

PMC-EF2a

(2.04.02)

**U.S. DEPARTMENT OF ENERGY
EERE PROJECT MANAGEMENT CENTER
NEPA DETERMINATION**



RECIPIENT: University of California Davis

STATE: CA

PROJECT TITLE : CRED - UC Davis Renewable Energy Anaerobic Digester facility (READ)

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
	DE-EE0003072	GFO-0003072-002	GO3072

Based on my review of the information concerning the proposed action, as NEPA Compliance Officer (authorized under DOE Order 451.1A), I have made the following determination:

CX, EA, EIS APPENDIX AND NUMBER:

Description:

B5.20 Biomass power plants The installation, modification, operation, and removal of small-scale biomass power plants (generally less than 10 megawatts), using commercially available technology (1) intended primarily to support operations in single facilities (such as a school and community center) or contiguous facilities (such as an office complex); (2) that would not affect the air quality attainment status of the area and would not have the potential to cause a significant increase in the quantity or rate of air emissions and would not have the potential to cause significant impacts to water resources; and (3) would be located within a previously disturbed or developed area. Covered actions would be in accordance with applicable requirements (such as local land use and zoning requirements) in the proposed project area and would incorporate appropriate control technologies and best management practices.

Rational for determination:

The U.S. Department of Energy (DOE) is proposing to provide federal funding to the University of California, Davis (UC Davis) under the DOE's American Recovery and Reinvestment Act of 2009 Community Renewable Energy Deployment Project, to install a Renewable Energy Anaerobic Digester facility (READ) and internal combustion engine generator at a closed campus Class 3 municipal solid waste landfill located in the west campus area. The proposed READ facility would accept organic wastes (feedstock) from campus operations as well as off campus sources, process the feedstock in a biodigester, and use the biogas produced in the biodigester and the biogas collected from the campus landfill to generate electricity in a 1200 kW internal combustion engine. The intent of the proposed project is to develop and construct a waste-to-renewable energy facility to benefit the University of California, Davis.

DOE made a previous NEPA determination for this project on 4/21/2010 (CX A.9 and CX B5.1), however the project scope has changed since the original proposal. This NEPA determination applies to a larger anaerobic digester facility, a larger internal combustion engine generator and different project site. UC Davis recently completed a California Environmental Quality Act (CEQA) Initial Study analysis with a Negative Declaration which states that the proposed project would not have a significant effect on the environment. The CEQA Initial Study was tiered from a 2003 UC Davis Long Range Development Plan and Final Environmental Impact Report (2003 LRDP EIR) which is a comprehensive campus land use plan. The Initial Study determined no new mitigation measures, other than those previously identified in the 2003 LRDP EIR, are required for this proposed project. Measures to mitigate impacts in the 2003 LRDP EIR were identified, developed and incorporated into this project. The CEQA Initial Study was reviewed as part of this NEPA determination.

The proposed project site is on the previous receiving and weighing area of the closed 39 acre landfill located at 28068 County Road 98, Davis, Yolo County, California, which is south of Hutchinson Drive, one half mile north of the Putah Creek corridor in the west campus area of the UC Davis campus within a Zone A 100-year floodplain. The landfill stopped receiving waste in August 2011 and is in the final closure process, scheduled for completion in the summer of 2013. The proposed project site has been heavily disturbed due to landfill activities, is graded nearly flat, and is covered primarily with compacted gravel. A small modular office building (scale-house) and a truck scale are currently located on site. These facilities would be retained for use as part of the proposed project and no new access roads would be required for construction or operation. The site also has a landfill gas collection system and flare that were installed to manage gases generated by the landfill.

The proposed project site does not support any native vegetation. There are four non-native trees located on the project site; however, they are not located within the footprint of the proposed facility and would not be removed. The surrounding land outside of the former landfill is currently used for campus support facilities and teaching and research agricultural fields.

The proposed project would consist of the installation of the following equipment: material separation and grinding equipment; biodigester tanks, piping and control equipment; solid and liquid separation equipment; biogas refining equipment and new flare; and a 1200 kW internal combustion engine unit for electricity generation. The READ facility would have the capacity to handle up to 50 tons of organic wastes feedstock per day and would involve five primary processes: (1) material receiving and preparation; (2) anaerobic digestion; (3) refinement of biogas; (4) generation of electricity using biogas and landfill gas; and (5) effluent treatment to process and dispose of any solid or liquid byproducts of the process.

