

FY 2002-FY 2007 Strategic Plan

June 1, 2004



WERC

A CONSORTIUM FOR ENVIRONMENTAL EDUCATION
AND TECHNOLOGY DEVELOPMENT

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BACKGROUND

Dramatic changes took place in our nation's priorities in the late 1980s and early 1990s. With the end of the cold war, there was a renewed national concern about the environment and our natural resources. This was very evident within the Department of Defense (DOD) and Department of Energy (DOE). In 1988, the DOE estimated that 20,000 environmental engineers and scientists would be required in order to remediate all of its environmental problems that were part of the cold war legacy. WERC: A Consortium for Environmental Education and Technology Development was established by New Mexico State University in order to develop the necessary human and technological resources to help meet these needs.

WERC was created in 1990 as a partnership between New Mexico State University (NMSU), the University of New Mexico (UNM), the New Mexico Institute of Mining and Technology (NMIMT) and Diné College in collaboration with Sandia and Los Alamos National Laboratories. Its premise was to pool environmental education and research expertise within these member institutions and develops human resources with necessary interdisciplinary training and education to fully address environmental issues. The DOE provided WERC's initial funding through a five-year cooperative agreement. WERC's accomplishments far exceeded the expectations of its founders and the DOE. This success has resulted in DOE renewing its cooperative agreement with WERC through 2007.

During the last eleven years, WERC has:

- played a major role in assisting DOE with its human resource needs,
- funded research projects that have resulted in eight technologies being deployed at DOE sites, and several more being commercialized,
- attained national and international acclaim by sponsoring the WERC Environmental Design Contest,
- been instrumental in establishing a pollution prevention program for the state of New Mexico,
- participated in on-going initiatives with the Small Business Administration (SBA), Food and Drug Administration (FDA) and Department of Interior (DOI),
- performed peer reviews for technical issues related to the environment and human health, including the Sandia National Laboratories Mixed-Waste Landfill, and
- conducted extensive public and private sector outreach and professional development to encourage sustainable environmental management practices.

SUMMARY OF WERC's MISSION, VISION, AND GOALS

MISSION

Develop human resources and technologies that assist various levels of government and private sector companies in environmental restoration, waste minimization, pollution prevention and conservation of natural resources.

VISION

Through its leadership and achievements, WERC is nationally and internationally recognized for its commitment to students, faculty, sponsors, industrial partners and the world's environment and natural resources.

GOALS

1. Provide quality environmental programs and college courses for undergraduate through graduate levels that meet student needs.
2. Select, direct and conduct projects among consortium members that advance the state-of-the-art research and have the potential for deployment.
3. Assist government, industry, educational institutions, tribal agencies and communities on relevant environmental issues.
4. Continue sponsorship of the college and high school environmental design contests.
5. Pursue new educational, research and outreach opportunities that will expand and institutionalize primary sources of funding.

CORE COMPETENCIES

WERC has a number of unique characteristics and core competencies that give it distinct advantages over other educational institutions and private sector companies. Some of the more notable competencies are that:

1. It is a consortium that combines the resources of four educational institutions and two national laboratories. This allows a diverse multi-disciplinary approach to a wide array of environmental problems.
2. It provides a “business-like” approach by using member institution resources to solve environmental problems and issues.
3. It has strong minority involvement. Three of its member educational institutions are designated as minority institutions. Two have a large Hispanic enrollment, and the third is a Native American college located on the Navajo Reservation.
4. It is a recognized authority in the environmental area on a national and international basis. It has also successfully established brand name recognition within the environmental community. This has been due in part to its sponsorship of the WERC Environmental Design Contest.

FUTURE OPPORTUNITIES

There are still a number of environmental issues and focus areas that have not been adequately addressed throughout the United States. New initiatives in these areas have the potential for providing outside funding and support for WERC. These have been broken into the two groups below. The primary group includes issues or focus areas that have the greatest potential for obtaining outside funding. These projects would correlate to WERC's core competencies.

PRIMARY

1. Pollution prevention
2. Energy and environmental issues
3. Nuclear waste
4. Bio-medical waste
5. Technology validation
6. Education delivery
7. Food contamination prevention and safety
8. Peer review

The secondary group lists items that may be pursued if outside funding becomes available.

SECONDARY

1. Toxic waste
2. Agriculture waste
3. Carbon sequestration
4. Environmental sensing and monitoring
5. Potable water
6. U.S. critical infrastructure
7. Sustained economic development

REQUIREMENTS FOR SUCCESS

The following must be accomplished to ensure that WERC continues to be successful:

1. A viable interdisciplinary environmental education program must be maintained at each of the member institutions.
2. Research projects that have commercialization potential must be selected and funded with collaborative member institutions and directed at real-world problems.
3. An active outreach program must be continued to assist state and local governments in solving or dealing with environmental issues.
4. Additional sources of funding must be established and institutionalized when possible.
5. Activities and capabilities must evolve so that new and emerging issues can be addressed.
6. Environmental issues along the U.S./Mexico border must receive more emphasis.

GOALS, OBJECTIVES, AND STRATEGIES

Goal 1 – Provide quality environmental programs and college courses for undergraduate through graduate levels that meet student needs.

