



U.S. Department of Energy Categorical Exclusion Determination Form

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Proposed Action Title: Delphi Automotive Systems, Inc. - Advanced Power Semiconductor and Packaging

Program or Field Office: Advanced Research Projects Agency - Energy

Location(s) (City/County/State): Kokomo, IN; El Segundo, CA; Knoxville, TN

Proposed Action Description:

Funding will support efforts to develop an automotive class inverter based on 600V GaN-on-Si depletion mode High Electron Mobility Transistors (HEMT).

Proposed work will consist of: (1) development of design plans, process plans, and test protocols and procedures for the prototype device; (2) fabrication and characterization of the prototype device; and (3) testing and characterization of the developed prototype device.

Development and fabrication of devices will take place at International Rectifier's facility in El Segundo, California. Design and development of the prototype device will take place at Delphi Automotive System's facilities in Kokomo, IN. Testing and characterization of the developed prototype device will be performed at Oak Ridge National Laboratory's laboratory facilities in Knoxville, TN.

Categorical Exclusion(s) Applied:

B3.6 - Small-scale research and development, laboratory operations, and pilot projects

For the complete DOE National Environmental Policy Act regulations regarding categorical exclusions, including the full text of each categorical exclusion, see Subpart D of 10 CFR Part 1021.

Regulatory Requirements in 10 CFR 1021.410(b): (See full text in regulation)

The proposal fits within a class of actions that is listed in Appendix A or B to 10 CFR Part 1021, Subpart D.

To fit within the classes of actions listed in 10 CFR Part 1021, Subpart D, Appendix B, a proposal must be one that would not: (1) threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health, or similar requirements of DOE or Executive Orders; (2) require siting and construction or major expansion of waste storage, disposal, recovery, or treatment facilities (including incinerators), but the proposal may include categorically excluded waste storage, disposal, recovery, or treatment actions or facilities; (3) disturb hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products that preexist in the environment such that there would be uncontrolled or unpermitted releases; (4) have the potential to cause significant impacts on environmentally sensitive resources, including, but not limited to, those listed in paragraph B(4) of 10 CFR Part 1021, Subpart D, Appendix B; (5) involve genetically engineered organisms, synthetic biology, governmentally designated noxious weeds, or invasive species, unless the proposed activity would be contained or confined in a manner designed and operated to prevent unauthorized release into the environment and conducted in accordance with applicable requirements, such as those listed in paragraph B(5) of 10 CFR Part 1021, Subpart D, Appendix B.

There are no extraordinary circumstances related to the proposal that may affect the significance of the environmental effects of the proposal.

The proposal has not been segmented to meet the definition of a categorical exclusion. This proposal is not connected to other actions with potentially significant impacts (40 CFR 1508.25(a)(1)), is not related to other actions with individually insignificant but cumulatively significant impacts (40 CFR 1508.27(b)(7)), and is not precluded by 40 CFR 1506.1 or 10 CFR 1021.211 concerning limitations on actions during preparation of an environmental impact statement.

Based on my review of 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: 

Date Determined: 09/12/2012



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

Digitally signed by William J. Bierbower
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 Date: 2009.12.15 15:14:50 -05'00'

Date Determined: 12/15/2009

Comments:

Webmaster:

