

Overcoming Obstacles in Environmental Partnerships: Validation of Technology Performance

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Introduction

The Rapid Commercialization Initiative (RCI), an innovative program uniting Federal and state governments with private sector partners in providing a solution to the issues unique to environmental technology commercialization, is serving as a model for collaboration and cooperative interaction. In order to be able to be commercialized, environmental technologies must be validated for cost and performance. Validated cost and performance data must be accepted across agencies, regulators, and stakeholders to smooth the path to technology commercialization and implementation. RCI is facilitating this acceptance, and exemplifies a collaborative paradigm to advance the national environmental technology strategy and to bring environmental technologies to market more rapidly and efficiently.

RCI's Mission

The Rapid Commercialization Initiative (RCI) was established to build cooperative interactions among the private sector, states, and federal agencies to bring environmental technologies to market rapidly and efficiently. RCI's primary mission is to identify and reduce barriers in the environmental technology "Valley of Death", wherein barriers impede market entry and further commercialization of technologies. The Valley of Death refers to that stage of technology development during which technologies fail to reach the market because of an inability to pass through the environmental technology commercialization phase. Conflicting and/or duplicative Federal, state, and local regulatory requirements may paralyze the technology commercialization process. Environmental technologies may lack access to testbed sites and never be demonstrated. Alternatively, the technology may be successfully demonstrated, but not able to be validated for cost or performance because of inconsistent or uncollected data. As a consequence, the technology languishes and dies in the Valley of Death, never reaching the environmental market.

RCI is addressing three barriers to commercialization by providing assistance in: finding appropriate sites for demonstrating/testing near-commercial environmental technologies; verifying the performance and the cost of performance of technologies; and facilitating and expediting the issuance of permits through multistate participation in the technology demonstration. These barriers were identified as those that might yield to services that could be delivered by Federal, state and local partners in the RCI.

RCI Partners

The RCI sponsoring organizations (Department of Commerce, Department of Defense, Department of Energy, Environmental Protection Agency, Southern States Energy Board, Western Governors Association, State of California Environmental Protection Agency) collaborate with selected industry participants to accelerate the commercialization of their environmental technologies. In this spirit of interagency, interstate cooperation, California's new Office of Technology Certification has agreed to verify technology that is within its statutorily defined areas; and the Western Governors Association (WGA) and the Southern States Energy Board (SSEB) are working to enable multi-state participation in RCI. Twenty-two states potentially are targeted to receive assistance from the WGA and the SSEB in streamlining permitting and verification protocols.

The commitment of top management to RCI is solidified by the RCI Principals, a group of senior-level individuals including the Under Secretary for Technology, U.S. Department of Commerce; the Deputy Under Secretary for Environmental Security, U.S. Department of Defense; the Assistant Administrator for Research and Development, U.S. Environmental Protection Agency; and the Deputy Assistant Secretary for Science and Technology, U.S. Department of Energy. The Secretary, California Environmental Protection Agency; Executive Director, Western Governors Association; and Executive Director, Southern States Energy Board round out the group's membership. Each Agency's senior manager is supported by a senior career employee. The career employees in turn form the RCI Working Group. The combination of political appointees and career employees facilitates institutionalizing the benefits of RCI and unites operational and executive perspectives.

At bi-weekly RCI Working Group meetings, processes and procedures for the RCI Program are debated and formulated. The interagency, interstate RCI Working Group has worked as a collegial team to design the RCI program, develop the RCI Announcement (issued in August 1995), conduct a competitive solicitation including a rigorous peer review process, and announce RCI project selections. RCI Program Materials -- an Operations Plan, a Guidance Manual for the Preparation of Test Plans, a directory of RCI testbeds -- were also team-developed.

RCI project management proceeds as an interagency, interstate process conducted by broad interdisciplinary project teams. Teams include a Federal agency project coordinator, regulatory representatives from the host and other states, third-party verifiers, representatives

from California EPA (for technology holders desiring technology certification), the technology holder, representatives from the demonstration site, and Federal and regional EPA. This "new culture" of cooperation and trust among team members has created a new paradigm for environmental technology development and in a larger sense, for intergovernmental partnerships.