The READ facility and equipment would sit on concrete pads or compacted gravel. Approximately 35,000 square feet of ground disturbance would occur and 3,000 cubic yards of material would be moved during construction of this facility. The final footprint of the project site and facility would be approximately 22,000 square feet and approximately 7,500 square feet of it would be paved and/or concrete pads.

The READ facility would include modular equipment that would be manufactured off site and brought to the site by truck for installation. The modular components would be mounted on skids placed on cement pads installed on the site as follows: the digester skids would sit on a 12 inch thick concrete pad 9.5 feet by 56 feet; the conveyor would sit within a four foot deep concrete pit that is 20 feet by 35 feet; the separator would sit on a six inch thick concrete pad 34 feet by 34 feet; the combustion engines would sit on six inch thick concrete pads 14 feet by 44 feet; and the effluent processing pad would be a six inches thick and 50 feet by 50 feet. The system would include cylindrical process tanks that would be constructed on site and sized as follows: two 75,000-gallon tanks 28 feet in diameter and 16 feet tall; two 150,000-gallon tanks 40 feet in diameter and 16 feet tall; and a 30,000-gallon tank 20 feet in diameter and 16 feet tall. All tanks would be placed on six inches of compacted gravel.

The READ facility would be connected to existing campus utilities and infrastructure including electricity, domestic and fire suppression water, wastewater, storm drainage and the landfill biogas collection system. Currently, there is no wastewater connection located within the project site. To accommodate this need, a new wastewater line would be installed to deliver wastewater from the READ project to an existing sewer facility system north of the project site. This existing facility is connected to the campus Wastewater Treatment Plant. The wastewater line would be installed via a 2,500 foot trench, which would be within the floodplain. The proposed point of connection for electricity would be at the existing electrical line on the northeast corner of the project site, which extends onto the property to the existing scale-house. The electrical lines are underground and accessible from a manhole to the northeast of the site and there is a transformer pad on the northeastern corner of the project site. The current landfill biogas collection system output and flare are within the proposed project site and would be connected to the READ facility via an underground gas line. Other utilities required for this project are immediately adjacent to the proposed facilities or within the footprint of the proposed project site and would be connected via underground trenches.

All trenching would be approximately two feet wide by three feet deep and all disturbed land would be backfilled, compacted and restored to its previous condition. As is done currently, the storm water runoff from this project would be directed via an existing storm water drainage system to a detention pond located to the south of the project site. When necessary, this pond can be pumped to a series of detention ponds to the south and eventually discharged to Putah Creek.

Impacts analysis of the proposed project:

- Air quality: As part of the CEQA Initial study, an Air Quality and Greenhouse Gas Emissions analysis was performed and it was concluded that the proposed construction and subsequent operation of the READ facility would have less than significant impact on air quality, either individually or on a cumulative basis. The air emissions analysis concluded the emissions would still be substantially below the thresholds established by the Yolo-Solano Air Quality Management District (YSAQMD). The proposed facility would be located in a state and federally recognized nonattainment areas for ozone (O₃) and particulate matter (PM₁₀). The proposed internal combustion engine (ICE) would be fitted with Selective Catalytic Reduction (SCR) emissions controls. Construction activities would follow campus-wide mitigation measures and BMPs to reduce dust impacts and reduce emissions of ozone precursors from construction equipment exhaust. UC Davis has an existing operating permit from the YSAQMD for the current landfill gas flare and is coordinating modifications to the permit with YSAQMD, to incorporate the proposed ICE and additional flare. Through the use of construction and operation mitigation measures, including ICE emission controls, impacts to air quality from this proposed project would not be significant.

- Odor: During the operation of the proposed facility, there is a potential for odors from composting and gas production activities. To mitigate any potential odor impacts the majority of the processes and process equipment would be enclosed. The majority of odor-causing compounds in the biogas produced by the facility would be removed as part of the biogas cleaning process and would be contained under negative pressure within the process equipment. Cleaned biogas would be combusted in the ICE or flare, therefore eliminating any odors associated with the biogas. To reduce odor impacts from feedstock delivery a lid would be incorporated on the feedstock receiving bin that would open only when feedstock is unloaded, and would remain closed at all other times. If on-site composting is selected as the method to handle solid digestate, the compostable material handling area would be designed to minimize odors. Prior

to the startup of operations at the facility, the Yolo County Local Enforcement Agency has required UC Davis to develop and submit an Odor Impact Minimization Plan for approval. Based on the proposed project design, the proposed odor mitigation measures and the required implementation of an Odor Impact Minimization Plan, impacts from odors associated with the proposed project would not be significant.

