PMC-EF2a
(2.04.02)

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

RECIPIENT: WA Department of Commerce **STATE:** WA

PROJECT TITLE : Van Dyk Dairy Anaerobic Digester

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
	DE-EE0000139	GFO-10-604	0

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:

A9 Information gathering (including, but not limited to, literature surveys, inventories, audits), data analysis (including computer modeling), document preparation (such as conceptual design or feasibility studies, analytical energy supply and demand studies), and dissemination (including, but not limited to, document mailings, publication, and distribution; and classroom training and informational programs), but not including site characterization or environmental monitoring.

B3.8 Outdoor ecological and other environmental research (including siting, construction, and operation of a small-scale laboratory building or renovation of a room in an existing building for sample analysis) in a small area (generally less than five acres) that would not result in any permanent change to the ecosystem.

B5.1 Actions to conserve energy, demonstrate potential energy conservation, and promote energy-efficiency that do not increase the indoor concentrations of potentially harmful substances. These actions may involve financial and technical assistance to individuals (such as builders, owners, consultants, designers), organizations (such as utilities), and state and local governments. Covered actions include, but are not limited to: programmed lowering of thermostat settings, placement of timers on hot water heaters, installation of solar hot water systems, installation of efficient lighting, improvements in generator efficiency and appliance efficiency ratings, development of energy-efficient manufacturing or industrial practices, and small-scale conservation and renewable energy research and development and pilot projects. The actions could involve building renovations or new structures in commercial, residential, agricultural, or industrial sectors. These actions do not include rulemakings, standard-settings, or proposed DOE legislation.

Rational for determination:

Proposed Project - Washington Department of Commerce would allocate $1,044,000 ($731,000 loan / $313,000 grant) in SEP funding to Van Dyk Dairy for purchase and installation of an anaerobic digester at the dairy located in Lynden, Washington. The project involves installation of the following components with a footprint of about ¼ acre:

- Anaerobic digester
- Combined heat and power unit
- Composter
- Solids dryer.

Cow manure would be pumped directly from the barns into the digester tank, which would have a flexible dual-membrane roof. The roof would protect the process against harsh weather and also accommodate built-in biogas storage. Biogas generated from the anaerobic digester would be routed to the combined heat and power (CHP) unit consisting of a biogas-fired reciprocating engine and generator capable of producing 425 kW of electrical energy while sending thermal energy (heat) back to the digester and the dryer. Electricity would be sent to the grid and sold to Puget Sound Energy. The project would include an on-site transformer and an underground electrical line extending about 350 feet to the existing transmission line running on the south side of the property.

Digestate from the digester would go to a separator with liquids going to an existing, clay-lined storage pond (for application to crop land when timing allows -- per current operations) and the solids going to an aerobic, in-vessel composter. The composter would kill all remaining pathogens making the solid product safer to work with and allowing its use for bedding material in the barns; replacing the sawdust currently used. Solids not used for bedding would go to the dryer to produce a product with an energy value of about 7095 Btu per pound and which would be sold as biomass fuel.

Air Emissions – Based on monitoring data and emission factors from a similar (cow manure to biogas) project (Environmental Technology Verification Report, Electric Power and Heat Production Using Renewable Biogas at Patterson Farms, SRI/USEPA-GHG-VR-43, September 2007) performed under a cooperative agreement with US EPA, estimated annual emissions from the Van Dyk CHP would be roughly 5 tons CO, 35 tons NOx, 33 tons total hydrocarbons (THC), and 2,400 tons CO2. The CO, NOx, and THC emissions would be off-set by reductions in emissions from other electricity generating plants that would have a corresponding reduction in the electricity they

produced. According to the Washington State Energy Profile from the U.S. Energy Information Administration (EIA) website, 60% of Washington's electricity comes from hydroelectric plants and 15%, the next largest source grouping, comes from natural gas-fired plants. It's reasonable to assume that hydroelectric production stays relatively constant and that offsets would come from plants with fuel flexibility. If the offset was from a natural gas plant, emissions eliminated would be very similar to those from the proposed use of biogas. According to the data reported in the Technology Verification Report, which involved a dairy farm with a very similar number of animals, the CO2 emissions would be offset by roughly 7,000 tons per year of CO2 from the methane that would be emitted naturally into the atmosphere from the manure were it not to be sent to the digester. That is, manure emits methane as it naturally degrades and is digested by micro-organisms.