Proof of a New Paradigm

Interagency, interstate representation on the RCI Working Group and within the RCI project teams creates a new culture of collaboration, cooperation, and trust. Different agency cultures and perspectives are introduced by team members and incorporated into program and project procedures as appropriate. Each RCI partner has a vested interest in RCI's success, and believes that such success cannot take place without the synergy afforded by teamwork.

Success of the new paradigm encompasses new tactics as well as new attitudes. The success of RCI initially can be measured by the acceptance of environmental technologies by the member states and by the U.S. Environmental Protection Agency (and will ultimately be measured by market acceptance). Environmental technology acceptance will be achieved by the use of verified cost and performance project data by other states in addition to the state hosting the RCI project. That is, states agree to use cost and performance data verified in another state to preclude more than one full-scale demonstration of the technology. This agreement by the states represents a major jump over commercialization barriers, and represents cooperation and collaboration indeed.

State acceptance will be facilitated by "circuit riders," who will provide value added to the RCI process by institutionalizing consistent data collection and verification procedures and by assisting the states in developing technology implementation plans. Circuit riders will serve as ombudsmen for the states on RCI project teams, and will identify state issues to the RCI Working Group. The circuit riders will be provided by the Western Governors Association, the Southern States Energy Board, and the U.S. Army Corps of Engineers, and will facilitate a standardizing approach to technology performance across RCI projects. Communication across circuit riders will enable multistate concerns to be addressed at the technology demonstration phase, enabling a smooth path to multistate permit reciprocity as a result of RCI projects.

RCI Project Status

On March 15, 1996, the RCI partners announced the projects chosen for negotiation. Of the nine projects selected, eight will demonstrate their technologies at Federal test beds, incorporating the collaborative philosophy of using Federal facilities appropriately to assist in the demonstration of private sector technologies. Test plans are currently being developed for the nine RCI projects:

- "LASAGNA Integrated In-situ Remediation Technology," Monsanto Company, St. Louis MO (Testbed: Paducah KY);
- "Verification and Certification of MAG-SEP Technology", Selective Environmental Technologies, Inc., Atlanta GA (Testbed: Savannah River SC);
- "Terra-Kleen Solvent Extraction Technology", Terra-Kleen Response Group, Inc., Del Mar CA (Testbed: Fernald OH);
- "Solvated Electron Chemistry Remediation and Restoration", Commodore Environmental Services, New York NY (Testbed: Port Hueneme CA);
- "Hand-Held Instruments for Measuring Low Levels of Trihalomethanes"/"Instrument for Measuring Petroleum Hydrocarbon Contamination", ORS Environmental Systems, Greenville NH (Testbed: Dover AFB DE);
- "Portable Spectrometer for Analysis of Soil and Water Contamination", Hanby Environmental Laboratory Procedures, Inc., Wimberley TX (Testbed: Dover AFB DE);
- "Waste Inspection Tomography/Active Passive Neutron Examination and Assay", Bio-Imaging Research, Inc., Lincolnshire IL (Testbed: Idaho Falls ID);
- "Multi-Sampling Lysimeter Installed with Cone Penetrometer", Bladon International, Inc., Oak Brook IL (Testbed: Savannah River SC);
- "Verification of Oxyozone Biosolids Treatment System", Total Municipal Solids Recovery (TMSR), Lenox MA (Testbed: Pittsfield MA -- Private site).

Early Lessons Learned

Although it is early in the RCI process, the progressive nature of RCI is such that the RCI partners have already acquired the benefit of preliminary "lessons learned":

1. Timing is right for new culture of collaboration, cooperation, and trust
As Federal budgets shrink, government agencies are seeking new methods to continue dialogues with the private sector, and to maximize their resources by cooperating with states. Collaborations such as those facilitated by the interstate Western Governors Association and its Interstate Technology Regulatory Cooperation Working Group show a spirit that indicates that the time is right for fostering the policy of collaboration and partnership facilitated by the White House Office of Science and Technology Policy. Success of bodies such as the Southern States Energy Board echo this spirit of cooperation on the part of the states.

