division	Donald Coe	27	916-654-3941

Recipient's Legal Name	Federal ID Number
City of San Jose	-

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

A) Business Meeting Information**Business Meeting approval is not required for the following types of Agreements:**

<input type="checkbox"/> ARFVTP minor amendments delegated to Executive Director.			
Proposed Business Meeting Date	06 / 18 / 2014	<input checked="" type="checkbox"/> Consent	<input type="checkbox"/> Discussion
Business Meeting Presenter	Donald Coe	Time Needed:	minutes
Please select one list serve. Select			

Agenda Item Subject and Description

Proposed resolution approving Amendment #1 to Agreement ARV-10-016 with the City of San Jose. The purpose of this amendment is to replace subcontractors, revise the budget and modify the scope of work to allow the City to investigate the feasibility of converting urban-source woody biomass and biosolids into high-quality syngas which can further be converted to an alternative transportation fuel (such as renewable gasoline or renewable diesel).

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

Legal Company Name:	Budget
Zero Waste Energy (ZWE)	\$ 200,000.00
JUM Global	\$ 3,402,688.00
For remaining companies see attachment	\$

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

Legal Company Name:
City of San Jose, Zero Waste Energy, JUM Global and Concord Blue

D) Budget Information (only include amendment amount information)

Funding Source	Funding Year of Appropriation	Budget List No.	Amount
Funding Source			\$
R&D Program Area:	Select Program Area	TOTAL:	\$ 0
Explanation for "Other" selection			
Reimbursement Contract #:		Federal Agreement #:	



E) California Environmental Quality Act (CEQA) Compliance

1. Is Agreement considered a "Project" under CEQA?
 Yes (skip to question 2) No (complete the following (PRC 21065 and 14 CCR 15378)):
Explain why Agreement is not considered a "Project":
Agreement will not cause direct physical change in the environment or a reasonably foreseeable indirect physical change in the environment because _____.

2. If Agreement is considered a "Project" under CEQA:
 a) Agreement **IS** exempt. (Attach draft NOE)
 Statutory Exemption. List PRC and/or CCR section number: _____

Categorical Exemption. List CCR Section 15301. Existing Facilities section number: _____

Common Sense Exemption. 14 CCR 15061 (b) (3)
Explain reason why Agreement is exempt under the above section: _____

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

- Check all that apply
- Initial Study
 - Negative Declaration
 - Mitigated Negative Declaration
 - Environmental Impact Report
 - Statement of Overriding Considerations

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

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

Agreement Manager Date Office Manager Date Deputy Director Date

EXHIBIT A

WORK STATEMENT Work Statement

TECHNICAL TASK LIST

Task #	CPR	Task Name
1	N/A	Administration
2	X	Initial Feasibility Studies
3		Planning, Design, and Construction of Demonstration Facility
4	X	Facility Operation <u>Operating</u> and Feedstock Testing
5		Long-Term Feasibility Studies (to run concurrently with Tasks 3 & 4)
6		Data Collection and Analysis

KEY NAME LIST

Task #	Key Personnel	Key Subcontractor(s)	Key Partner(s)
1	Jeff Krump Michele Young <u>Stephanie Molloy</u>	<u>HDR</u>	
2	Jeff Krump Michele Young Bhavani Yerrapotu <u>Stephanie Molloy</u>	Harvest Agnion URS <u>JUM</u> <u>ZWE</u>	<u>CBE</u>
3	John Newby Dale Ihrke Bhavani Yerrapotu <u>Michele Young</u> <u>Stephanie Molloy</u>	Harvest Agnion URS <u>JUM</u> <u>ZWE</u> HDR	<u>CBE</u>
4	Dale Ihrke Alex Ekster <u>Michele Young</u> <u>Stephanie Molloy</u>	Harvest Agnion URS <u>JUM</u> <u>ZWE</u> HDR	<u>CBE</u>

5	Jeff Krump Michele Young Bhavani Yerrapotu <u>Stephanie Molloy</u>	Harvest Agnion URS JUM ZWE HDR	CBE
6	Jeff Krump Michele Young Bhavani Yerrapotu <u>Stephanie Molloy</u>	URS HDR	

