U.S. Department of Energy
Advanced Research Projects Agency – Energy

Announcement of Teaming Partner List for an upcoming Funding Opportunity Announcement: *Creating Innovative and Reliable Circuits Using Inventive Topologies and Semiconductors (CIRCUITS)*

The Advanced Research Projects Agency Energy (ARPA-E) intends to issue a Funding Opportunity Announcement (FOA) tentatively entitled: *Creating Innovative and Reliable Circuits Using Inventive Topologies and Semiconductors (CIRCUITS)* to fund the development of disruptive advanced circuit topologies using fundamentally higher performing wide-bandgap (WBG) semiconductor devices that lead to more efficient, more reliable, smaller, lighter, and lower cost electric power conversion systems. The overall goal of the *CIRCUITS* program will be to improve the efficiency of electric power conversion across a wide range of applications by overcoming the limitations of conventional silicon-based circuits through the holistic development of circuit topologies, controls, packaging, and application specific architectures that take full advantage of the inherent energy efficiency of WBG devices.

As described in more detail below, the purpose of this announcement is to facilitate the formation of new project teams to respond to the upcoming *CIRCUITS* FOA. The anticipated FOA will provide specific program goals, technical metrics, selection criteria, and other terms and requirements. The anticipated FOA terms will be controlling. ***ARPA-E anticipates that the deadline for submission of Concept Papers will occur 30 days after issuance of the anticipated FOA.*** For purposes of the Teaming Partner List, the following summarizes current planning for the anticipated FOA:

The technical goals of the anticipated FOA will be centered on the development of electric power converters with advanced circuit topology, control & drive electronics, and packaging that take full advantage of WBG devices to demonstrate transformational improvements over state-of-the-art in relative loss, size, weight, reliability, and cost while maintaining EMI compliance. Additionally, application specific architectures that take advantage of transformational electric power converters to improve the energy efficiency in wide range of applications areas including, but not limited to: solar & wind, high/medium voltage DC distribution, hybrid/electric vehicles, EV chargers, data centers and power supplies, motor drives and HVAC, solid state lighting, aerospace, and rail & ship propulsion are of interest in the FOA. It is envisioned that the desired efficiency improvement may be achieved directly, through inherently more efficient and cost-effective electric power conversion circuit designs, and indirectly, by enabling the accelerated adoption of higher efficiency sources and loads.

Currently, ARPA-E anticipates that the FOA will target research in: (1) innovative circuit topologies, (2) advanced gate drive and control electronics, (3) 3D or other novel packaging, (4) advanced thermal design with passive/active cooling, (5) application specific system architectures, and (6) electromagnetic modeling.

In order to realize the goals of the *CIRCUITS* program, ARPA-E aims to bring together diverse engineering and scientific communities, including but not limited to circuit designers, power electronics engineers, application engineers, RF engineers, IC designers, software and firmware engineers, system architects, system installers, grid power electronics, pulsed power scientists and engineers, thermal management and mechanical engineers, packaging and module engineers, electromagnetic interference-compliance engineers, physicists, test engineers, product engineers, WBG device engineers, and facilities and operations engineers.

As a general matter, ARPA-E strongly encourages outstanding scientists and engineers from different organizations, scientific disciplines, and technology sectors to form new project teams. Interdisciplinary and cross-sector collaboration spanning organizational boundaries enables and accelerates the achievement of scientific and technological outcomes that were previously viewed as extremely difficult, if not impossible.

The Teaming Partner List is being compiled to facilitate the formation of new project teams. The Teaming Partner List will be available on ARPA-E eXCHANGE (http://arpa-e-foa.energy.gov), ARPA-E's online application portal, starting **November 16, 2016**. The Teaming Partner List will be updated periodically, until the close of the Full Application period, to reflect new Teaming Partners who have provided their information.

Any organization that would like to be included on this list should complete all required fields in the following link: https://arpa-e-foa.energy.gov/Applicantprofile.aspx. Required information includes: Organization Name, Contact Name, Contact Address, Contact Email, Contact Phone, Organization Type, Area of Technical Expertise, and Brief Description of Capabilities.

By submitting a response to this Notice, you consent to the publication of the above-referenced information. **By facilitating this Teaming Partner List, ARPA-E does not endorse or otherwise evaluate the qualifications of the entities that self-identify for placement on the Teaming Partner List.** ARPA-E will not pay for the provision of any information, nor will it compensate any respondents for the development of such information. Responses submitted to other email addresses or by other means will not be considered.

This Notice does not constitute a FOA. No FOA exists at this time. Applicants must refer to the final FOA, expected to be issued in **December 2016**, for instructions on submitting an application and for the terms and conditions of funding.