

Arkansas Science & Technology Authority

Annual Report

2005



Table of Contents

<i>Letter from the Chairman & President.....</i>	<i>3</i>
<i>About the Authority.....</i>	<i>8</i>
<i>New Faces of 2005.....</i>	<i>9</i>
<i>President addresses Senate and House Committees.....</i>	<i>10</i>
<i>Meeting Measures in Research.....</i>	<i>11</i>
<i>Meeting Measures in Commercialization.....</i>	<i>17</i>
<i>Meeting Measures in Industry.....</i>	<i>21</i>
<i>Operating Report.....</i>	<i>24</i>
<i>Current Board of Directors.....</i>	<i>26</i>
<i>Staff.....</i>	<i>27</i>
<i>AMS Project Managers.....</i>	<i>28</i>





Sept. 15, 2005

2005 Annual Report

Letter from the Chairman & President

Dear Governor Huckabee & Distinguished Legislators:

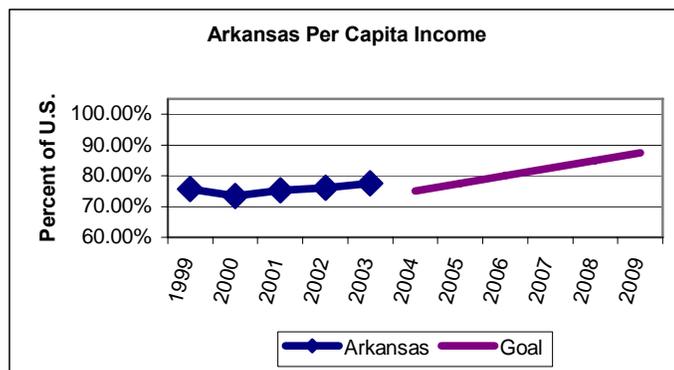
The Arkansas Science & Technology Authority's Board of Directors and staff are pleased to submit to you the Authority's 2005 Annual Report. This report summarizes the scientific and technological projects by which the Authority carries out its mission to bring the benefits of science and advanced technology to the people and state of Arkansas.

The Authority's overall goal is to stimulate the Arkansas economy and increase per capita income by planning, promoting, influencing, and supporting the commercialization of research innovations through high-quality programs and services. Its programmatic goals are to: (1) increase research activities in Arkansas, (2) develop new products and firms, and (3) maintain and transform existing enterprises into knowledge-based companies and increase their global competitiveness.

Per capita Income

Arkansas per capita income has remained relatively constant as a percentage of the U.S. since 1970. Accelerate Arkansas, a volunteer organization, has established a goal of increasing per capita income to the national average. The goal in the chart titled Arkansas Per Capita Income, for example, shows the growth needed to reach the U.S. average in the year 2015. The chart also shows actual data for Arkansas for the years 1999 through 2003.

The Authority's approach to contributing to per capita income growth is to pursue its mission and emphasize growth in areas that correlate with higher per capita income; such areas include federally funded research and development, venture capital invested, and technology and knowledge-based employment.



Research

Basic research grant proposal solicitation continued to be suspended and no investments were made in basic research projects this fiscal year due to the lack of state funds. However, the Authority's commitment to research remains steadfast, and has not waned, because our economic competitiveness depends on the innovations derived from research. Increasing externally funded

research activities in higher education and improving science, technology, engineering, and mathematics education are essential building blocks in the national and global marketplace.

The STUART Grants and Minigrants supported by the Winthrop Rockefeller Foundation allowed the Authority to continue promoting innovative science education in middle school grades and examine student attitudes toward science in grades 5 through 8. A total of 10 STUART Grants were awarded, and 91 Minigrants were awarded to 57 schools. As for the Arkansas Community Foundation Affiliates Science Minigrant Program, the first round of Minigrant applications ended on April 15th, 2005; the Authority received 133 applications and 115 of them have been awarded. For the second round of Minigrant applications, the Authority had received 84 applications at the time this report was printed.

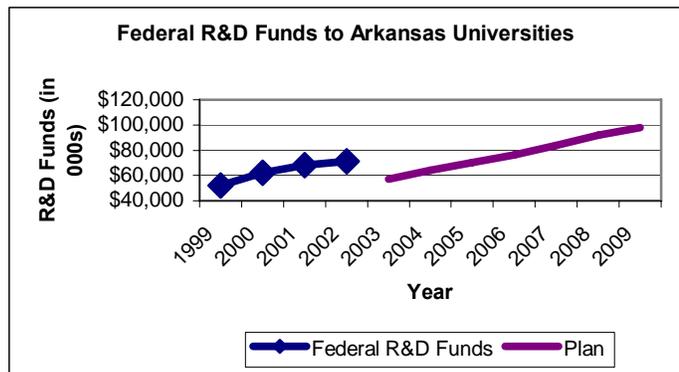
The Authority continues to facilitate the Experimental Program to Stimulate Competitive Research (EPSCoR). This program is charged with planning and implementing an effort to increase federally supported research at colleges and universities and bring Arkansas' science and engineering research to nationally and internationally competitive levels.

The Authority's staff played other important roles in the development of research and education.

The Authority's President sits on the Arkansas Biosciences Institute board and the Tobacco Settlement Commission, and the Authority's Vice President Research sits on the Board of Visitors for the Arkansas School for Mathematics Sciences & the Arts. This year the Authority joined a number of business and academic leaders throughout the state in initializing the formation of an active statewide coalition for the support of mathematics, science and technology education.

Federal Funds for University R&D

The Authority celebrates the success that Arkansas colleges and universities have in attracting federal research and development funds. States that receive more federal research support tend to enjoy higher per capita incomes. The Authority undertook or participated in 28 projects or initiatives as part of the Board's goal to increase research activities in Arkansas and increase externally supported research.



The amount of federal research support is shown in the chart titled Federal R&D Funds to Arkansas Universities. This is an important outcome measure for the state as a whole and correlates with higher per capita incomes.

Firms & Investments

The Authority is very supportive of university research. In previous years it has helped develop new products and services around which new knowledge-based companies have formed and from which jobs are now spinning out of the universities. The Authority is working with several of these firms to explore capital markets for financing. Plus, Techpreneur and the Student Business Plan Competition are two examples of a number of supportive entrepreneurial activities in which the Authority is involved, along with others.

The Authority funded 15 TTAG SBIR projects during 2005. Authorized awards totaled \$55,250 and were matched by private sector investments totaling \$21,500. A majority of the recipients of Small Business Innovation research (SBIR) funds have either prepared proposals through the use of TTAG funds or were formed as a result of Authority funding from another program. The Authority uses

TTAG funds to leverage a federal award to the Small Business Development Center for SBIR outreach. It co-sponsors an SBIR conference that brings in speakers to discuss the SBIR process, and works with the Arkansas Department of Economic Development (ADED) to ensure that SBIR funds are counted as eligibility criteria to meet the ADED requirements for the R&D tax credit. Many of the Authority's former seed capital and TTAG recipients have gone on to win more financial backing in fiscal year 2005.

- In 2000-2001, the Authority invested in Art Exchange.com, which achieved its goal in 2005 to receive a final seed capital investment program disbursement of \$200,000.
- The National Institutes of Health awarded a \$150,000 Phase I Small Business Technology Transfer (STTR) grant to Minotaur Technologies, a Fayetteville company and former Authority TTAG recipient.
- DCV Technologies Inc., an Authority TTAG recipient, was awarded \$100,000 by the National Cancer Institute to pursue an ovarian cancer vaccine.
- Vegrandis LLC, an Arkansas-based technology company in Fayetteville has received a Phase II SBIR award from the National Science Foundation for \$500,000 to develop technology to rapidly detect water supply pathogens. Vegrandis could potentially receive an additional \$500,000 in Phase IIb funding for a total of up to \$1 million.
- Vision Technologies Inc., an Authority supported company, has won a \$2 million U.S. Navy contract renewal for 2005.
- NASA awarded two SBIR grants to Arkansas Power Electronics Inc., one of the Authority's clients. The grants were worth \$100,000 each.

The Authority's President serves on the board of Accelerate Arkansas, an organization that stimulates the growth of knowledge-based business in Arkansas by putting into place initiatives that will diversify and strategically grow Arkansas' future economy.

The Authority supported the 2005 Accelerate Arkansas eight-point legislative agenda to grow the tax base with higher paying jobs by increasing seed capital and research matching funds, easing requirements for targeted businesses to qualify for research and development tax credits, extending the carry forward period for research and development tax credits under the Consolidated Incentives Act from 3 to 9 years, and eliminating the two-year waiting period for angel investors to receive investor tax credits. Other points included: expanding eligibility for bond guaranty programs to include targeted businesses, making it easier for companies to participate in the employee tuition reimbursement tax credit program, expanding technical careers student loan forgiveness to include graduate students, and increasing the cap on technology development projects from \$50,000 to \$100,000.

The Authority's President was invited to address the Senate Committee on Technology and Legislative Affairs and the House Committee on Advanced Communications and Information Technology during the session and discuss the knowledge based economy and its importance in Arkansas' future.

The Authority continued its work on A Pilot Project for Entrepreneurship in Arkansas, with support from the Winthrop Rockefeller Foundation. The Project was designed to identify critical educational and economic development indicators upon which entrepreneurship depends; develop information and policy options for entrepreneurship that would influence the performance indicators; establish a model delivery system for information; test policy options; and inventory and assess relevant public policy. As part of the Project, the Authority's President introduced a panel presentation on Model Entrepreneurship Programs before the Joint Interim Committee on Agriculture, Forestry & Economic Development. The Authority's goal was to inform committee members about how such programs

were being used in other states to stimulate economic development. During the academic year, the Project also had three graduate interns – Dustin Hartung, Patty Trantham, and Kathleen Velek – doing research on entrepreneurship at the Authority’s offices. The interns had the opportunity to draft model legislation, provide information to members of the 85th Arkansas General Assembly during the regular session, and support the strategic planning efforts of Accelerate Arkansas. The Project demonstrated, in collaboration with non-profit organizations and government agencies, a process for implementing the policy recommendations extracted from studies and reports. The lessons learned while working with Accelerate Arkansas as it planned core strategies adopted from the report *Arkansas Position in the Knowledge-based Economy* was particularly useful to the Project and has been shared with other organizations.

The Authority president also serves on the Boards of the Arkansas Capital Corporation (ACC) and the Arkansas Commerce Capital Development Company (CCDC). The ACC is a publicly chartered, private, non-profit business development corporation offering an alternative source of financing for small Arkansas businesses and bridging the gap between the level of funding a business needs and what it is able to obtain through traditional banking sources. The CCDC, an affiliate of the ACC, markets and manages the state’s tax incentive program for early-stage investors, reviews applicants, and tracks the allocation and utilization of the tax credit throughout its life.

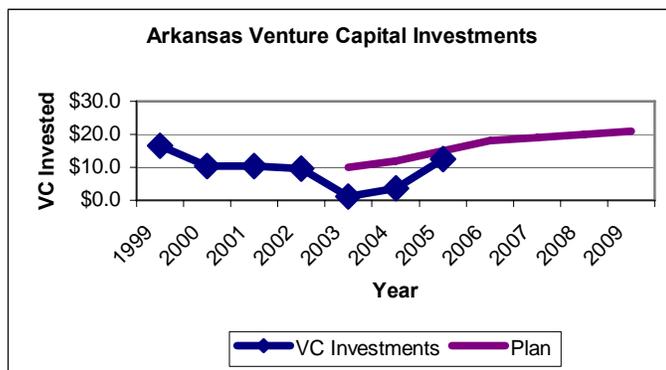
The Authority and ADED’s review the applications in conjunction with the CCDC staff as part of CCDC’s due diligence. It is the Authority’s task to ensure the projects are technically feasible while ADED looks at the economic development aspects of the projects. The Authority has also informed technology-based businesses of the CCDC opportunity as part of an awareness campaign.

The Authority has supported the ADED’s use of R&D tax credits, has assisted with presentations to companies on how the tax credit could be used, and reviews applications submitted to ADED.

Venture Capital

A major thrust of the Authority is to help commercialize new products and services that spin out of universities, federal laboratories, and existing knowledge-based companies. During FY2005 the Authority assisted 18 companies as part of the Board’s goal to enable companies and new enterprises in the commercialization process that leads to venture capital investments in Arkansas companies.

The amount of venture capital invested in a state’s enterprises is important. The chart titled Arkansas Venture Capital Investments shows recent history of reported investments, which are an outcome measure for the state as a whole and correlate with higher per capita incomes.



Maintain and Transform Existing Enterprises

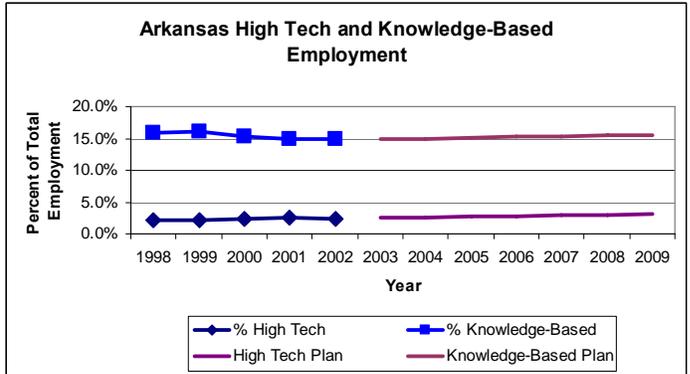
The Arkansas Manufacturing Solutions continued to improve the performance, productivity, and profitability of Arkansas manufacturers through training and implementation projects that achieved tangible and measurable results. The Board authorized funding in the amount of \$997,477 to support the director and eight field staff: three at the University of Arkansas, Fayetteville; three at the University of Arkansas at Little Rock; one at Arkansas State University; and one at Southern Arkansas University Tech. The Board also authorized \$25,250 for partner activities and \$37,500 for Technology Transfer Assistance Grants.

From July 2004 through June 2005, the AMS field staff completed 145 projects and served 241 companies. The Authority's Board of Directors authorized nine AMS funded TTAG projects totaling \$33,750 to help clients solve technical problems. The private sector invested an additional \$11,250 in these solutions. On October 14, 2004, Arkansas Manufacturing Solutions received the 2004 Arkansas Institute for Performance Excellence Quality Commitment Award.

Employment

The Authority recognizes the importance of existing industry in the state and contributes to its success through technology and manufacturing extension. During FY2005 the Authority fostered the development and retention of 2,351 jobs and assisted 275 companies as part of the Board's goal to support existing enterprises.

The volunteer group, Accelerate Arkansas, illustrated the importance of high tech and knowledge-based jobs in its 2004 benchmark study *Arkansas' Position in the Knowledge-based Economy*, prepared by the Milken Institute and the University of Arkansas. Using the definitions and methodology in this report as a guide, employment in two important categories is shown in the chart titled Arkansas High Tech and Knowledge-Based Employment. Growth in these categories is identified by the Milken Institute as essential if Arkansas' per capita income is to increase to the national average.



Conclusion

In 2005, the Authority continued to strive and evolve in serving the scientific and technological needs of Arkansans. It greatly appreciates your continued interest and support, and will continue to prepare the state to meet the ever-changing challenges of our technological world.

Sincerely,

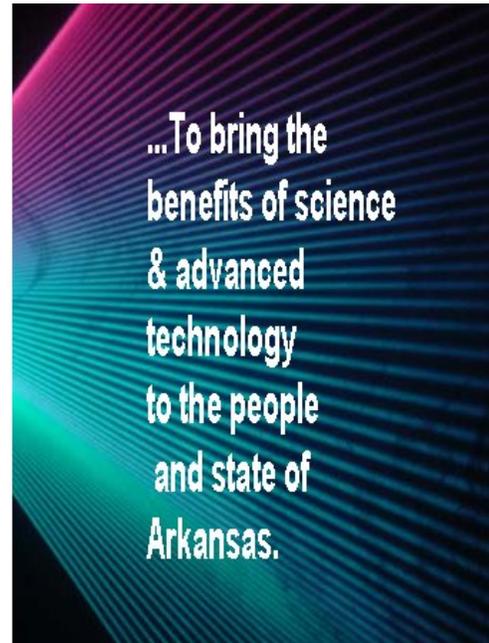
John A. White, Ph.D., Chairman of the Board

John W. Ahlen, Ph.D., President

About the Authority

The Authority was created by statute in 1983 with the mission to bring the benefits of science and advanced technology to the people and state of Arkansas. This mission is addressed by strategies to promote scientific research, technology development, business innovation, and math, science and engineering education.

The Authority is comprised of a Board of Directors, Advisory Committees and staff. The 14-member Board is appointed by the Governor to staggered four-year terms. The Board has three directors who are scientists or engineers, two directors who are representatives of academic institutions, five directors who represent the private sector, three directors who represent the private sector and have knowledge and experience in the field of manufacturing, and the Director of the Department of Higher Education (or the Director's designee).



The Authority's staff is led by the President, the chief executive officer, who is responsible for the agency's programs, services and support functions. The Authority's activities are divided into three programmatic areas that include research, development and technology.

The Board determines the allocation of funds to all projects supported by the Authority. Three standing committees, comprised exclusively of members of the Board, make recommendations to the full Board. Advisory Committees, comprised of Board and non-Board members, offer additional advice to the Authority. All of the Authority's activities are audited annually to ensure compliance with state and federal guidelines.

New Faces of 2005:

In the last year, the Authority Board and Staff have continued to bring the benefits of science and technology to people and state of Arkansas by satisfying our performance standards, meeting and surpassing our objectives, and welcoming some valued new faces to our family.



(Top left to right) VP Research, Dr. Gail McClure and Authority Board Member, Robert Hall.

(From Bottom left to right) Authority Board Members, Johnny Hooks, Dr. Collis Geren, and Dr. Gary Phillips.



The Authority would like to wish the best of luck to our 2005 junior staff interns; (below) Kathleen Velek, Patty Trantham & Dustin Hartung.



Authority President addresses Senate and House Committees on Technology....

On January 20th, 2005, The Authority President, Dr. John Ahlen, addressed the Senate Committee on Technology and Legislative Affairs at the State Capitol.....



...and on January 24th, Dr. Ahlen spoke to the House Committee on Advanced Communications and Information Technology.

Each time Dr. Ahlen spoke on the knowledge based economy and its importance in Arkansas' future, and was joined by Mr. Doug Elkins, the State's Executive Chief Information Officer, who spoke on the status of Information Technology Development in State Government, and Claire Bailey, Director of the Department of Information Systems, who spoke on the status of Arkansas Wireless Information Network. Each of these presentations was an example of how the Authority satisfies its performance measure goal to plan, promote, influence and support with high quality programs and service the commercialization of research innovations thereby helping to grow the Arkansas economy and increase per capita income.



Meeting Measures in Research

The Authority has set high performance measures and objectives that it aspires to meet, one of which is to make university scientists, technologists, and engineers more nationally competitive for federal research funds. The Authority follows through by continually supporting entities like Arkansas Biosciences Institute, the Experimental Program to Stimulate Competitive Research (EPSCoR), Arkansas Manufacturing Solutions (AMS), and the Arkansas Department of Economic Development (ADED) with which it collaborated in the creation of an R&D tax credit program. Numerous advanced technology start-up companies have benefited from these R&D tax credits including, BioBased Systems, Space Photonics, Nanomech, and Nanomaterials and Nanofabrication Laboratories.

The Authority also supports larger-scale research projects and research infrastructure investments. Authority staff serve on the UALR College of Science and Mathematics advisory board to determine instrumentation needs, all EPSCoR initiatives (NSF, DOD and NASA), and Authority staff members have met with researchers at the University of Arkansas (UA) campus to discuss research funding for nanoscience projects.



On Nov. 7, 2004, the Authority co-hosted the Welcome Reception for the 42nd Annual Briefing of the Council for the Advancement of Science Writing (CASW).

The Authority met its goal to support strategic research and research infrastructure projects that are relevant to the state's economic growth and that make higher education institutions more nationally competitive for federal funds. The Authority staff have attended an Axiom Tresnet meeting and Steering Committee meeting for the Axiom Laboratory for Applied Research (ALAR), set up meetings and worked with multiple state University researchers to develop the second round research focus for EPSCoR, as well as a multi-institutional transportation and eCommerce research focus. During the EPSCoR focus forums, university researchers have collaborated with FDA researchers at National Center for Toxicological Research (NCTR) to pursue projects of mutual benefit. The Authority organized a series of EPSCoR Brainstorming Sessions held at a series of locations including UAF, ASU, and UALR. From these sessions, collaborative efforts between the institutions and the inclusion of NCTR as a partner are emerging as a focus for the next EPSCoR submission. The Authority has also worked to foster more collaboration between NCTR and various state universities, which also helps increase federal research investments at federal facilities in Arkansas. In the third and fourth quarters the Authority worked to support strategic research and research infrastructure projects, and to strengthen federal-institutional collaboration by organizing and hosting "collaborative brainstorming" sessions. On Jan 25th, March 28th, April 13th, and May 16th such "brainstorming sessions" were held by the Authority with University of Arkansas, Arkansas State University, and University of Arkansas at Little Rock to investigate possible research focus areas for the next round of NSF EPSCoR. Researchers from FDA/NCTR, UALR, UAF and ASU attended these series of sessions. These sessions satisfied the measure to support larger-scale research projects and research infrastructure investments that make higher education institutions more nationally competitive for federal research funds, while fostering collaborations to increase shared projects among institutions.

The Authority also increases shared projects among institutions and supported large scale research projects and infrastructure investment by serving on the NASA Space Grant Consortium, which meets monthly, in addition to its EPSCoR work and nanoscience project development



On Friday September 17th 2004, the Arkansas Science & Technology Authority Board of Directors & Authority Staff toured The Arkansas State University Bioscience Institute on the ASU campus in Jonesboro.

To increase the number of faculty in research, Authority staff served on an advisory board of the UAPB STEM project, and attended meetings to evaluate the progress of the program. The Authority staff have also worked independently with individual state universities that have traditionally been predominantly teaching institutions to plan strategies for expanding research capacity.



A second collaborative effort orchestrated by the Authority is a statewide initiative focused on transportation and eCommerce. The Authority is leading a collaborative effort to organize industry-university partnerships between large companies with international supply chain and specific transportation needs and universities (U of A, UALR and University of Memphis) that can supply expertise for these areas. In recognition of the Authority's research activities in Arkansas, Dr. Gail McClure, the Authority's Vice President Research, was awarded UALR CyberPartner Award. This is the second year in a row in which an Authority representative has won this award.

Dr. Gail McClure receives CyberPartner award

To increase the relationships between higher education and business development, the Authority works with ADED in the R&D tax credit program by visiting and working with companies that conduct in-house research, and by helping develop guidelines for R&D forms and tax credit certificates. The Authority has also sought to increase industry-university partnerships through this mechanism. The Authority staff frequently visits with and advises established Arkansas companies, such as Tyson Foods, Eaton Inc, , as well as new start-up companies such as Nanofabrication Laboratories, Space Photonics, Nanomech, and Premium Sales and Service, on the ADED R&D tax credit program. The Authority supported the Arkansas Department of Economic Development's use of R&D Tax Credits, by visiting numerous industry research laboratories in conjunction with R&D applications and by working with business incubators to clarify the strategies in developing R&D plans that will

best leverage the tax credits. The Authority worked directly with administrators of Genesis Incubator and with individual clients including Space Photonics, Biobased Systems, and Nanomech.

The Authority also worked with UAF Poultry Science to help plan strategies to support new start-up companies and fund seed capital investments. The Authority even toured a new startup company, Premium Sales, as they treated poultry houses with biologicals for litter control and odor reduction.

By participating in the Small Business Development Centers, Arkansas Department of Economic Development, and USDA Rural Development and by working with companies like Space Photonics, Premium Sales, and Biobased Systems, the Authority works to encourage the development of new products or services and to expand knowledge-based companies. In addition, the Authority sought outside support to promote entrepreneurship by attending the Arkansas Rural Development Conference (USDA grants and loans sessions), the Southern Technology Council meeting and the Southern Growth Policies Board conference.

The Authority is directed to support SBIR (Small Business Innovation Research Program) efforts (i.e. proposal preparation) in new enterprises and leverage phase I and II SBIR awards (with all relevant programmatic activities of the Authority). The Authority satisfied this measure by writing a support letters for nanotechnology applications of NN-labs in Fayetteville, and by working with Premium Sales to develop strategies to apply R&D tax credits which will leverage the SBIR submitted. Such support letters have helped secure two new SBIRs, and awards from EPA, NSF and NIH federal programs which have resulted in \$823,000 additional research funding.

The Authority also endeavors to improve science, technology, engineering, and mathematics education by seeking outside support. A good example is the Winthrop Rockefeller Foundation (WRF) with which the Authority has worked to provide supplemental funding to Arkansas middle school teachers for enhancing hands-on science activities in the classroom. The Authority has worked with WRF to insure sustainability of this program through an endowment to the Arkansas Community Foundation. Interest from this endowment will continue to provide funds for this Minigrants Program and the Authority has begun an extensive training program to insure a smooth transition of the Minigrants Program to Arkansas Community Foundation (ARCF) Affiliates. The Authority has also developed an instruction manual, revised application forms, expanded guidelines and developed an evaluation matrix for use by ARCF affiliates. As part of the transition and training effort, the Authority helped organize and conduct a workshop to formulate defining characteristics and develop brochures for the Minigrants Program for future use by ARCF Affiliates. The Authority has held numerous workshops as part of the training effort to shift the Minigrants Program to ARCF Affiliates.