GLOSSARY

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

Term/ Acronym	Definition
Agnion	Agnion Technologies, GmbH
AMR	Agnion Methanation Reactor
ARFVT	Alternative and Renewable Fuel and Vehicle Technology
CBE	<u>Concord Blue Energy</u>
CEC	<u>California Energy Commission</u>
City	<u>City of San José</u>
CNG	Compressed Natural Gas
CPR	Critical Project Review
Energy Commission	California Energy Commission
Facility	The biomass gasification and methanation facility to be developed by this project
FTD	Fuels and Transportation Division
GHG	Greenhouse Gas
Harvest	Harvest Power, Inc., d/b/a Harvest Organics, Inc. in California
HDR	<u>HDR Engineering, Consulting Engineers</u>
JUM	<u>JUM Global</u>
Plant <u>RWF</u>	<u>San José-Santa Clara Regional Wastewater Facility previously referred as San José/Santa Clara Water Pollution Control Plant</u>
URS <u>Syngas</u>	<u>URS Corporation (Synthesis Gas) a fuel gas and feedstock consisting of hydrogen, methane and carbon monoxide as combustible components and nitrogen and carbon dioxide as inert components.</u>
<u>ZWE</u>	<u>Zero Waste Energy</u>

Background:

Assembly Bill 118 (Núñez, Chapter 750, Statutes of 2007), created the Alternative and Renewable Fuel and Vehicle Technology Program (ARFVT Program). The statute,

subsequently amended by AB 109 (Núñez, 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 Program Opportunity Notice (PON) 09-604 to provide funding and financial assistance for the development of new, California-based biofuel production plants and enhance the operation of existing ethanol production plants to increase statewide biofuel production and reduce greenhouse gas emissions. To be eligible for funding under PON-09-604, the projects must also be consistent with the Energy Commission's Commission's annually updated ARFVT Investment Plan.

In response to PON-09-604, Recipient the City of San José (City) submitted application #39, which was proposed for funding in the Energy Commission's Notice of Proposed Awards (NOPA) issued August 12, 2010. PON-09-604, the City's application #39, and the NOPA issued on August 12, 2010 for PON-09-604, and isare incorporated by reference to this Agreement in its entirety.

In the event of any conflict or inconsistency between the terms of the Solicitation and the terms of the Recipient's Application, the Solicitation shall control. In the event of any conflict or inconsistency between the Recipient's Application and the terms of 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.

[SK1]

PROBLEM STATEMENT

~~Production of biomethane transportation fuel from biomass gasification requires four steps: gasification, methanation, upgrading to biomethane, and compression of the biomethane so it can be dispensed as vehicle fuel. Previously, this process was technically impossible on a distributable scale, since conventional gasifiers yield a~~

synthetic gas contaminated with nitrogen and in a suboptimal ratio of hydrogen to carbon monoxide. The proposed project addresses two steps of this problem. The first part will be addressed by using Agnion's recently proven indirect gasification process to yield a gas of appropriate quality ready for the second step, which is methanation. The second part is to accomplish the methanation step on a reduced scale, which we propose to demonstrate with the Agnion Methanation Reactor (AMR).

Another technical challenge relates to feedstocks. While the Agnion gasification process using woody biomass has been successfully demonstrated at full scale, the gasification of biosolids using the Agnion process has only been proven at laboratory scale. The challenges are technical and economic: maximizing efficiency of feedstock preparation (drying and pelletizing the biosolids) and reducing corrosion of the heat pipes in order to extend their life cycle.

Beyond the conversion of producer gas into commercial ready biomethane, there are also market and institutional issues that the proposed project is prepared to address. For many people, gasification conjures images of air pollution and carcinogens, yet decades of technological advancement have created a process that offers a multitude of environmental benefits without any adverse effects on air quality. Part of the feasibility study will assess public acceptance of new gasification technology and develop an awareness campaign to overcome inadequate consumer knowledge. This will also increase the visibility of the ability of biomethane to serve as a clean, reliable transportation fuel.

GOAL OF THE AGREEMENT

Initially, the City and their project partner, Harvest Power, Inc., proposed a two phased project including (I) investigate the feasibility of converting urban-sourced woody biomass and waste water treatment biosolids into a renewable natural gas based transportation fuel, and (II) if technically feasible, build and demonstrate the technology in the San José area. A Draft Feasibility Study was produced and issued to the Energy Commission in November 2013.

