



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

Submit by E-mail

Proposed Action Title: (0474-1555) University of Colorado - Boulder - Wafer-Level Sub-Module Integrated DC/DC Converter

Program or Field Office: Advanced Research Projects Agency - Energy

Location(s) (City/County/State): Colorado, Maine, Virginia

Proposed Action Description:

Funding will support development of a planar, wafer-level sub-module integrated converter (SubMIC) device that can be integrated into various types of photovoltaic (PV) modules to enable low-cost maximum power point tracking at high power processing efficiencies.

Proposed work consists of indoor laboratory-based research and development (R&D), microfabrication activities, and analytical research, including: (1) simulated modeling and design of SubMIC components and integrated units; (2) development, fabrication, testing, and optimization of SubMIC components, including the proprietary PolyStrata micro-coaxial transformer, Gallium Nitride integrated circuits, and Complementary Metal-Oxide Semiconductors; (3) fabrication of a discrete SubMIC prototype and wafer-level SubMICs; (4) modeling and design of SubMIC-enhanced PV modules; (5) integration of the discrete prototype and wafer-level SubMICs into PV modules for experimental testing, analysis, and system optimization; and (6) analytical paper studies and data evaluation. Indoor laboratory-based R&D and analytical research will be performed in dedicated laboratory and office facilities at the University of Colorado - Boulder (Boulder, CO) and National Renewable Energy Laboratory (Golden, CO). Microfabrication activities will be performed in industrial cleanroom and manufacturing facilities at Nuvotronics LLC and Texas Instruments Inc.

Categorical Exclusion(s) Applied:

A9 - Information gathering, analysis, and dissemination

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:

*Matthew Anne*

Date Determined: 11/30/2011