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

Announcement of Teaming Partner List for an upcoming Funding Opportunity Announcement:

Systems for Monitoring and Analytics for Renewable Transportation Fuels from Agricultural Resources and Management

The Advanced Research Projects Agency – Energy (ARPA–E), concurrently with this Teaming Partner List Announcement, is issuing new Funding Opportunity Announcements (FOA) DE-FOA-0002250 & DE-FOA-0002251 to deploy and demonstrate the functionality of technology solutions capable of producing effective quantification of (1) feedstock-related N2O emissions and/or (2) soil carbon storage at the field level. ARPA-E anticipates such quantification will require a "system of systems" to include, but not be limited to, in-field sensors, UAV and satellite imagery, agronomic data, and modeling/simulation tools. The objective of the Systems for Monitoring and Analytics for Renewable Transportation Fuels from Agricultural Resources and Management (SMARTFARM) program is to bridge the data gap in the biofuel supply chain by funding technologies that can replace national averages and emissions factors for feedstock-related emissions with field-level estimates.

U.S. agriculture has the potential to produce ~5 quads of energy in the form of biofuels, and with new innovations throughout the biofuel supply chain, these fuels could become carbon negative. Reaching this potential and achieving greater carbon reductions requires that feedstock producers adopt new technologies and management practices that simultaneously improve yield, drive down production associated emissions, and enhance carbon sequestration in soils. To facilitate the adoption of these new technologies and practices for improved carbon management, feedstock producers need incentives beyond yield. While carbon management incentive structures exist elsewhere in the biofuel supply chain, they do not extend to feedstock production because monitoring and verification of feedstock production emissions is too costly to conduct at the field level. Instead, all feedstock producers are assumed to produce the same amount of emissions— the national average —despite significant variations in actual emissions when moving to state or regional averages, let alone field-level estimates.

ARPA-E intends to provide financial support to teams proposing to deploy novel sensing systems for quantification of feedstock-related N2O emissions or soil carbon storage that meet the metrics specified in the FOAs. If successful, the technologies funded by this phase of the SMARTFARM program are expected to catalyze new market incentives for efficiency in feedstock production and carbon management, reducing annual U.S. emissions by ~1%. A precursor to the SMARTFARM program is an ARPA-E effort -- described in Topic H of DE-FOA-0001953 -- which aims to fund the establishment of publicly available, high-resolution datasets to support testing and validation of emerging monitoring technologies. The sensor technologies developed under the SMARTFARM program will be subjected to rigorous testing in relevant deployment scenarios (> 80 acres), and the project teams funded under SMARTFARM will have the opportunity to partner with project teams funded under Topic H of DE-FOA-0001953 to deploy and validate the new sensor technologies. ARPA–E held a workshop on the

anticipated SMARTFARM program in February 2018; information on this workshop can be found at the webpage (https://arpa-e.energy.gov/?q=workshop/energy-smart-farm-distributed-intelligence-networks-highly-variable-and-resource).

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. Multidisciplinary 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. Furthermore, ARPA-E strongly encourages involving industry partners to advise and collaborate with teams, with the ultimate goal of achieving successful industry adoption and integration of a new risk-driven operational and planning paradigm.

The Teaming Partner List is being compiled to facilitate the formation of new project teams. ARPA-E intends to make the Teaming Partner List available on ARPA–E eXCHANGE (http://ARPA–E-foa.energy.gov), ARPA–E's online application portal, in December 2019. Once posted, 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 the Teaming Partner 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 Announcement, 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 Announcement does not constitute a FOA. Applicants must refer to DE-FOA-0002250 & DE-FOA-0002251 for instructions on submitting an application, the desired technical metrics, and for the terms and conditions of funding.