Due to the withdrawal of the City's original technology provider, the City is now requesting approval of Amendment #1 to replace subcontractors, revise the budget, and change the scope of work. The project, as revised under Amendment #1, allows the City to investigate the feasibility of converting urban-source woody biomass and biosolids into high-quality syngas which can further be converted to an alternative transportation fuel (such as renewable gasoline or renewable diesel).

Problem Statement:

The City of San José in partnership with the San José-Santa Clara Regional Wastewater Facility (RWF) seeks to develop a closed loop, sustainable transportation fuel production unit to help meet its Green Vision goals and to support the California Energy Commission (Energy Commission) in developing alternative fuels and infrastructure.

In 2007, the City of San José adopted its Green Vision, a comprehensive strategy to achieve sustainability through new technology and innovation. Green Vision goals include 100 percent diversion of waste from landfills, conversion of waste to energy, alternative fuels for all public fleet vehicles, and establishment of a World Center of Clean Tech Innovation to include a significant number of Clean Tech jobs. Since adopting the Green Vision, the City has evaluated new technology approaches to manage its solid waste and has identified gasification as one possible alternative to landfilling or trucking the City's urban biomass to the Central Valley for power generation.

In addition, the City anticipates challenges in managing biosolids from the RWF and has been exploring possible technology approaches to help address those challenges. The City is participating in the Bay Area Biosolids to Energy (BAB2E) Project, a coalition of nineteen Bay Area agencies working together to create a local sustainable solution to biosolids management by utilizing the remaining energy contained in the biosolids material. For the most part, the participating agencies currently haul biosolids out of the region for land application or use as alternative daily cover at landfills. Like San José, these agencies are exploring opportunities to diversify biosolids management options with the development of a regional unit or units that will use biosolids and possibly other renewable feedstocks to generate renewable energy.

The City will explore the feasibility of producing liquid hydrocarbon transportation fuels (renewable gasoline or diesel) using a gasification and gas reforming technology to convert urban wood waste and biosolids to renewable fuels. A demonstration unit will be developed to produce a high quality syngas that will be suitable as a feedstock for liquid hydrocarbon transportation fuels at a decentralized, distributed-energy scale (Project). Renewable transportation fuel will be the goal of a subsequent commercial unit that is envisioned to follow development and testing of the demonstration unit if successful.

The syngas will be generated using a staged allothermal (indirectly heated, no added oxygen) steam gasification process. Heat for the reactor is provided by hot ceramic pellets which are mixed with the feedstock in the reactor vessel to pyrolyze the material. The raw product gas is then reformed in a steam reformer to produce a high quality syngas with appropriate H₂ to CO ratios. Syngas quality will be evaluated as part of the feasibility study to determine potential use for conversion to liquid fuels.

In addition to exploring the techno-economic feasibility of production of renewable hydrocarbons at the distributed scale, stakeholder awareness and education about the project and the technology will be pursued through a public outreach campaign. This will include evaluation, monitoring and reporting of the environmental performance of the demonstration technology (i.e., composition and mass of any solid, liquid or gaseous emissions or discharge).

[SK2]

Goal of the Agreement:

The goal of this Agreement is to determine the technological and economic feasibility of converting renewable urban-sourced woody biomass and waste resources water

~~treatment biosolids into biomethane of sufficient quality for transportation fuel syngas using the a gasification process. If successful, the biomethane This goal will be converted to compressed natural gas (CNG) accomplished by: (a) constructing and sold to fleets that service the city operating a biomass and biosolids gasification demonstration facility; and (b) testing multiple combinations (or ratios) of the biosolids and woody feedstocks to determine viability of San Jose as well as San Jose county fleets. reuse of biosolids from water treatment plant.~~

OBJECTIVES OF THE AGREEMENT

Objective of the Agreement:

The objectives objective of this project are is to:

- ~~Construct construct a biomass and biosolids gasification and methanation demonstration facility (the “Facility”) that can produce a methane-rich high-quality syngas (20% methane by volume, pre-conditioning) that could be processed using existing technology to remove water and carbon dioxide, yielding a suitable for processing into alternative transportation fuel quality (>95% methane) biomethane.~~
- ~~Operate the Facility for at least 500 hours continuously, and 5,000 hours in a year.~~
- ~~Operate the Facility on a feedstock of urban wood waste (clean construction and demolition wood and woody yard waste from the San Jose region)~~
- ~~Operate the Facility on a feedstock of mixed wood waste and biosolids from the San Jose/Santa Clara Water Pollution Control Plant (Plant).~~
- ~~Complete feasibility studies that show the market potential for rollout of similar gasification facilities in the San Jose region specifically and California generally, taking into account available feedstocks, economic costs, environmental, stakeholder, and other siting factors.~~

~~Determine capital costs for a facility capable of producing CNG for transportation fuel, and for an onsite fuels (such as renewable gasoline or near-site fueling station that could be used by fleets that service the city of San Jose. renewable diesel).~~

- ~~Conduct measurements and collect all necessary data required to:
 - ~~Obtain CEQA and other permits for commercial-scale facilities~~
 - ~~Calculate GHG emissions for commercial-scale facilities.~~~~
- ~~Develop permitting “roadmap”: pathway identifying all necessary permitting steps, template analyses, etc. needed for siting of commercial facilities.~~

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 Recipient shall:

- Attend a “Kick-Off” meeting with the Commission Project 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 Project Manager to this meeting. The administrative and technical aspects of this Agreement will be discussed at the meeting. Prior to the kick-off meeting, the Commission Project Manager will provide an agenda to all potential meeting participants.

The administrative portion of the meeting shall include, but not be limited to, the following:

- Discussion of the terms and conditions of the Agreement.
- Discussion of Critical Project Review (Task 1.2).
- Match fund documentation (Task 1.6). No work may be done until this documentation is in place.
- Permit documentation (Task 1.7).
- Discussion of subcontracts needed to carry out project (Task 1.8).

The technical portion of the meeting shall include, but not be limited to, the following:

- The Commission Project Manager’s expectations for accomplishing tasks described in the Scope of Work.
- An updated Schedule of Products.
- Discussion of Progress Reports (Task 1.4).
- Discussion of Technical Products (Product Guidelines located in Section 5 of the Terms and Conditions).
- Discussion of the Final Report (Task 1.5).

The Commission Project Manager shall designate the date and location of this meeting.

Recipient Products:

- Updated Schedule of Products
- Updated List of Match Funds
- Updated List of Permits

Commission Project Manager Product:

- Kick-Off Meeting Agenda

Task 1.2 Critical Project Review (CPR) Meetings

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.

CPRs provide the opportunity for frank discussions between the Energy Commission and the Recipient. CPRs generally take place at key, predetermined points in the Agreement, as determined by the Commission Project Manager and as shown in the Technical Task List above. However, the Commission Project Manager may schedule additional CPRs as necessary, and any additional costs will be borne by the Recipient.

Participants include the Commission Project Manager 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 Commission Project Manager to provide support to the Energy Commission.

The Commission Project Manager 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. One of the outcomes of this meeting will be 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 the Terms and Conditions, Section 8). If the Commission Project Manager concludes that satisfactory progress is not being made, this conclusion will be referred to the Transportation Committee for its 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 Commission Project Manager 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.

Commission Project Manager 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 Project 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 Project 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 Project Manager will determine the appropriate meeting participants.

The administrative portion of the meeting shall be a discussion with the Commission Project 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 research 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 Project Manager within 10 days of the end of the reporting period. The recommended specifications for each progress report are contained in Section 6 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 its 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.
- Prepare a Final Report following the approved outline and the latest version of the Final Report guidelines which will be provided by the

Commission Project Manager. The Commission Project Manager 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:

- Draft Outline of the Final Report
- Final Outline of the Final Report
- 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 Project 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 Project Manager if during the course of the Agreement additional match funds are received.
- Notify the Commission Project 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.

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 expenditures 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 Project 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 Project Manager.
- As permits are obtained, send a copy of each approved permit to the Commission Project Manager.
- If during the course of the Agreement permits are not obtained on time or are denied, notify the Commission Project 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).

