



# 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: Exelus Inc.

Location: Livingston, NJ

Project Title Launching a New Route to Styrene Monomer

Proposed Action or Project Description American Recovery and Reinvestment Act:

Styrene monomer is a vital commodity chemical that consumes vast amounts of energy in its production. A new, energy-efficient route to styrene using novel process chemistry is being developed in this project, enabled by a breakthrough catalytic material. This new technology has the potential to slash energy consumption and greenhouse gas emissions from styrene production by 40% or more while also making US styrene producers significantly more competitive in the global market by cutting their cost of production by 30%. Phases I and II of this project saw the development of the advanced catalyst and the development of numerous catalyst and process innovations that generated commercially desirable yields of styrene from the alternate synthesis route for the first time ever, greatly exceeding previous efforts in the field. Phase I focused on the catalyst and underlying reaction kinetics, while Phase II centered on reactor and process design and scale-up. Exelus, Inc., proposes to construct and operate a pilot unit for the new technology. The pilot unit will generate data needed to proceed to commercialization that cannot be produced with the current, smaller-scale reactors. In Phase III, these innovations will be proven at a scale that is an order of magnitude larger than previously attempted. The pilot unit will be designed to mimic the anticipated commercial reactor. Styrene produced in the unit will undergo a battery of tests to verify its suitability for commercial sale. This technology has the potential to cut the cost of production of styrene significantly, providing a strong incentive for adoption in the industry. It has already attracted considerable industrial attention due to its potentially disruptive nature. This technology can bring ailing domestic styrene producers back into profitability, saving jobs and enhancing exports while reducing greenhouse gas emissions and overall energy usage compared to the conventional technology. Converting a single plant to this new technology would save the energy equivalent of 675,000 barrels of oil annually.

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:

9/17/2010