Objective 1.1 – Provide specific degrees at the undergraduate and graduate level in environmental science and engineering.

Strategy 1.1.1 – Provide at least one environmental degree, minor, or certificate option at each of the member institutions.

Strategy 1.1.2 – Provide the necessary infrastructure to accommodate 250 students in the WERC program.

Objective 1.2 – Develop and continue distance education courses in the areas of expertise at each academic institution.

Strategy 1.2.1 – Exchange at least four courses between academic institutions each semester.

Strategy 1.2.2 – Continue to employ the best available means for providing distance education. These may include interactive television or Web-based courses.

Strategy 1.2.3 – Enroll at least 50 students in distance education each semester.

Strategy 1.2.4 – Require at least two distance learning courses for a minor.

Objective 1.3 – Provide scholarships or fellowships for students enrolled in the WERC program.

Strategy 1.3.1 – Have at least 50 students on scholarship or fellowship each semester.

Strategy 1.3.2 – Provide the financial resources for at least 15 technology development projects each year with the participation of at least 100 students.

Objective 1.4 – Provide assistance to students in job placement and track results.

Strategy 1.4.1 – Continue to promote a job fair at each annual Environmental Design Contest.

Strategy 1.4.2 – Actively promote the establishment of co-op positions with WERC Affiliates.

Strategy 1.4.3 – Maintain a data bank of all graduating students and actively assist in job placement.

Strategy 1.5.4 – Develop and maintain a data bank of all graduating students in the WERC Program by 2002.

Objective 1.5 – Place more emphasis on education in WERC Strategic Plan focus areas.

Strategy 1.5.1 – Develop a curriculum of at least three courses in WERC focus areas at the member institutions.

Goal 2 – Select, direct and conduct projects among consortium members that advance the state-of-the-art research and have the potential for deployment.

Objective 2.1 – Within available funding, support research projects that advance state-of-the-art technologies and have the potential for deployment.

Strategy 2.1.1 – Fund 10 to 20 ongoing technology development projects.

Strategy 2.1.2 – Fund 10 to 20 ongoing seed projects.

Strategy 2.1.3 – Fund between 1 and 3 ongoing deployment or demonstration projects.

Objective 2.2 – Place more emphasis on research in WERC Strategic Plan focus areas.

Strategy 2.2.1 – Develop a curriculum of at least three courses in WERC focus areas at the member institutions.

Strategy 2.2.2 – Fund at least three research projects each year that deal with WERC focus areas.

Strategy 2.2.3 – Respond to request for proposals and other research opportunities that are directed at WERC focus areas.

Goal 3 – Assist government, industry, educational institutions, tribal agencies and communities on relevant environmental issues.

Objective 3.1 – Provide information to communities, tribal agencies and others so that informed decisions can be made on environmental issues.

Strategy 3.1.1 – Have at least one project that involves communities, industry, tribal agencies and government.

Strategy 3.1.2 – During the year, disseminate significant items of information such as newsletters and newspaper articles that convey information on critical issues to communities, industry, tribal agencies and various levels of government.

Objective 3.2 – Develop and offer, on a periodic basis, a variety of environmental training courses that are related to the needs of communities, industry, small businesses and government.

Strategy 3.2.1 – Have at least two education courses available on demand that can be used for professional development.

Strategy 3.2.2 – Have at least four training courses available for use on a periodic basis.

Objective 3.3 – Develop and offer, on a periodic basis, professional development training and standards-based curriculum for teachers and students regarding implementation of long-term environmental stewardship.

Strategy 3.3.1 – Have professional development courses for pre-service and in-service teachers.

Strategy 3.3.2 – Developed curriculum will meet national and state standards for utilization in the classroom.

Strategy 3.3.3 – During the year, offer a minimum of one educational field trip-type event that will expose students to environmental issues and encourage sustainable stewardship.

Goal 4 – Continue sponsorship of the annual college and high school environmental design contests.

Objective 4.1 – Provide at least three different categories for tasks in the college-level competition.

Strategy 4.1.1 – For the 2002 competition there will be four tasks, i.e., waste management, sustainability, food safety and virtual. Interest in these tasks will be evaluation based on team participation in each task. Tasks for future competitions will be eliminated or added based on this evaluation.

Objective 4.2 – Maintain a level of participation in the collegiate competition that exceeds 20 universities and 35 teams.

Strategy 4.2.1 – Ensure that each competition is of high quality and performed in a fair and unbiased manner for all participating teams.

Strategy 4.2.2 – Provide the opportunity for each team to be debriefed on their performance after the conclusion of the competition.

Objective 4.3 – Increase the number of teams participating in the high school environmental design contest.

Strategy 4.3.1 – Publicize the high school competition through publications, correspondence and visits to high schools.

Goal 5 – Pursue new educational, research and outreach opportunities that will expand and institutionalize primary sources of funding.

Objective 5.1 – Develop relationships with other state and federal agencies that have the potential for new sources of funding.

Strategy 5.1.1 – Establish working relationships with representatives from the Food and Drug Administration; U.S. Departments of Agriculture, Interior, Defense; and the National Science Foundation through contacts established at the annual WERC Environmental Design Contest.