Task 1.8 Obtain and Execute Subcontracts

The goal of this task is for Recipients to identify any subcontracts required to carry out the tasks under this Agreement, and to procure them 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:

- Prepare a letter documenting the subcontracts required to conduct this Agreement, and submit it to the Commission Project Manager at least 2 working days prior to the kick-off meeting. If there are no subcontracts required at the start of this Agreement, then state such in the letter. If it is known at the beginning of the Agreement that subcontracts will be required during the course of the Agreement, provide in the letter:
 - A list of the subcontracts that describes the anticipated maximum budget and general scope of work for each,
 - A description of the procurement process to be used, and
 - The schedule the Recipient will follow in applying for and obtaining these subcontracts.

- Submit a draft of the subcontract that will include a budget with the information required in the budget details to the Commission Project Manager for review and approval, and incorporate any changes recommended by the Commission Project Manager.
- Submit a final copy of the executed subcontract.

Products:

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

TECHNICAL TASKS

~~TASK 2 INITIAL FEASIBILITY STUDIES~~

Task 2 Initial Feasibility Studies

The goal of this task is to complete all planning, design, and analysis required prior to commencing construction of the facility.

~~Task 2.1 PROJECT SITE SELECTION ON CITY OF SAN JOSE PLANT LANDS~~

Task 2.1 Project Site Selection on City of San Jose Facility Lands

The Recipient shall:

- Determine criteria for site selection.
- Analyze potential locations for the facility on RWF Plant lands and select a site.
- The analysis of potential sites should address issues such as:
 - ~~Site owner input and feedback on test conditions~~
 - Coordination with site owner for siting of the demonstration unit and incorporation into existing site operations
 - Site size
 - Access to site
 - Access to utilities
 - Applicable for local Fire Department protection
 - Geotechnical, seismic and hydrology inspections
 - Insurance and indemnity
 - Contingency if damages are caused by ~~facility~~ Facility
 - Equipment installation and removal.
- Prepare and submit a Project Site Selection report including ~~site selection criteria~~ copy of agreements, issues resolved, and photographs of proposed site.
- ~~Conclude agreements between the Recipient and Harvest for use of the proposed site if City, Harvest, and CEC concur with proceeding to Tasks 3-6.~~

[Before this task ends, all relevant subcontracts must be executed. See Task 1.8 for details.]

Product:

- Project Site Selection Report

Task 2.2 ECONOMIC, TECHNOLOGY, AND FEEDSTOCK FEASIBILITY ANALYSIS
Economic, Technology, and Feedstock Feasibility Analysis

The Recipient shall:

- Analyze the economic feasibility of a demonstration facility and a commercial facility.
- Define parameters for the economic feasibility of the technology to include, but not limited to:
 - Permits
 - Siting
 - Design
 - Construction
 - Unit operation, maintenance and monitoring costs
 - Energy production costs ~~and~~ pricing and potential revenues generated
- Analyze the technical feasibility of the ~~Agnion-low temperature~~ gasification technology and associated inputs and outputs for the demonstration project, and ~~for~~ a commercial facility.
- Define parameters for the ~~technical~~ technology feasibility based on technical data ~~provided by Agnion~~, such as:
 - Performance using proposed feedstocks
 - Capabilities of the proposed equipment and operations
 - Emission characteristics of solid, liquids, and gases
 - Engineering parameters for demonstration and commercial models
- Complete a detailed analysis of available feedstock for the Facility, such as:
 - Available volumes
 - Characterization
 - Logistics requirements, including supply, handling, storage, preparation, and disposal of contaminants
 - Design implications for the gasification technology
- Prepare and submit Feasibility Analysis including economic feasibility, ~~technical~~ technology feasibility, and feedstock feasibility, ~~based on the above analyses~~.

[Before this task begins, all relevant subcontracts must be executed.
See Task 1.8 for details.]