- **Wastewater:** The facility would produce 5,000 gallons of biodigester effluent per day on average and would be connect to the existing campus wastewater system. The effluent would go through a screw press to separate digestate (solids) from liquids. The liquids would be sent through a sand filter containing zeolite media to recover ammonia and suspended solids. The remaining liquids would then be treated at the campus Wastewater Treatment Plant and discharged under an existing NPDES Waste Discharge Requirement permit. Alternatively, liquids may be concentrated and/or treated to form organic liquid fertilizer to be sold. During the CEQA Initial Study, UC Davis evaluated the quality of the wastewater expected from the proposed READ facility for its effect on the campus Wastewater Treatment Plant; with proposed inclusion of a sand filter/zeolite media filtration system in the project, wastewater discharged from the process would not cause the Wastewater Treatment Plant to exceed effluent limits. The campus' tertiary level Wastewater Treatment Plant is regulated under a National Pollutant Discharge Elimination System (NPDES) Waste Discharge Requirement (WDR) permit issued by the Central Valley Regional Water Quality Control Board (CVRWQCB).

- **Solid Waste:** All process solids (digestate) would be handled in one of the following manners: hauled to an existing off-site composting facility; composted on site using an "Ag Bag" system or an in-vessel composting drum, then packed for wholesale and hauled off site for sale and distribution; or hauled to an existing off-site facility for pelletizing and distribution as a fertilizer product. If on-site composting is selected as the method to handle solid digestate, composting would occur in windrows on the effluent processing pad within the proposed project site. The maximum amount of compost on the site at any one time would be 2,425 tons. The windrows would be placed on a surface with 1 to 3 degree grade to facilitate leachate collection. The grade would lead to a collection drain which would feed into a sump pump. The pump would be triggered by a float switch, which senses when there is water present and the water would be pumped into one of onsite digester process tanks referenced above. Water would not leave the site as a raised concrete barrier would be put in place to direct the flow to the collection drain and the sump. UC Davis has a current permit from California Department of Resources Recycling and Recovery (CalRecycle) for the Class 3 landfill that includes composting as a permitted activity. UC Davis stated should they choose on-site composting as the method to handle solid waste; they would coordinate with CalRecycle to ensure that the proposed READ facility is permitted to compost on-site.

- **Traffic:** There would be a small increase in local traffic associated with the delivery of feedstock and potential disposal removal of solid waste digestate. Access to the facility for staff, delivery trucks, and visitors would be from an existing campus roadway that extends west off of County Road 98 and was the delivery entrance to the campus landfill until August 2011. It is estimated traffic associated with the operation of the facility would be as follows: Employee vehicle trips (two peak hour trips per day), feedstock delivery truck trips (4 to 5 truck trips per day), and occasional truck trips associated with the removal of byproducts and/or delivery the bulking agent for composting (one truck trip every three days). Incoming and outgoing delivery trucks typically would observe regular business hours, Monday through Friday, 8:00 AM to 5:00 PM, except during times for maintenance. During the CEQA process, a comment letter from Caltrans recommended that construction vehicles remain off of State Routes during peak travel periods, which UC Davis stated would be taken into consideration during project construction. Due to the limited construction activities associated with installation of the facility and the minimal increase in vehicle traffic on local roads associated with the operation of the facility; the proposed project would not have an adverse effect to local traffic and transportation routes. Traffic impacts were studied and addressed in the CEQA Initial Study and impacts were determined to be less than significant.

- **Noise:** The CEQA Initial Study analyzed potential noise impacts associated with this project. Current noise sources in the vicinity of the proposed project site include occasional aircraft over-flights associated with the University Airport located on the west campus, nearby agricultural operations, and vehicle traffic on local roads, State Route 113 and US Interstate 80. The area surrounding the project site is primarily agricultural and the distance to the nearest residences is 0.8 miles to the northeast. Construction of the proposed project would be limited and for a short duration of time. It would involve construction activities using conventional construction techniques and equipment and the use of pile driving, blasting, or other special construction techniques are not anticipated. The construction and subsequent operation of the READ facility equipment and its associated vehicle activity would contribute to noise sources and ambient noise levels around the proposed facility; however, due to existing local noise sources, the distance of the project to the nearest residences, the limited construction activities, and minimal increase in vehicle traffic on local roads associated with operation of the facility; impacts to local ambient noise levels from this project would be less than significant.

