

SOLUTION PATHS

The **Strategies** section of the **INTRODUCTION** outlined the process used recently for identifying and prioritizing needs, procuring funding, and managing science and technology development under the OST Focus Area-centered approach. **SOLUTION PATHS** complements **Strategies** by exploring pathways that can be used in identifying and recruiting qualified Principal Investigators (PIs) and contractors to carry out the desired research and development activity.

The first and most cost-effective tactic is to ensure that DOE site end users can easily become aware of readily available measurement technologies previously developed by DOE-EM, other federally funded organizations, and the private sector. Similarly, DOE characterization, monitoring, and modeling needs and gaps should be publicized to a broad range of potential solution developers and providers.

PATHWAYS TO R&D PROVIDERS

There are two related aspects to recruiting PIs: how the PI is identified and selected; and how the project is funded and managed. In the past PIs have been recruited through a variety of mechanisms.

- ! Broad competitive solicitations for proposals to perform research of interest to DOE-EM, such as Program Research and Development Announcements (PRDAs) targeted at industry and university researchers, invitations to DOE laboratories, and solicitations issued by EMSP
- ! Targeted competitive solicitations for proposals to provide solutions to specific needs, issued through INDP, the Small Business Innovative Research (SBIR) program by the DOE Office of Science, or by individual site organizations
- ! Sole source requests to uniquely qualified PIs for R&D needed to meet specific needs
- ! Inclusion of specific R&D tasks in larger work scopes such as Industry and University Programs research conducted at Mississippi State University's Diagnostic Instrumentation and Analysis Laboratory (DIAL), the Hemispheric Center for Environmental Technology (HCET) at Florida International University, and at National Laboratories

DOE site needs and priorities have traditionally been publicized through various means, including workshops and needs meetings ranging from site-specific to medium-specific to program-wide, conference exhibits and presentations, solicitations published in the *Commerce Business Daily*, and websites maintained by DOE sites and DOE-EM.

FUNDING AND PROJECT MANAGEMENT

Funding and project management mechanisms have likewise varied according to the nature and maturity of the R&D desired. Avenues have included the following.

- ! Research grants awarded by EMSP, typically for basic and applied research to be conducted at universities and/or government laboratories (occasionally elsewhere), with oversight by EMSP assisted by other OST programs
- ! Direct R&D contractor funding provided through a site, generally for site-specific development work, with oversight provided by the site Technical Program Officer (TPO) assisted by OST programs
- ! Deployment assistance provided to a DOE site contractor through the Accelerated Site Technology Deployment (ASTD) program, typically for mature technologies needing relatively minor site-specific modification or adjustment, with oversight provided by the TPO in conjunction with the ASTD program and the FA involved

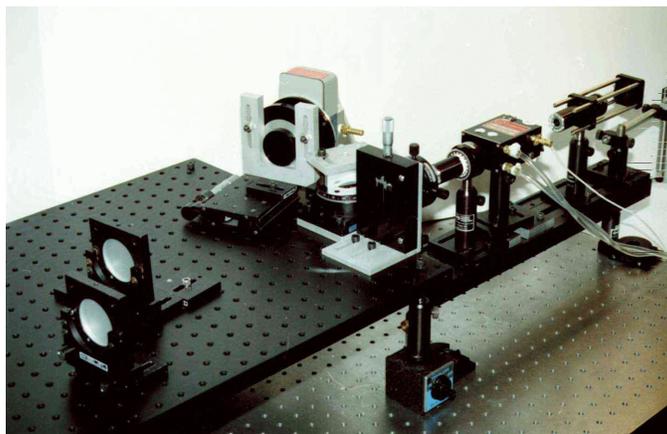
- ! Funding channeled to industry or university research centers through INDP, generally for successful respondents to INDP or SBIR solicitations as well as DIAL and HCET, with oversight is provided by NETL along with other OST programs
- ! Research conducted under Interagency Agreements with U.S. EPA, DoD, and USGS, with funding contributed by DOE and others, monitored by an interested OST program

EXAMPLES

Two R&D procurement processes that were used for **VIPs** are sketched here. Expanded discussions for these and other **VIPs** are included in **APPENDIX B**.

- ! The FAs, assisted by Crosscutting Programs, developed detailed functional requirements responding to site-identified needs. These were published in Requests For Proposals in the *Commerce Business Daily*, the NETL website, and elsewhere. Responses from interested researchers were evaluated, refined, and ranked; one respondent was selected. Development was contracted through INDP and reviewed and monitored by INDP and the FA involved, assisted by the Crosscutting Program as appropriate. This path was followed for the SEAttrace™ Barrier Validation System and the Surface and Air Beryllium Monitor.
- ! DOE needs and technical requirements for previously unsolved problems were presented to DOE research communities including EMSP, DOE labs, DIAL, HCET, and other parties through workshops, conference presentations, website publication, and other means. Interested researchers then responded to broad calls for proposals; they could in some instances even initiate proposals. This path is particularly appropriate at more basic R&D levels. **VIPs** following this path include developing next generation sensors (robust, *in situ*, autonomous, self-calibrating, and self-maintaining) for long-term monitoring, devising data collection methods and protocols for such sensors, and providing *in situ* tank waste characterization technologies capable of providing data satisfying regulatory certification requirements currently attainable only with conventional laboratory analyses.

The strategy selected for a particular challenge depends on the nature and maturity of previous technology development for it and similar challenges. CMST-CP's familiarity with measurement technology relevant to DOE needs and the results of prior DOE efforts has been a major asset in responding to the challenges.



TechID 1564: Bench Prototype of Compact High Resolution Spectrometer