Products:

- Feasibility Analysis

Task 2.3 ~~PERMITTING DATA COLLECTION PLANS~~ Permitting Data Collection Plans

The Recipient shall:

- Identify all data (such as air emission, water balance, energy balance, odor, etc.) that may be required for environmental permitting of demonstration and commercial operating facilities
- Determine how such data could or must be collected
- Formulate ~~and submit~~ plans for data collection, including:
 - Required instrumentation or equipment
 - Measuring or monitoring protocols
 - Timing
 - Data analysis

Products:

- Permitting Data Collection Plans

Task 2.4 ~~STAKEHOLDER FEASIBILITY PLANS~~ Stakeholder Feasibility Plans

The Recipient shall:

- Develop project understanding and provide support through key stakeholder partners meetings with, including but not limited to:
 - San Jose City Council
 - Wastewater Treatment Plant TAC (Technical Advisory Council)
 - Regional TPAC (Treatment Plant Advisory Council)
 - Master Plan CAG (Community Advisory Group)
 - Applicable Regulators
- Integrate community stakeholder activities ~~activities~~ into the Plant Master Plan through a stakeholder ~~communications~~ communication plan that:
 - Identifies key community stakeholders
 - Develops project milestones to develop messaging
 - Coordinates with Plant Master Plan outreach timeline and activities to deliver messaging to appropriate audiences
 - Analyzes community input to continually refine the outreach process
 - Includes gasification specific objectives
 - Includes comments from stakeholder partners meetings
 - Prepares and integrates fact sheets for gasification
- Prepare and submit the Stakeholder Communication Plan.

Products:

- Stakeholder Communication Plan

[CPR WILL BE HELD AT THE CONCLUSION OF THIS TASK. See SEE TASK 1.2 FOR DETAILS.]

Task 1.2 for details. The City, Harvest 3 Planning, Design, and the CEC will use the feasibility studies from Tasks 2.2 through 2.4 to determine if the parties should proceed to Tasks 3-6. Concurrence from all interested parties and an amendment to the agreement between the City and Harvest would be required to proceed to Tasks 3-6. Construction of Demonstration Facility

TASK 3 PLANNING, DESIGN, AND CONSTRUCTION OF DEMONSTRATION FACILITY

The goals of this task are to plan, design, and construct the demonstration facility and commission operations. Task 3 will begin upon completion and approval of Task 2 activities and products.

Task 3.1 ENGINEERING & DESIGN Planning, Engineering and Design

The Recipient shall:

- Complete basic (schematic) and detailed engineering designs for the facility. This task will include the following:
 - For basic engineering, the following process systems:
 - Feedstock intake, storage and preparation
 - Gasifier and all associated equipment
 - Particle Filter
 - AMR
 - Gas conditioning
 - Odor treatment (if applicable)
 - Gas interconnect to Plant Flare
 - Emissions control equipment for air, water and land
 - Instrumentation and Control System
 - Solids handling and storage
 - For basic engineering, documents including, but not limited to, the following:
 - Time schedule with milestones
 - Process description
 - Civil description
 - Process flow diagram
 - Water, mass, and energy balances
 - Equipment description
 - Basis equipment data sheets
 - Concept of automation
 - General layout and drawings for foundation and load

- Architectural / civil engineering (building layout), design of structures, including planning of structural frameworks with preliminary designs (dimensions)
- Geotechnical evaluation and description of necessary arrangements
- Safety concept plan
- Preliminary cost estimate calculations
- For detailed engineering, the basic engineering documents will be technologically elaborated. Additional documents, including but not limited to the following, will be created:
 - Pipe and instruments diagrams
 - Functional design and automation specifications
 - Commissioning program
 - Detailed equipment data sheet
 - Equipment inquiry specifications
 - Instrument list
 - Instrument inquiry specifications
 - General layout and drawings for foundation and load
 - Architectural/civil engineering (building layout), design of structures, including planning of structural frameworks with final preliminary designs (dimensions)
 - Specifications (description of building structure, materials needed, etc.)
 - Cable net calculation
 - Switchboard layout
 - Electrical schema/wiring diagrams
 - Cable routing layout
 - Lighting and lighting protection
- Include progress on this task in monthly progress report(s)

Products:

- ~~None—This information will be included in monthly progress report(s)~~
- Schematic and Detailed Engineering Plans

Task 3.2 ~~FACILITY TESTING PLANS~~ Facility Testing Plans

The Recipient shall

- Prepare and submit test plans for the facility. The test plans shall address both the gasification unit and the AMR gas reformer, using both urban wood waste and biosolids as feedstock. Test plans and testing procedures will be highly detailed, including factors such as instrumentation, data collection, data analysis, statistical analyses, and performance curves. Test results shall include relationships among performance, efficiency, emissions, temperature, pressure,

and all other parameters that qualify and quantify the technology. The test plans shall include, but are not limited to:

- A description of the processes for testing
- ~~Rationale for why the tests are required~~
- Predict performance results based on calculations or other analyses
- Test objectives and technical approach
- A test matrix showing the number of test conditions and replicated runs
- Descriptions of the facilities, equipment, and instrumentation required to conduct the tests
- A description of testing procedures, including:
 - parameters to be controlled and how they will be controlled
 - parameters to be measured and instrumentation to measure them
 - calibration procedures to be used
 - recommended calibration interval
 - keeping and maintenance of a test log
- A description of the data analysis procedures
- A description of quality assurance procedures
- Contingency measures to be considered if the test objectives are not met

Products:

- Test Plans

Task 3.3 CONSTRUCTION OF DEMONSTRATION FACILITY- Construction of Demonstration Facility

The Recipient shall:

- Prepare the site
- Construct the facility, including:
 - ~~Urban wood waste~~ Feedstock intake, storage and preparation equipment
 - The gasification unit and associated equipment
 - ~~The AMR~~
 - Gas conditioning
 - Odor treatment (if any)
 - Gas Flare
 - Emissions control equipment for air, water and land
 - Instrumentation and Control System
 - Solids handling and storage
- Complete all needed utility interconnects
 - Electricity
- ~~Waster~~
 - Gas Water
 - Sewer
 - Natural gas connection to Plant

- Conduct mechanical testing
- Commission the facility
- Prepare and submit Commissioning Report that verifies equipment is operating as designed

Product:

- Commissioning Report

~~TASK 4 FACILITY OPERATION AND FEEDSTOCK TESTING~~

Task 4 Facility Operation and Feedstock Testing

The goal of this task is to operate the facility and demonstrate the successful production of biomethane syngas from both urban wood waste and biosolids feedstocks. Task 4 will begin upon completion and approval of Task 3 activities and products.

The Recipient shall:

- Operate the facility ~~for approximately ten months~~ using various ratios of urban wood waste as feedstock.
- ~~Execute and adapt the testing plans with respect to the results of processing the urban wood waste feedstock.~~
- Install equipment needed for processing biosolids as feedstock
- ~~Operate the facility over a period of approximately ten months using biosolids as feedstock~~
- Execute and adapt the testing plans with respect to the results of processing the biosolids feedstock.
- Conduct measurements and collect all necessary data.
- Estimate GHG emissions for commercial-scale facilities.
- Submit adapted test plans and estimate of GHG emissions for commercial scale facilities.
- Meet all regulatory and permit requirements

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

Products:

- Adapted Test Plans and GHG Estimate

~~TASK 5 LONG-TERM FEASIBILITY STUDIES~~

Task 5 Long-Term Feasibility Studies

The goals of this task are to ~~develop~~ refine the feasibility study based on input from the demonstration project data. The updated feasibility study including data from the demonstration will be made available to external stakeholders for their potential use in developing long-term plans for commercialization of similar gasification facilities in San Jose and throughout California; and to determine capital costs for a facility capable of

producing CNG for transportation fuel, and for an onsite or near-site fueling station. If cost-effective, the CNG will be sold to fleets that service the City of San Jose. Task 5 will not begin until after completion and approval of Task 3 activities and products.

The Recipient shall:

- Evaluate technologies for carbon dioxide scrubbing to be used on a commercial scale
- Develop economic models for commercial facilities for urban wood waste and biosolids feedstocks, including:
 - Development costs (land acquisition, permitting, legal, and other soft costs)
 - Design costs
 - Capital costs for:
 - ~~Facility capable of producing CNG equivalent transportation biomethane (comprised of greater than 95% methane)~~
 - Construction of a facility and all associated equipment including any required environmental control equipment (air, water and land)
 - ~~On or near-site fueling station, including gas compression~~
 - Equipment required for liquefaction (if gas will not be compressed) to transportation fuel processing
 - On or near-site fueling station, including gas compression (if applicable)
 - Operating costs
 - Revenues
 - Overall cost of production (\$/MJ of fuel)
- Analyze feedstock availability, quality, and cost by geographic areas to determine other potential sites for commercialization
- Create a “roadmap” for permitting including a GHG model that sets forth a full lifecycle analysis for a typical/typically commercial facility.
- Prepare and submit Commercialization Plan recommendations for commercialization planning, including technology evaluations, economic models, feedstock analysis and roadmap.