The Washington Northwest Clean Air Agency (NWCAA) issued (on November 3, 2010) an Order of Approval to Construct (OAC, #1074) to the Van Dyk Dairy project. The OAC identifies the specific federal air quality regulations applicable to the project and specifies restrictions and conditions that must be met by the project. The applicable regulations are:

- New Source Performance Standards
  - 40 CFR 60 Subpart A – General Provisions
  - 40 CFR 60 Subpart JJJJ – Standards of Performance for Stationary Spark Ignition Internal Combustion Engines
- National Emissions Standards for Hazardous Air Pollutants (NESHAP)
  - 40CFR 63 Subpart ZZZZ – NESHAP for Stationary Reciprocating Internal Combustion Engines

The restrictions and conditions include a H2S concentration limit of 350 ppm (by dry volume, 30-day rolling average) in the biogas going to the engine generator. The conditions also set limits for visible emissions, prohibit nuisance odors (even requiring the Dairy to establish a complaint response program), and require the Dairy to notify the NWCAA in writing of startup.

Water Resources – Wetlands – A wetlands determination was performed that included a search of the National Wetlands Inventory (NWI) and the Soil Survey, Whatcom County Area (1992 report by the USDA Soil Conservation Service), as well as a site visit. The conclusion of the effort was "No wetlands are present on the Van Dyk dairy farm where the anaerobic digester is proposed" (Northwest Environmental Consulting, LLC, Technical Memorandum, "Wetland Determination, Van Dyk Anaerobic Digester," dated December 17, 2010).

Biological Resources – An evaluation was performed to determine potential effects to threatened or endangered (T&E) species, or other species of concern. The evaluation included review of T&E species listings from the websites of the US Fish and Wildlife Service, the NOAA National Marine Fisheries Service (NMFS), and the Washington State Department of Natural Resources (DNR), as well as information from the Washington State Department of Fish and Wildlife's Priority Habitats and Species (PHS) database.

The evaluation concluded there would be no effect on T&E species or critical habitat (Northwest Environmental Consulting, LLC, Technical Memorandum, "Endangered Species Act and Magnuson Stevens Act Compliance, Anaerobic Digester," dated December 17, 2010). These findings were based on the following:

- The Washington PHS database does not indicate any T&E, or proposed species or habitat occurs on or adjacent to the proposed project site.
- Bald eagles are known to nest along the Nooksack River, but it is more than a mile to the north of the project site.
- The nearest stream draining to the Nooksack River is 2,000 feet from the project site. Runoff from the construction site and new impervious surfaces after construction will infiltrate into pastures that separate the project site from the nearest stream. There would be no effect to the bull trout, Chinook salmon, or steelhead or to Essential Fish Habitat (EFH) for the Chinook. [Although there would be no concern for runoff reaching surface waters (small slope and well drained soils), Van Dyk Dairy has indicated, as a standard practice for protecting soil, that during construction disturbed soil would be covered with mulch or straw if it was to be left in a disturbed condition for more than 2 days during the rainy season and more than 7 days otherwise.]

Cultural Resources – The Washington Department of Archaeology and Historic Preservation issued a letter of January 28, 2010 to the Washington Department of Commerce indicating that materials provided by Van Dyk Dairy on the digester project had been reviewed and that the Department of Archaeology and Historic Preservation concurred "with the determination of No Historic Properties Affected."

