



U.S. Department of Energy

Categorical Exclusion Determination Form

Program or Field Office: Advanced Research Projects Agency - Energy (ARPA-E)

Project Title: 25A4583 - Advanced Power Semiconductor and Packaging

Location: *- Multiple States - Michigan, Indiana, Colorado, Tennessee, California, Minnesota

Proposed Action or Project Description:

American Recovery and Reinvestment Act:

Delphi Automotive Systems LLC (Delphi) and International Rectifier (IR) realize a need to develop revolutionary technologies required for more efficient, compact, and cost-effective power conversion, specifically to reduce U.S. dependence on imported oil, as well as to reduce the use of fossil fuels contributing to the build-up of greenhouse gases globally. IR has developed a GaN-on-Si process that is compatible with standard CMOS lines utilizing 150mm (6") wafers. Delphi has developed new packaging technologies that allow dual side cooling and higher current densities to better utilize power semiconductor devices. Delphi and IR propose to combine and develop from these basic technologies, GaN-on-Si devices that will be packaged in a manner capable of extracting heat from both sides of the device. Delphi and IR further propose to develop these technologies to allow for a lead-free packaging solution using more reliable sintered interconnects. Oak Ridge National Laboratory (ORNL) will provide key support on sintering, as well as device and system benefit characterization.

Categorical Exclusion(s) Applied:

X - B3.6 Siting/construction/operation/decommissioning of facilities for bench-scale research, conventional laboratory operations, small-scale research and development and pilot projects

*-For the complete DOE National Environmental Policy Act regulations regarding categorical exclusions, see Subpart D of 10 CFR 10 21 [Click Here](#)

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.

NEPA Compliance Officer: /s/ William J. Bierbower Date Determined: 12/15/2009

Digitally signed by William J. Bierbower
DN: cn=William J. Bierbower, o, ou,
email=william.bierbower@hq.doe.gov, c=US
Date: 2009.12.15 15:14:50 -05'00'

Comments:

Webmaster:

