



# U.S. Department of Energy Categorical Exclusion Determination Form



Program or Field Office: Office of Energy Efficiency and Renewable Energy:  
Phase III Xlerator Program

Funding Opportunity Number DE-FOA-0000397

Applicant Name: Composite Technology Development, Inc.

Location: Lafayette, CO

Project Title High-Temperature Wire Insulations for Downhole  
Enhanced Geothermal System (EGS) Equipment

Proposed Action or Project Description American Recovery and Reinvestment Act:

Geothermal energy is a viable, environmentally-clean alternative energy source under development through the U.S. Department of Energy. Composite Technology Development, Inc. (CTD), proposes to provide high-temperature, high-voltage wire insulations to improve the reliability of downhole equipment necessary for commercial-scale geothermal energy production. The Phase I and II work involved the production and testing of insulated wires produced using high temperature, inorganic insulations. The wire insulation used in this work possessed an electrical resistivity eight times higher than currently-used polymer insulations at 250°C, while also possessing the necessary mechanical strain tolerance needed for spooling and downhole deployment operations. Prototype cables were also produced in collaboration with an industrial partner. In Phase III, CTD will scale-up the processes for manufacturing high-temperature, insulated wires for use in geothermal and related applications. Specific tasks include: demonstration of commercial-scale wire manufacture, full-scale motor construction, high-volume manufacture of insulated wire, pilot-scale manufacture of electric submersible pump (ESP) motors, manufacture of commercial-scale quantities of motor wire, qualification of impregnation materials for motor applications, fabricate and test prototype motor windings, fabrication and testing of electric motors for hybrid, and program management/reporting. Once produced, CTD will work with manufacturing partners to produce and test prototype devices utilizing this technology.

Conditions: None

Categorical Exclusion(s) Applied: B3.6, B5.1

\*-For the complete DOE National Environmental Policy Act regulations regarding categorical exclusions, see Subpart D of 10 CFR 10 21

This action would not: threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health, including DOE and/or Executive Orders; require siting, construction, or major expansion of waste storage, disposal, recovery, or treatment facilities, but may include such categorically excluded facilities; disturb hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products that pre-exist in the environment such that there would be uncontrolled or unpermitted releases; or adversely affect environmentally sensitive resources (including but not limited to those listed in paragraph B.(4)) of Appendix B to Subpart D of 10 CFR 1021). Furthermore, there are no extraordinary circumstances related to this action that may affect the significance of the environmental effects of the action; this action is not "connected" to other actions with potentially significant impacts, is not related to other proposed actions with cumulatively significant impacts, and is not precluded by 40 CFR 1506.1 or 10 CFR 1021.211.

Based on my review of information conveyed to me and in my possession (or attached) concerning the proposed action, as NEPA Compliance Officer (as authorized under DOE Order 451.1B), I have determined that the proposed action fits within the specified class(es) of action, the other regulatory requirements set forth above are met, and the proposed action is hereby categorically excluded from further NEPA review.

ORO NEPA Compliance Officer

**James L. Elmore**

Date Determined:

9/16/2010