



TECHNOLOGY DEVELOPMENT THROUGH INDUSTRIAL PARTNERSHIPS

INTRODUCTION

Office of Science and Technology

The Department of Energy's (DOE) Environmental Management (EM) Office of Science and Technology (OST) manages an aggressive national program for applied research, development, demonstration, testing, and evaluation (RDDT&E). This program develops high-payoff technologies to clean up the inventory of DOE nuclear component manufacturing sites and to manage DOE-generated waste faster, safer, and cheaper than currently available environmental cleanup technologies. The primary goal is to protect human health and prevent further contamination.

The RDDT&E sponsored by OST is designed to make new, innovative, and more cost effective technologies available for transfer to DOE environmental restoration and waste management end-users. EM has divided its technology development program into Focus Areas, which represent its highest priority problem areas.

The Focus Areas are:

- Mixed Waste
- Tanks
- Subsurface Contaminants
- Deactivation and Decommissioning

- Plutonium Stabilization and Disposition

Technology development projects encompass the range of problems addressed by the EM-50 program. This includes: mixed waste characterization and treatment, soils and groundwater remediation, landfill stabilization and remediation, remediation of high level waste tanks, deactivation and decommissioning of buildings, characterization and monitors, chemical and physical separation of contaminants, plutonium stabilization, and robotics. In addition, future activities will include the areas of special nuclear fuels, emissions and long-term monitoring, and pollution prevention.

One of OST's strategies is to ensure that private industry, other Federal agencies, universities, and DOE National Laboratories are major participants in developing and deploying new and emerging technologies. This is accomplished through funding set aside for building public and private-sector partnerships through the Industry Program. To enhance opportunities for technology commercialization, OST seeks partnerships with private-sector companies during the technology development and demonstration phases. Industry

partners will facilitate implementing these emerging technologies to solve the nation's environmental problems.

Tools employed to select and implement RDDT&E projects include: Program Research and Development Announcements (PRDAs), Research Opportunity Announcements (ROAs), Requests for Proposals (RFPs), Financial Assistance Awards, Cooperative Research and Development Agreements (CRADAs), Interagency Agreements, and DOE National Laboratory Technical Task Plans (TTPs). Of these various tools, the PRDAs, ROAs, RFPs and Financial Assistance Awards are administered for OST through the Federal Energy Technology Center (FETC).

Federal Energy Technology Center

FETC, with sites in Morgantown, West Virginia and Pittsburgh, Pennsylvania, is a Fossil Energy program implementation office that also supports the Offices of Environmental Management, and Energy Efficiency. FETC, using the full R&D resource base of the country (industry, universities, national laboratories, and other research entities), carries out a function with a national scope





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analogous to those of the combined DOE field offices and National Laboratories.

FETC is a government-owned and operated entity with Federal personnel having full delegated procurement authority to enter into contracts and assistance agreements on behalf of DOE, including the negotiation of patent and data rights which are important elements in many of the cost-shared R&D agreements that are the heart of the Fossil Energy Program.

To facilitate effective RDDT&E, the OST projects managed by FETC are conducted by industrial entities that can commercialize new products. The industrial partners use government funding to conduct RDDT&E, enabling them to achieve earlier market entry than would be possible under company-funded only development.

Of the projects selected under PRDAs and ROAs, a substantial portion have gone to small business technology developers.

Industry and University Programs

The mission of the Industry and University Programs is to involve the private-sector [non-Department of Energy (DOE) Management & Operating] entities such as colleges,

universities, not-for-profit institutions, and industry) in developing, demonstrating, and implementing improved technologies that address the needs of the DOE Environmental Management Focus Areas, through government contracting mechanisms and competitive procurement.

The goal is to provide technological solutions that reduce costs associated with cleanup activities, reduce health and safety risks, and enable intractable problems to be solved. To achieve these goals, The Industry Program implements competitively procured contracts:

- To ensure that private sector companies, including small businesses, are able to compete within the DOE market and deploy innovative, cost-effective solutions and concurrently support the advancement of U.S. industrial competitiveness
- To develop confidence in the user community at the DOE sites so that the sites are willing to implement innovative technology and so that the private sector contractor can bid on future DOE work

FETC partners with private sector companies to assist them in

developing their technologies through full scale demonstration at DOE sites. FETC also participates in deployment initiation as needed. In this process FETC works closely with the contractors, DOE Headquarters program personnel, DOE technical managers and site personnel (including regulators and the public) to ensure that end user requirements are met. This partnering process and the phased nature of the contracts has resulted in effective management of the projects, where projects were terminated or redirected as the technology matured and moved toward commercial application. Of the 99 total Industry Program projects, 55 have been completed and 44 are ongoing. For the completed projects, 50% were terminated in the early stages of development prior to more costly development efforts and field testing.

These partnerships will reap significant benefits to the DOE's cleanup efforts, provided that the DOE sites maintain an open market to the private sector. Significant benefits will be realized by cost savings through widespread use of technologies and services provided by private sector companies in response to competitive procurements issued by the DOE sites. The EM Accelerated Cleanup:





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Paths to Closure Plan requires a supply of technology systems from private sector companies. Strategies that entail competitive procurements based on end-state performance specifications, technology deployment, privatization, outsourcing and mortgage reduction require a competitive supplier base to meet EM needs. The Industry and University Programs provide an effective mechanism that industry can use to fill the information gaps needed to confidently bid on competitive procurements from the DOE sites.

The Industry Program plans to issue multiple Program Research and Development Announcements to address the technology needs established by the Focus Areas; this would also include requirements of the crosscutting programs. It is anticipated that these procurements will result in multiple contract awards. RFPs will also be initiated if sufficient information can be

developed by the Focus Areas on their specific requirements. This must be done on a case-by-case basis for the various problem areas, and can effect future deployment activities.

A Technology Development Data Sheet (TDDS) is prepared for each project within the Industry Program and also other EM RDDT&E projects at FETC. These TDDSs contain information on the problem the technology is addressing, the solution and benefit that it provides, a description of the technology, project contacts, and if completed, a results section.

The TDDSs are contained in this document and can also be found on the FETC Home Page, along with other important information, at the following Internet URL: <http://www.fetc.doe.gov/publications/factsheets/ewm/index.html>.

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