



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: KSE, Inc.

Location: Sunderland, MA

Project Title Reduction of Distillation Usage in the Manufacture of
Ethanol by Reactive Water Separation

Proposed Action or Project Description American Recovery and Reinvestment Act:

Biomass-derived ethanol is now an integral part of the overall transportation fuel system in the US. To be useful as fuel-grade ethanol, large amounts of water must be evaporated from dilute fermentation alcohol, which is energy-intensive, costly, and an impediment to the transition to a biofuels economy. KSE, Inc., proposes to reduce energy consumption and manufacturing costs for biomass-derived ethanol for use in the transportation sector of the U.S. economy. Phase I and Phase II projects demonstrated the technical and economic feasibility of a Reactive Dehydration Technology for enhanced energy efficiency in ethanol production. The projects developed novel catalysts and technology to demonstrate that fuel-grade ethanol meeting commercial specifications could be produced by reactive dehydration. The overall objective of the Phase III project is to pursue commercial application of a novel reactive technology to reduce or substantially eliminate the reliance on distillation for water removal from biomass-derived ethanol. Water removal from ethanol is accomplished by the addition of a novel reagent to the crude ethanol to convert the water into a highly volatile product, which is readily removed from the ethanol at substantially reduced energy input. The reagent is then regenerated off-line by reversing the reaction and producing water, which is removed by simple decanting and phase separation. In the Phase III program, research and development will be completed to allow commercialization of the novel technology. The program will entail optimization of performance of the reactive dehydration catalysts and technology for maximum energy savings. To facilitate early commercialization, the technology will be demonstrated through design, construction, and operation of a pilot unit. This program will be conducted with a subcontract to the Department of Chemical Engineering at the University of Massachusetts.

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:

9/14/2010