On December 10th and 11th a workshop was held at the Best Western Governor's Suite in Little Rock to educate instructors on how the program can help them enhance the potential of their classrooms.

The STUART Grant Program has provided funds to Arkansas public middle school teachers to use technology for science instruction. The Minigrant Program has provided funds to Arkansas public middle school teachers to purchase consumable items for student hands-on experience in science.

The Authority's STUART Grant Program provides a \$5,100 award to Arkansas teachers in grades five, six, seven, and eight to purchase a classroom participation system, a projector and a laptop computer.

The Authority's Mini-grant Program Provides a \$500 award to Arkansas teachers in grades five, six, seven, and eight to purchase consumable science materials.

Explore the Authority's Mini-grant & STUART Grant opportunities.....



"The Mini-grant enabled my students to experience what science is all about-discovery."

Melissa Estes, College Hill Middle School
Texarkana, Arkansas

A total of 10 STUART Grants were awarded, and 91 Minigrants were awarded to 57 schools. Some information about Arkansas Community Foundation Affiliates Science Minigrant Program:

The first round of Minigrant applications ended on April 15th, 2005, the Authority received 133 applications, 115 of them have been awarded. For the second round of Minigrant applications, the Authority received 84 applications from which addition teachers will be awarded Minigrants.

The Authority's President, or designee, serves on the Arkansas School for Mathematics Sciences & the Arts (ASMSA) Board of Visitors, which meets every two months, and also attends two yearly weekend planning retreats to improve science, technology, engineering, and mathematics education.



Registration at the organizational meeting of the Arkansas Mathematics Science and Technolgy Coalition held at Axiom Rivermarket Building.



The Authority also sought to improve science, technology, engineering and mathematics (STEM) education by helping initiate the organization of the Arkansas Mathematics, Science and Technology Coalition. The Authority helped plan and organize this meeting of business leaders, policy makers, and educators with the assistance of ADHE, and the Arkansas Mathematics and Science Educational Resource Centers. The event was co-hosted by Acxiom to address K-12 instructional needs.

The Authority also served on the Taskforce for Technology in Education, which contributed to the study of educational facilities in 2004, and planned and initiated a two-day STUART workshop retreat for expanded e-Instruction training for science teachers receiving awards.

Later, in the third quarter, a Board for the Arkansas Mathematics, Science and Technology (AMST) Coalition was organized and the Authority serves as secretary to this Board. The AMST Board has been actively meeting to determine the STEM public school educational needs and the Arkansas workforce educational needs, to evaluate model STEM programs and to develop strategies to enhance STEM curriculum in Arkansas public schools.

The Authority also administers STUART grants to provide electronic classroom participation systems to middle school science classrooms, funded through the WRF. During the past year, the Authority funded teachers in 10 schools and initiated a two-day STUART workshop retreat for expanded e-Instruction training for science teachers receiving awards.



In addition, the Authority served on the Taskforce for Technology in Education, which contributed to the study of educational facilities in 2004 and has continued this initiative with organization of a Taskforce of Technology Integration in Public School Curriculum. The Authority has undertaken organization of this Taskforce of individuals with expertise in technology to discuss plans for the incorporation of technology into public school curriculum grades 7-12 based on legislative Act 2266. The Authority is seeking outside support for this technology curriculum initiative through collaboration with similar programs in West Virginia and submission of an ITEST proposal to NSF to implement a pilot program for Arkansas technology curriculum.



To increase the number of faculty in research and the relationships between higher education and business development, and to emphasize the impact of research on the state economy, the Authority hosted a Research Day at the Capitol on March 23rd. The Authority held a research expo and luncheon for the legislature to emphasize the benefits of research to Arkansas.



The expo included displays from the Authority, the Department of Economic Development, University of Arkansas for Medical Sciences, Arkansas Bioventures, Arkansas Biosciences Institute, University of Arkansas at Little Rock, University of Arkansas at Pine Bluff, University of Arkansas, Fayetteville, Arkansas State University and Arkansas Children's Hospital.

In the fourth quarter of 2005, the Authority worked to improve science, technology engineering, and mathematics education, by submitting a proposal to the Winthrop Rockefeller Foundation for funding a program to develop a website for free access to lesson plans for “hands-on” activities to enhance public school science and mathematics curriculum. The Authority received an award letter acknowledging a \$441,000 five year grant to develop this program known as SMART (Science and Mathematics Accessible Resource Tool). The Authority’s worked to increase teacher education by organizing and training Science Specialists and Center Directors at an Educational Resource Centers in administration of Minigrant Program which will transition the Minigrants Program to the ARCF Affiliates over a five year period. The science specialists at the Educational resource centers focus on teacher professional development and curriculum enrichment.



On the 27th and 28th of April, the Arkansas Science & Technology Authority participated in a Workshop/Retreat for Directors and Science Specialists of the regional Mathematics & Science Resource Centers to provide information on the Arkansas Community Foundation Affiliate Science Minigrant Program

Meeting Measures in Commercialization:

Commercialization is a goal designed to direct the development of new products and firms. Authority staff continually fulfill this measure by serving on the UAMS patent & copyright committee to review intellectual property from UAMS research, by serving on the UALR Incubator Advisory Committee which is reviewing the research and commercialization possibilities that an incubator could create for the state, and by meeting with various companies interested in state incentives. Plus, Authority staff members have met with various Venture Capital funds interested in Arkansas. The Authority has also represented the state at the SSTI annual meeting, and hosted sessions on technology based economic development and private equity capital formation.

The Authority staff nurtures the relationships between higher education and business development, by meeting with clients and introducing them to other university partners.

To increase knowledge worker jobs through entrepreneurship and new company formation, Authority staff participate in Accelerate Arkansas meetings, and support and serve as staff for that organization, assist with the CAEDA report, plan for the Arkansas Venture Capital Forum, and participate in Techpreneur by speaking at events and helping organize meetings. Authority Staff have also attended meetings of the state team for the National Governor's Association (NGA) Pathways to Prosperity Project and provided input to the Arkansas Employment Security Department regarding high growth careers.



The House & Senate Interim Committees on Agriculture, Forestry & Economic Development met Wednesday, August 25, 2004. Authority President, Dr. John Ahlen introduced a presentation on Model Entrepreneurship Programs. Read more at <http://asta.arkansas.gov/>

The Authority has also sought outside support to promote entrepreneurship by pursuing a Kellogg Foundation Grant opportunity in conjunction with the Small Business Development Center (SBDC) and Arkansas Capital Corporation. The Authority assisted with the Don Reynolds Governors Cup by arranging judges and visiting with representatives from Oklahoma and Nevada concerning the Reynolds grant, thus satisfying the Commercialization Strategy Measure.