- **Biological Resources:** The U.S. Fish and Wildlife Service (USFWS) Endangered Species Program website identifies ten federally listed species that are known to or believed to occur within Yolo County; the California freshwater shrimp (*Syncaris pacifica*), the Conservancy fairy shrimp (*Branchinecta conservatio*), the Vernal pool tadpole shrimp (*Lepidurus packardii*), the Delta smelt (*Hypomesus transpacificus*), the Colusa grass (*Neostapfia colusana*), the Keck's Checker-mallow (*Sidalcea keckii*), the Palmate-bracted bird's beak (*Cordylanthus palmatus*), the Solano grass

(*Tuoria mucronata*), the Giant garter snake (*Thamnophis gigas*) and the California tiger salamander (*Ambystoma aliforniense*). The Giant garter snake and the California tiger salamander are known to occur on the UCD campus or have potentially suitable habitat present on campus, but there is no known potentially suitable habitat for these species within the proposed project site. After analyses of the proposed project site, its surroundings and habitat requirements for the ten federally listed species, DOE performed an informal Section 7 Consultation with the USFWS and determined the proposed project would have "no effect" to the identified federally listed species. The USFWS concurred with the DOE determination in a letter dated 1/25/2013.

Impacts to biological resources and species of concern were analyzed in the CEQA Initial Study. This analysis determined the proposed project would not exceed the levels of significance of biological resources impacts and no project-specific mitigation measures would be required for the project.

- **Floodplains/Wetlands:** The proposed project site is within a Zone A – No Base Flood Elevations determined 100-year floodplain area as identified by the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps. The proposed project is not located within a wetland. In accordance with 10 Code of Federal Regulations (CFR) 1022, the DOE prepared a Floodplain Assessment to evaluate the potential impacts of implementing this project within a floodplain. The DOE posted the Floodplain Assessment for a 15-day period and requested public and agency comments. The DOE subsequently published and posted a Statement of Findings, that determined no long-term negative direct or indirect impacts to the beneficial values of the 100 year floodplain and no effects to lives and property associated with floodplain disturbance would be expected under the proposed project.

- **Storm Water:** The proposed project would not substantially increase impervious surfaces from its current condition as the project site is covered primarily with compacted gravel. The storm water runoff from this project would be directed via an existing storm water drainage system to an existing detention pond located to the south of the project site. Construction activities at UC Davis managed by outside contractors are covered under the NPDES state-wide General Permit for Discharge of Storm Water Associated with Construction Activity. As required under this permit UC Davis would implement a Storm Water Pollution Prevention Plan (SWPPP) which specifies Best Management Practices (BMPs) to reduce construction-related pollutants to storm water runoff and to minimize potential for soil erosion.

- **Cultural/Historical Resources:** A Cultural Resource Assessment was performed during the CEQA Initial Study and no cultural resources were identified within the project area and determined historic and/or cultural resources would not be affected. DOE reviewed all pertinent information and made a determination and finding of No Historic Properties Affected by the proposed undertaking pursuant to Section 106 of the National Historic Preservation Act of 1966. In a letter dated July 26, 2012 and a subsequent follow up email on 11/8/2012, the California Office of Historic Preservation (SHPO) concurred with the DOE's determination and finding.

Based on review of the project information and the above analysis, DOE has determined the installation of a renewable energy anaerobic digester facility and internal combustion engine generator would not have a significant individual or cumulative impact to human health and/or environment. DOE has determined the proposed project is consistent with actions contained in DOE categorical exclusion B5.20 "installation of small-scale biomass power plants" and is categorically excluded from further NEPA review.

NEPA PROVISION

DOE has made a final NEPA determination for this award

Insert the following language in the award:

If you intend to make changes to the scope or objective of your project you are required to contact the Project Officer identified in Block 11 of the Notice of Financial Assistance Award before proceeding. You must receive notification of approval from the DOE Contracting Officer prior to commencing with work beyond that currently approved.

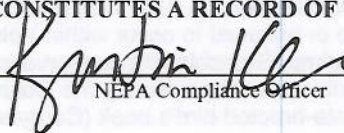
Note to Specialist :

Obadiah Broughton 1/30/2013

DOE Funding: \$ 2,500,000
 Cost Share: ~\$ 2,500,000
 Total Funding: ~\$ 5,000,000

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: _____


 NEPA Compliance Officer

Date: 1/31/2013