Product:

- ~~Commercialization Plan~~

TASK 6 DATA COLLECTION AND ANALYSIS

- Long-Term Feasibility Analysis

Task 6 Data Collection and Analysis

The goals of this task are to:

- ~~Perform~~ 1) perform the final analysis of all project data and to prepare final reports for the Energy Commission.

Collect; and 2) collect data on the economic benefits and local impacts of the project throughout the term of the project, analyze that data for project sustainability and include that analysis in the Final Report

The Recipient shall:

- Estimate gasoline and/or petroleum-based diesel fuel that will be displaced annually.
- Explain how this work will reduce criteria air pollutants and air toxics and reduce or avoid multimedia environmental impact, and lead to a decrease, on a life cycle basis, in emissions of water pollutants or any other substances known to damage human health or the environment.
- Provide a quantified estimate of the project's carbon intensity values for life-cycle scale greenhouse gas emissions.
- Quantify any water efficiency and water use reduction measures used in the project including, but not limited to, the use of recycled or reclaimed water and the reduction or elimination of point and nonpoint source wastewater discharge.
- Describe any potential use of renewable energy or cogeneration in the project.
- Describe any potential energy efficiency measures used in the project that would exceed Title 24 standards in Part 6 of the California Code of Regulations.
- Provide data on expected job creation, economic development, and increased state revenue.
- Compare any project performance and expectations provided in the proposal to the Energy Commission with actual project performance and accomplishments.
- Describe how the project supports new technology advancement for vehicles, vessels, engines, and other equipment, and promote the deployment of such technologies in the marketplace. To the extent possible, describe how the project provided a measurable transition from the nearly exclusive use of petroleum fuels to a diverse portfolio of viable alternative fuels that meets California's petroleum reduction and alternative fuel use goals.
- Describe how the project demonstrated the cost-effectiveness of the proposed technology in achieving greenhouse gas emissions reduction.
- Provide additional data that may be requested by the Energy Commission with during the term of this Agreement.

Products:

- None. Data from this task will be included in the Final Report.

RESOLUTION NO:

**STATE OF CALIFORNIA
STATE ENERGY RESOURCES
CONSERVATION AND DEVELOPMENT COMMISSION**

RESOLUTION REGARDING: AMENDMENT OF GRANT AWARD TO CITY OF SAN JOSE UNDER PON-09-604

WHEREAS City of San Jose has applied to the State Energy Resources Conservation and Development Commission (Energy Commission) for an amendment to grant agreement ARV-10-016 originally entered into subsequent to PON-09-604, to investigate the feasibility of converting biomass and biosolids into syngas; and

WHEREAS the proposed amendment replace subcontractors, revise the budget and modify the scope of work. The project, as revised under Amendment #1 allows the City to investigate the feasibility of converting urban-source woody biomass and biosolids into high-quality syngas which can further be converted to an alternative transportation fuel (such as renewable gasoline or renewable diesel); and

WHEREAS the County of Sana Clara, as the Lead Agency, has in 2010 issued a Negative Declaration and filed a Notice of Determination indicating that the City of San Jose's proposed project will not have a significant effect on the environment; and

WHEREAS the Energy Commission has independently reviewed the potential environmental effects of the proposed project as amended;

THEREFORE BE IT RESOLVED that the Energy Commission finds that the proposed project will have no significant environmental impacts; and

BE IT FURTHER RESOLVED, that the Energy Commission approves the proposed amendments to grant Agreement ARV-10-016 with **City of San Jose**, to revise the scope of work, make minor budget revisions; and

BE IT FURTHER RESOLVED that this document authorizes the Executive Director or his/her designee to execute the revised agreement on behalf of the Energy Commission.

CERTIFICATION

The undersigned Secretariat to the Commission does hereby certify that the foregoing is a full, true, and correct copy of a Resolution duly and regularly adopted at a meeting of the California Energy Commission held on May 14, 2014.

AYE: [List of Commissioners]

NAY: [List of Commissioners]

ABSENT: [List of Commissioners]

ABSTAIN: [List of Commissioners]

Harriet Kallemeyn,
Secretariat