To support ADED's use of R&D Tax Credits, the Authority has participated in ADED client meetings and works on applications for R&D tax credits involving companies such as Ventria, Green

Technologies, and Space Photonics. The Authority also supported the Commerce Capital Development Corporation's (CCDC) use of investment tax credits, by attending meetings and assisting with interactions among the state entities.

The Technology Transfer Assistance Grant Program (TTAG) assists Arkansas' enterprises in developing or improving products or processes through the transfer of technical solutions to technology-based, industry-driven problems, thus enhancing that enterprise's market competitiveness. The Authority provides limited financial support for the transfer and deployment of innovative technology. The Authority will fund up to \$3,750 of costs associated with transferring new or existing technology from a qualified applicant -- such as a public or private enterprise, laboratory, college or university -- to an enterprise based in Arkansas. Up to \$5,000 of total project costs will be considered, with the first \$2,500 funded by the Authority; the remaining \$2,500 is cost-shared equally (50:50) between the Authority and the enterprise. Each enterprise is eligible to receive assistance for two technology transfer projects per year. Projects are evaluated on a competitive basis.

In the fourth quarter, the Authority satisfied its commercialization strategy to seek outside support to promote entrepreneurship, by participating in the AR Venture Capital Forum, the Small Business Development Center meeting in Fort Smith and the Arkansas Business Plan Competition. By supporting UAMS BioVentures, and the BioTech Taskforce, the Authority also met its strategy to develop new products or services, around which to create new knowledge-based companies.



On May 16th at the Peabody Hotel, Authority Vice President Finance, Leslie Lane, spoke on a panel at the 2005 Arkansas Venture Conference, along with Jay Dickey-President, JD Consulting and Dr. Calvin Goforth-President, Virtual Incubation Company. Arkansas Venture Forum and its activities provide educational and networking resources designed to facilitate the advancement of promising Arkansas companies. Leslie's presentation covered venture finance and how state resources, tax credits, capital gains exclusion, and the Venture Capital Act of 2001 can benefit investors and entrepreneurs.

Leslie Lane served as a planner for the Arkansas Student Business Plan Competition. James Watkins and Lydia Carson served as judges. The goal of the competition is to promote an entrepreneurial spirit at universities and encourage student teams to launch new businesses from the plans they develop.

The judging is based both subjectively and objectively on the evaluation guidelines and the impressions formed by the business experiences of the judges. All judges ultimately consider the entire business concept looking at overall feasibility, combined with significant capital gains potential, attractive investment possibilities and



Commercialization Totals of 2005

Client Profile	
Average Number Of Employees	156.23
Average Age of Company	14.02
Average Year Of Corporation Founded	1990.98
County Name	Washington
Number Of Projects In County	16
Average Authority Investment	\$3,505.91
Total Authority Investment	\$154,260.00
Average Client Investment	\$1,331.70
Total Client Investment	\$58,595.00

Service Area Program Description Category	Total
Business Systems/Business Management	1
Environmental	3
Market Development	12
Material Engineering	1
Plant Layout/Manufacturing Cells	2
Product Development and Design	4
Quality/Inspection	7
SBIR Assistance	14

TTAG SBIR

Authorized Awards Total	\$55,250.00
Private Sector Total	\$21,500.00
Total Projects Funded	15

Industry Type	Total
Air Purification Equipment Manufacturing	1
All Other Professional, Scientific, and Technical Services	2
Analytical Laboratory Instrument Manufacturing	6
Custom Computer Programming Services	2
Drugs and Druggists' Sundries Merchant Wholesalers	1

Continued on next page

Continued from previous page

Engineering Services	2
Farm and Garden Machinery and Equipment Merchant Wholesalers	1
Gasoline Engine and Engine Parts Manufacturing	1
General Freight Trucking, Long-Distance, Less Than Truckload	1
Hand and Edge Tool Manufacturing	1
Hardware Manufacturing	1
Human Resources and Executive Search Consulting Services	1
Industrial Launderers	1
Machine Tool (Metal Cutting Types) Manufacturing	1
Other Millwork (including Flooring)	1
Other Urban Transit Systems	2
Pharmaceutical Preparation Manufacturing	2
Poultry Processing	1
Research and Development in the Physical, Engineering, and Life Sciences	9
Softwood Veneer and Plywood Manufacturing	1
Soil Preparation, Planting, and Cultivating	1
Testing Laboratories	1
Unlaminated Plastics Profile Shape Manufacturing	1
Veterinary Services	2
Water Supply and Irrigation Systems	1

R&D Tax Credit Under Programs of the Authority

Arkansas Science & Technology Authority's Board of Directors approved an R & D Tax Credit Application for Green Technologies in FY05.

Awarded	Description
Green Technologies	Development of novel mobility assistive devices primarily wheelchairs

Steven Weintz was awarded a TTAG grant for his business SBW Ventures, which enabled him to work as a consultant for TicketSage, a box office systems manager. According to Stephen Cassar, president and CEO of that corporation, Steve Weintz was "instrumental in the success of Ticket Sage, Inc." and Mr. Weintz credited the Authority's TTAG program for his success.

Meeting Measures in Industry

Arkansas Manufacturing Solutions (AMS) has continued to improve Arkansas' manufacturing and industrial competitiveness through the delivery of comprehensive technical and business assistance services.

Being an affiliate of the National Institute of Standards and Technology Manufacturing Extension Partnership (NIST MEP), AMS has strived to improve the quality, productivity and global competitiveness of Arkansas' small and medium-sized manufacturers by providing technical and business management assistance services. AMS' primary partners are the University of Arkansas, Fayetteville; Arkansas State University, Jonesboro; the University of Arkansas at Little Rock; Southern Arkansas University Tech; Arkansas Institute for Performance Excellence; and the Arkansas Department of Economic Development.

Eight field staff deliver services to manufacturers. Typical services include Lean Manufacturing, Quality Management Systems, Six Sigma, Environmental, Health and Safety Management Systems, and Information Technology and Strategic Business Solutions.

During the four quarters in FY 2005, AMS staff assisted Arkansas manufacturing clients through high impact projects in the areas of Lean Manufacturing, Quality Improvement, ISO 9000 Registration, and Environmental, Health and Safety.

AMS staff completed 145 projects, which led to clients' business improvements including jobs created or retained. Assistance projects were carried out on-site with a specific company or conducted in open enrollment training, which were attended by multiple companies.