2. Federal agency differing operational practices require flexibility across partners
The ability to be flexible is essential when agencies and states with differing operational practices come together in a procurement situation. Operational practices must be blended within the legal extent of procurement procedures involving competitive procurements, Congressional and public announcement of program selections, negotiation of Cooperative Demonstration Agreements, and provision of technology information on the respective technologies for Federal and state regulators. Quality Assurance requirements, such as those for EPA verification participation, must be carefully crafted to include concerns of all program partners.

3. Critical to establish good working relationships early
In order to ensure smooth working program relationships, good communication is essential at the program onset. All partners must participate in discussions, and must be prepared to supply openness and trust in order to make issue resolution feasible. Such trust provides a basis for effective teamwork.

4. Face-to-face discussions between technology developers and regulators are important and productive for understanding capabilities of innovative technology
Technology developers and Federal and state regulators have differing views of the utility of innovative technology. To strike a balance between the unbridled enthusiasm of the technology developer and the caution of the regulator, discussions must take place early in the technology demonstration process to understand innovative technology capabilities and technology claims.

5. Language differences between regulators and R&D agencies should be minimized
Dysfunctional communication prevents rapid, efficient, and successful technology demonstration from taking place. Regulators and R&D agencies must refrain from talking past each other in order to get their individual missions accomplished, and should look upon understanding each other's language as part of the technology development mission.

6. With regard to the technical level of briefings, some stakeholders do not have in-depth technical backgrounds
In order to involve stakeholders in the technology demonstration and commercialization process, presentations should be made at a semi-technical level. Use of technical jargon only alienates stakeholders and may make technologies impossible to accept and implement.

7. State bureaucracies are challenging, i.e. 30 days advance notice is needed for state regulators to travel outside home state
Federal bureaucracies and private sector technology developers should not assume that their practices and procedures are written in stone for all participants. The needs of state bureaucracies must be considered when program procedures are formulated.

8. Incorrect to assume that states want to participate, can participate, or have staff to do so

State budgets are shrinking as state tax bases are employed to shore up infrastructures, health care, and education. States that may want to participate in RCI may not have the staff or the inclination to do so. Results of RCI projects must be made available to those states to give them the benefits of lessons learned to improve state policies for environmental technologies and to allocate resources appropriately.

9. Finding testbeds is a non-issue for agencies with landlord responsibilities

Federal agencies that are landlords for sites are well suited to serve as testbeds for demonstrating technologies. By doing the demonstrations on federal sites, liability is not an issue for technology holders.

10. Project management varies greatly across Federal agencies

Just as operational perspectives differ across Federal agencies, so do project management procedures and requirements. Agencies need to be sufficiently flexible to accommodate each others' practices.

Lessons learned will be used on two levels. At the RCI project level, lessons learned will be used to improve verification processes for technology demonstration and to further define barriers to environmental technology commercialization. At a higher level, however, Federal agencies and states will be able to formulate better, more cost-efficient and responsive technology and regulatory policies by considering lessons learned. Better policies will benefit the private sector, as environmental technology policies and procedures become standardized across states and Federal agencies.

Use of lessons learned should facilitate a common language among all technology development partners. The common language will encourage a merge of the government's role in fostering environmental stewardship and streamlining regulations with industry's role in economic competitiveness. Use of lessons learned to encourage compliance with better management practices will bring a competitive edge to the nation's environmental technology developers. Government and industry discord will ease, as RCI replaces command and control with cooperation and partnerships -- prescriptiveness with trust and openness.

Conclusion

The working partnership of RCI enables all partners to benefit. Industry obtains assistance through the RCI services, which will help transition innovative environmental technology to products more quickly. States accelerate cooperation with other states on environmental issues, and can acquire the knowledge to assist in a faster, more data-rich process to evaluate technologies for environmental applications through a verification process to validate technology performance. This should lead to an accelerated permitting process, faster and less expensive cleanup of waste sites, and interstate recognition and use of technical data. Federal agencies gain lessons learned to formulate improved policies that foster industrial, state, and federal cooperation and collaboration; minimize barriers to

technology commercialization and industry; and avoid multiple demonstrations of one technology at numerous sites, and so save both time and money.

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