



U.S. Department of Energy
Advanced Research Projects Agency – Energy
Announcement of Teaming Partner List
for Upcoming Funding Opportunity Announcement:
Accelerating Low-cost Plasma Heating and Assembly (ALPHA)

The Advanced Research Projects Agency Energy (ARPA-E) intends to issue a Funding Opportunity Announcement (FOA) entitled Accelerating Low-cost Plasma Heating and Assembly (ALPHA), to solicit applications to pursue innovative research to significantly reduce the “cost of entry” into fusion R&D. 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 ALPHA FOA. The FOA will provide specific program goals, technical metrics, and selection criteria. The FOA terms will be controlling. For purposes of the Teaming Partner List, the following summarizes current planning for the FOA:

The focus of ALPHA is to develop research tools to explore the intermediate ion density regime of 10^{18} - 10^{23} ions/cm³ (at Lawson conditions). This intermediate density space falls outside of the major research programs in magnetic confinement and inertial confinement fusion, and represents a high risk, high reward opportunity to identify new pathways to fusion power that may offer relatively inexpensive development cycles. ARPA-E's goal is to develop a set of low-cost technologies in fusion drivers and plasma formation that will achieve high experimental shot rates for rapid learning, and create new low-cost paths to fusion power beyond the ARPA-E program. Currently, ARPA-E anticipates that the FOA will focus on research in: (1) *Targets*, plasma formation technologies to produce plasmas with sufficient lifetime, transport properties, and geometry to pair with a driver and achieve Lawson conditions at a final density of 10^{18} - 10^{23} ions/cm³; and (2) *Drivers*, systems to deliver energy to plasma targets with sufficient power density, symmetry, and mitigation of instabilities to achieve Lawson conditions at a final density of 10^{18} - 10^{23} ions/cm³. There may be areas of overlap where a single system can both form a plasma target and drive it to fusion conditions, and such a system is also within the scope of this planned FOA.

ARPA-E anticipates that expertise including, but not limited to, the following Technical Areas may be useful in responding to the FOA: thermonuclear fusion, plasma physics, pulsed power, plasma guns, rail and coil guns, particle accelerators, laser accelerators, MEMS, plasma compression (e.g. solid liners, liquid liners, plasma liners, magnetic compression), compact toroids (field reversed configuration, spheromaks), standoff plasma magnetization, plasma pinches, power plant design, magnetohydrodynamics, plasma codes, fusion energy, fusion propulsion.

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 in August 2014. 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 themselves 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 August or September 2014, for instructions on submitting an application and for the terms and conditions of funding.