AMS is executing the AMS communication plan with the goal of being recognized as the place to go for manufacturers and industry groups. Active communication actions such as mass mailings and press releases led to the improved name recognition of AMS and increased the number of enterprises served. AMS has acquired staff, developed marketing materials and established delivery plans to offer new, high impact services including Strategic Business Solutions, Lean Six Sigma and Information Technology.



AMS exhibited its services at the 2004 Arkansas Economic Developers Conference in Hot Springs.



For FY2005, the Board authorized funding in the amount of \$997,477 to support the director and eight field staff: three at the University of Arkansas, Fayetteville; three at the University of Arkansas at Little Rock; one at Arkansas State University; and one at Southern Arkansas University Tech. The Board also authorized \$25,250 for partner activities and \$37,500 for technology transfer assistance grants. On October 14, 2004, Arkansas Manufacturing Solutions received the 2004 Arkansas Institute for Performance Excellence Quality Commitment award. The following improvements were reported by clients during the NIST MEP Survey of AMS projects completed from April 2003-March 2004 with Arkansas companies:

Increased or Retained Sales	\$77,987,000
Cost Savings	\$7,869,626
Company Investments	\$4,646,160
Jobs Created or Retained	994

In FY 2005 (July 2004 - June 2005), AMS field staff completed 145 projects and served 241 companies.

Substance	Total
Business System/Business Management	10
CAD/Communications/LAN	0
EDI/Communications/LAN	3
Environmental	30
General	8
Human Resources	1
Market Development	0
Process Improvement	73
Product Development and Design	1
Quality Inspection	19
Total	145

NAICS	Industry Type	Total
311	Food Manufacturing	12
312	Beverage & Tobacco Product Manufacturing	4
313	Textile Mills	1
314	Textile Product Mills	1
315	Apparel Manufacturing	4
316	Leather and Applied Product Manufacturing	2
321	Wood Product Manufacturing	17
322	Paper Manufacturing	11
323	Printing and Related Support Activities	5
324	Petroleum and Coal Products Manufacturing	3
325	Chemical Manufacturing	13
326	Plastic & Rubber products Manufacturing	19
327	Non-Metallic Mineral Product Manufacturing	4
331	Primary Metal Manufacturing	9
332	Fabricated Metal Product Manufacturing	26
333	Machinery Manufacturing	21

334	Computer & Electronic Product Manufacturing	10
335	Electrical Equipment, Appliance & Component Mfg.	16
336	Transportation Equipment	20
337	Furniture and Related Product Manufacturing	7
339	Miscellaneous Manufacturing	2
	Other	34
	Total	241

Funding Received	
NIST Funding	\$ 745,356.56
Client Fees	\$ 537,020.70
State Funding	\$ 257,182.00
Total	\$1,539,559.26

In FY 2005 the Authority's Board of Directors authorized nine AMS funded TTAG projects totaling \$33,750 to help clients solve technical problems. The private sector invested an additional \$11,250 in these solutions. These investments assisted **nine** separate companies, located in five counties representing the following industry types:

Industry Type	Number
Air Purification Equipment Manufacturing	1
Aluminum Die-Casting Foundries	1
Corrugated and Solid Fiber Box Manufacturing	1
Current-Carrying Wiring Device Manufacturing	1
Machine Tool (Metal Cutting Types) Manufacturing	1
Nonfolding Sanitary Food Container Manufacturing	1
Other Chemical and Allied Products Merchant Wholesalers	1
Sign Manufacturing	1
Testing Laboratories	1
Total:	9

TTAG Client Company Profile	
Average Number of Employees	96.78
Projects in Counties	Benton (1), Cleburne(1), Conway (1), Craighead (4), and Sebastian (2)
Average AMS Investment per TTAG Project	\$3,750
Average Client Investment per TTAG Project	\$1,250

Services Rendered	Number
Quality/Inspection	3
SBIR	1
Environmental	1
Process Improvement	1
Plant Layout/Manufacturing Cells	3
Total:	9

OPERATING REPORT

Operating Plan (FY2005)

Revision Date: 06/30/2005

Owner: Fiscal
Officer

General Operations		Actual				
Character	Budget	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	Total
Regular Salaries	521,124	124,347.91	133,674.24	123,138.93	124,751.7	505,913
Extra Help	12,000	2,448.00	0.00	0.00	561	3,009
Maintenance and Operations	144,204	37,696.24	24,190.63	39,334.93	41,721.42	142,943
Fringe Benefits	138,654	36,561.84	31,704.04	33,219.03	32,233.77	133,719
Research	0					0
(Reallocation)	0					0
Conference Fees and Training	27,223	230.36	5,084.34	4,557.95	5,976.78	15,849
Professional Fees	16,800		185.72	40.00	614.4	840
Capital Outlay	0					0
Marketing and Redistribution	0					0
Technology Development	154,352	27,475.00	32,500.00	34,385.00	59,900.00	154,260
TOTAL	1,014,357	228,759.35	227,338.97	234,675.84	265,759.07	956,533

Network Support		Actual				
Character	Budget	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	Total
Act 1291 of 2003	257,182	0.00	124,344.42	60,634.91	72,202.67	257,182

Seed Capital Fund		Actual				
Character	Budget	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	Total
Seed Capital Fund Balance	1,737,302	0.00	50,000.00	0.00	200,000.00	250,000

AMS Operations		Actual				
Character	Budget	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	Total
Regular Salaries	129,756	34,084.68	34,182.99	29,299.66	26,016.78	123,584
Maintenance and Operations	124,456	19,397.78	22,985.59	15,362.10	44,764.82	102,510
Fringe Benefits	34,396	9,747.51	8,085.88	8,060.80	7,395.68	33,290
Grants	200,000	15,019.50	12,792.00	12,124.78	49,142.81	89,079
Conference Fees and Training	37,928	2,987.29	5,480.38	755.89	1,869.03	11,093

Professional Fees	50,000		3,000.00	5,639.00	4000	12,639
Capital Outlay	0			0.00	0	0
Field Services	997,477	265,227	88,561	188,680	229,362	771,830
Miscellaneous Fees	0					0
TOTAL	1,574,013	346,463.69	175,087.98	259,921.94	362,551.10	1,144,025

Grants Received	Annual Budget	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	Total
Winthrop Rockefeller Foundation: Middle School Science Year 3 of 3 Total award \$405,000	135,000	32,500.00	66,189.53	1,947.99	31,388.37	132,026
Winthrop Rockefeller Foundation: Entrepreneurial Arkansas Year 2 of 3 Total award \$443,750	381,473	412.08	25,515.70	25,612.06	20,450.33	71,990
Winthrop Rockefeller Foundation: Transition of Middle School Science to AR Community Foundation Year 1 of 2 Total award \$49,830	29,507		3,521.75	958.91	5,268.03	9,749