New Facilities and Infrastructure – New facilities associated with proposed project would be constructed on Van Dyk Dairy property in an area that is now used for periodic parking of equipment. New construction primarily would involve a 40' x 70' Solids Storage Facility, a 30' x 30' Equipment Building (housing the CHP), and a 73'-diameter Digester/Storage Tank, along with piping to existing facilities and an underground electric line running to the transmission line that runs along Van Dyk Road to the south of the property. Including the paved area that would be put in adjacent to the two buildings, the newly built-up area would be about 11,250 square feet (1/4 acre).

State Environmental Policy Act (SEPA) – On September 29, 2010, Whatcom County Planning and Development Services issued a Determination of Nonsignificance (DNS) for the Van Dyk Dairy anaerobic digestion system project. The determination further states that "with proper mitigation, no significant adverse environmental impacts are likely." The document indicates that the determination was made following review of a completed SEPA environmental

checklist and other information on file with the County. With respect to mitigations, the only measures identified in the Van Dyk's SEPA checklist are the use of mulch or straw to cover disturbed soil left alone for periods of time (described previously) and that construction would occur during daytime so noise concerns would be lessened. Neither of these would be considered significant issues with or without the mitigation. Limitations established in the NWCAA Order of Approval to Construct (see Air Emissions) might be considered mitigation measures to reduce air impacts, but they are also regulatory based and as part of the Order, are not an optional means of reducing or eliminating a significant environmental impact.

Proposed Project - Washington Department of Commerce would allocate $1,044,000 ($731,000 loan / $313,000 grant) in SEP funding to Van Dyk Dairy for purchase and installation of an anaerobic digester at the dairy located in Lynden, Washington. The project involves installation of the following components:
• Anaerobic digester
• Combined heat and power unit
• Composter
• Solids dryer.

This project was previously given a C12 determination in FY 2010. However, due to the details given on the project and Washington State completing SEPA, this determination has been to a Categorical Exclusion. Cow manure would be pumped directly from the barns into the digester tank, which would have a flexible dual-membrane roof. The roof would protect the process against harsh weather and also accommodate built-in biogas storage. Biogas generated from the anaerobic digester would be routed to the combined heat and power (CHP) unit consisting of a biogas-fired reciprocating engine and generator capable of producing 425 kW of electrical energy while sending thermal energy (heat) back to the digester and the dryer. Electricity would be sent to the grid and sold to Puget Sound Energy.

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Condition of Approval: Follow the Restrictions and Conditions identified in Washington's NWCAA OAC #1074 for the Van Dyk Dairy anaerobic digestion system project issued November 3, 2010 and all Washington State rules, regulations, and requirements. Based on the information provided by County and State agencies and the recipient, DOE has determined that the work outlined is consistent with activities identified in Categorical Exclusion A9, B3.8, and B5.1. Based on the information provided by County and State agencies and the recipient, DOE has determined that the work outlined is consistent with activities identified in Categorical Exclusion A9, B3.8, and B5.1.

NEPA PROVISION

DOE has made a final NEPA determination for this award

Insert the following language in the award:

Note to Specialist :

Condition of Approval: Follow the Restrictions and Conditions identified in Washington's NWCAA OAC #1074 for the Van Dyk Dairy anaerobic digestion system project issued November 3, 2010 and all Washington State rules, regulations, and requirements.

EF-2a prepared by Christopher Carusona.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: _____ Date: 2/2/11

NEPA Compliance Officer

FIELD OFFICE MANAGER DETERMINATION

☐ Field Office Manager review required

NCO REQUESTS THE FIELD OFFICE MANAGER REVIEW FOR THE FOLLOWING REASON:

☐ Proposed action fits within a categorical exclusion but involves a high profile or controversial issue that warrants Field Office Manager's attention.

☐ Proposed action falls within an EA or EIS category and therefore requires Field Office Manager's review and determination.

BASED ON MY REVIEW I CONCUR WITH THE DETERMINATION OF THE NCO :

Field Office Manager's Signature: _____ Date: _____

Field Office Manager