

PMC-EP2a

(201002)

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



RECIPIENT: Furman University

STATE: SC

PROJECT TITLE : North Village Ground Source Heat Pump Project

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-EE0000116	DE-EE0002817	GFO-10-297	GO2817

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.
- 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:

- Furman University has conducted thermal conductivity testing and completed drilling the test boreholes. Furman University is proposing a project to install ground source heat pumps in eleven buildings (student housing) which house 1,020 students in 255 apartments. Furman University's ground source heat pump project will retrofit a traditional and aging heating and conventional HVAC system with innovative ground source heat pumps. The data generated from the new system will be analyzed by students participating in Furman's Shi Center for Sustainability and compared to comparable data from when the apartment-style dormitory buildings were heated and cooled by older heat pumps.

The proposed project will be located in the Northeast quadrant of campus on an approximate 25 acre site and has a total system capacity of 661.5 tons comprised of 258, 2.5-ton heat pumps and 11, 1.5-ton heat pumps. The well field will contain 265 boreholes at depths ranging from 300 to 500ft. The heat exchange system will be a closed loop type utilizing potable water as the heat exchange media. This will eliminate the risk of contamination to any surrounding ground water in the event of a leak. The recipient states that they will consult with a representative from the South Carolina Department of Natural Resources throughout installation to ensure that this project does not negatively impact any surface or subsurface water ways. However because the heat exchange fluid used will be Propylene Glycol and the effects to ground water resources are completely benign.. The system will use high density polyethylene pipe that is heat fused at the joints to minimize the risk of leakage even further. The drilling will be executed by a State licensed and board certified drilling company and both IGSHP and the NGWA guidelines were used for the design and installation of the system. The land disturbance is projected to be minimal and will occur on previously developed and landscaped land from when the apartments were first built. A CSPCI (Certified Erosion Prevention & Sediment Control Inspector) inspector will be managing the installation of this system and will ensure that generally accepted erosion control measures are followed including the use of silt fences, straw bales, and erosion control socks as required. The recipient states that any excess materials generated from the borings will be temporarily stored on site, allowed to drain, and used as pipe bedding on this project. The R-22 refrigerant from the existing heat pumps will be recovered by a certified refrigerant recovery technician. Other construction and demolition waste from this project will either be recycled or disposed of in an approved landfill. The recipient states that a mechanical and electrical permit will be required by Greenville County. It is noted that The North Village GHP project is a retrofit onto an existing building complex. All construction work will be conducted either within the existing building complex or on previously disturbed ground right next to the building complex.

Tasks 1.0, 2.0 and 6.0 pertain to the further information gathering processes and implement project management and reporting procedures; therefore a CX A9 will apply. Tasks 3.0 and 4.0 pertain to construction of the well fields and

replacement of the current heating and cooling system. Specifically, Task 4.0 will include construction of ground source heat pump system completed for 11 buildings, including the following: 1 test well and 17 wells with HDPE tubing installed for each of 11 buildings; landscape restoration; remove and save refrigerant from North Village's existing heat pumps, and also remove all existing heat pumps; furnish and install new ground source heat pumps; furnish and install new pumps and pads; furnish and install VFD for each pump; rework ductwork in all 11 buildings; furnish and install piping from wells to buildings; insulate pipe and ductwork; install controls and electrical. These are actions to conserve energy; therefore a CX B5.1 will apply.

Through a review of the above information, it can be determined that the proposed project will not have a significant impact to human health and/or environment. Therefore the proposed project is hereby Categoricaly Excluded under A9 "Information Gathering" and B5.1 "actions to conserve energy", from further NEPA review.

NEPA PROVISION


DOE has made a final NEPA determination for this award

Insert the following language in the award:

Note to Specialist :

None Given.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature:  Date: 3/29/10
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