Current Board of Directors

<p>John White, Ph.D. - Chair <u>Biography (pdf)</u> Chancellor University of Arkansas, Fayetteville Term Expires 2006</p>	<p>Neil Rutger, Ph.D. – Vice Chair Director and Supervisory Research Geneticist Dale Bumpers National Rice Research Center USDA Agricultural Research Service Term Expires 2009 <u>Authority Research Committee Chair</u></p>
<p>Sue McGowan - Secretary Director of Economic Development/CEO Paragould /Greene County Chamber of Commerce Term Expires 2008 <u>Authority Investment Committee Chair</u></p>	<p>Collis Geren, Ph.D. Vice Provost for Research University of Arkansas, Fayetteville Term Expires 2009</p>
<p>Johnny Hooks Agency Field Executive State Farm Insurance Term Expires 2008</p>	<p>David Eberdt Private Sector Term Expires 2007</p>
<p>Harry Ward, M.D. <u>Biography (pdf)</u> Professor of Medicine and Retired Chancellor University of Arkansas for Medical Sciences - Little Rock Term Expires 2006</p>	<p>Bum Lee Account Director Fidelity Information Services **Resigned May 2005</p>
<p>D.W. May <u>Biography (pdf)</u> May and Associates Term Expires 2006</p>	<p>Rickey Williams President & Chief Executive Officer Rickey Williams & Associates, Inc. Term Expires 2007</p>
<p>Steve Floyd, Ph.D. Arkansas Department of Higher Education Little Rock Term Permanent</p>	<p>Robert Hall President Hall Manufacturing Term Expires 2008</p>
<p>Gordon Knetzer Manufacturing Term Expires 2007</p>	<p>Gary Phillips, Ph.D. The Small Town Computer Guys Term Expires 2009</p>

Staff

Mailing address: 423 Main Street, Suite 200. Little Rock, AR. 72201

Email address: asta.arkansas.gov

<p>John W. Ahlen, Ph.D. President (501) 683-4400 john.ahlen@arkansas.gov</p>	<p>Chuck Myers Executive Vice President (501) 683-4403 chuck.myers@arkansas.gov</p>
<p>Leslie G. Lane V.P. Finance (501) 683-4408 les.lane@arkansas.gov **Resigned June, 2005</p>	<p>Lydia Carson V.P. Industry (501) 683-4411 lydia.carson@arkansas.gov</p>
<p>Gail McClure Ph.D. V.P. Research (501) 683-4407 gail.mcclure@arkansas.gov</p>	<p>Larry J. Smith Information System Planner (501) 683-4412 larry.smith@arkansas.gov **Retired July, 2005</p>
<p>Scott Snider Communications Mgr. (501) 683-4405 scott.snider@arkansas.gov</p>	<p>Cathy Ma Research Program Mgr. (501) 683-4422 cathy.ma@arkansas.gov</p>
<p>Ed Sartain Fiscal Officer (501) 683-4416 ed.sartain@arkansas.gov</p>	<p>Tiki S. Alexander Accounting Supervisor (501) 683-4417 tiki.williams@arkansas.gov **Resigned May, 2005</p>
<p>James Watkins, Jr. (JJ) Finance Program Mgr. (501) 683-4409 james.watkins@arkansas.gov</p>	<p>Tovia Chan Operations Manager Manufacturing Ext. (501) 683-4410 tovia.chan@arkansas.gov</p>
<p>Amy Scivally Project Analyst (501) 683-4415 amy.scivally@arkansas.gov</p>	<p>Chase Conyer Research Project Analyst (501) 683-4414 chase.conyer@arkansas.gov</p>
<p>Melissa Adams Business Controller (501) 683-4421 melissa.adams@arkansas.gov</p>	<p>Danielle Morris Executive Secretary (501) 683-4400 Danielle.morris@arkansas.gov **Resigned May, 2005</p>

AMS Project Managers

<p style="text-align: center;"><u>Loren Berry</u> <i>Project Manager</i> University of Arkansas - Fayetteville Engineering Research Center 700 Research Blvd. Fayetteville, AR 72701 Phone: (479) 575-6886 Fax: (479) 575-7446 lberry@engr.uark.edu</p>	<p style="text-align: center;"><u>Scotty McKnight, CIH, CSP, CHMM</u> <i>Project Manager</i> University of Arkansas - Fayetteville Engineering Research Center 700 Research Blvd. Fayetteville, AR 72701 Phone: (479) 651-5439 Fax: (479) 996-4114 smcknight1@cox-internet.com</p>
<p style="text-align: center;"><u>Pamela Speraw</u> <i>Account Manager</i> University of Arkansas at Little Rock Reynolds Business Center 2801 S. University Avenue Little Rock, AR 72204 Phone: (501) 944-8492 Fax: (501) 683-4420 pjsperaw@ualr.edu</p>	<p style="text-align: center;"><u>Sherry Smith</u> <i>Project Manager</i> University of Arkansas at Little Rock Reynolds Business Center 2801 S. University Avenue Little Rock, AR 72204 Phone: (501) 837-8679 Fax: (501) 683-4420 smith1205@aol.com</p>
<p style="text-align: center;"><u>Bill Kraus</u> <i>Project Manager</i> Delta Center for Economic Development 4110 Lindberg Jonesboro, AR 72401 Phone: (870) 972-3000 Fax: (870) 972-3806 Cell: (870) 897-5135 wkraus@astate.edu</p>	<p style="text-align: center;"><u>Tom Mann, P.E.</u> <i>Project Manager</i> Southern Arkansas University Tech P.O. Box 3499 East Camden, AR 71711-1599 Phone: (870) 574-4545 Fax: (870) 574-4538 Cell: (870) 818-2439 tmann@sautech.edu</p>
<p style="text-align: center;"><u>Jim Lilly</u> <i>Project Manager</i> University of Arkansas at Little Rock Reynolds Business Center 2801 S. University Avenue Little Rock, AR 72204 Phone: (501) 569-8221 Fax: (501) 569-8442 jxlilly@ualr.edu</p>	<p style="text-align: center;"><u>Joe McCoy</u> <i>Project Manager</i> University of Arkansas - Fayetteville Engineering Research Center 700 Research Blvd. Fayetteville, AR 72701 Cell: (479) 957-0614 Phone: (479) 575-3190 Fax: (479) 575-7446 jmccoy@uark.edu</p>