IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

FY12 Board of Regents, State of Iowa, Annual
Economic Development and Technology
Transfer Report

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FY12 Board of Regents, State of Iowa, Annual Economic Development and Technology Transfer Report

1. Please briefly describe the relationship of your institution's economic development activities to the enhancement of economic growth in the state. The description should cover, but not necessarily be limited to the following:
   A. the relationship between institutional activities and creation of jobs and wealth in Iowa
   B. Institutional activities and services which indirectly promote economic development, such as training provided to staff of local economic development agencies

1A. Enhancement of Economic Growth through Job Creation and Retention, Investments, Sales, and Cost Savings

Iowa State University engages in several activities that have direct impact on both the creation as well as the retention of jobs in Iowa. The ISU Research Park is a technology community that encourages commercialization of university research. Likewise, the Innovations Development Facility, part of the Plant Sciences Institute, incubates new companies. In addition, the IPRT (Institute for Physical Research and Technology) Company Assistance Program, ISU Extension and Outreach’s Center for Industrial Research and Service (CIRAS), the Small Business Development Center (SBDC) and the ISU Pappajohn Center for Entrepreneurship interact with companies across Iowa to solve production and management problems. These interactions lead to the resolution of problems related to product development and business management. As a consequence of the improved production resulting from these interactions, businesses have been able to retain and often expand their work force. Some examples of the direct impact that these ISU units have had this past year are as follows:

- The ISU Research Park continues to be successful in initiating as well as nurturing numerous new businesses. Eight new companies and affiliates joined the Park in FY12, bringing the historical total to 218 companies, research centers, and affiliates. Currently, there are 59 companies and research centers and 17 affiliates located in the Park, employing 1072 and 148 people, respectively.

- There are currently four faculty-affiliated startup companies located in the Innovations Development Facility, the on-campus business incubator in the Roy J. Carver Co-Laboratory under direction of the Plant Sciences Institute. The PSI met with three entrepreneurs interested in forming Limited Liability Corporations involving plant science. They are currently working with these individuals and ISURF (Iowa State University Research Foundation) to develop SBIR phase I proposals to be submitted to USDA and NIH. A total of 18 companies have used this business incubator space since the facility opened in September 2003.

- A summary of project evaluation data clearly shows that Iowa companies with technical problems and R&D needs continue to find important technical help through the services of Institute for Physical Research and Technology (IPRT) Company Assistance. Companies report positive impacts affecting their sales, investments, and operating costs throughout the languishing recovery from the economic recession of 2009-2011. Of the IPRT clients responding to the survey, the FY11 half decade average of the estimated impact of projects was $9.9
million; this reflects a decrease in the mean half-decade average of $12.4 million over the previous three years. Companies also report on the estimated number of jobs that were created or retained because of interactions with Company Assistance. The five-year average for jobs created or retained through FY11 was 18 positions. The mean five-year average over the previous three years was 24 positions. The satisfaction rating given by clients during the past year was 4.84 (1-5 scale, with “1” being “not satisfied” and “5” being “very satisfied”). The decrease in performance can be attributed to two major factors: during the recessionary period, company projects tended toward cost-savings projects rather than new product development, and the Company Assistance program experienced high personnel turnover, primarily due to funding instability.

- DuctSox, a custom engineering, design, and manufacturer of fabric duct work, turned to IPRT Company Assistance to study the performance of fabric and metal ductwork. The 10-month study included computational thermal evaluation between the fabric systems and ceiling diffuser systems. The results of the study showed that the fabric ductwork performed better by heating the area more quickly and uniformly. Nick Kaufmann, sales and product engineering manager, states that having the study “will impact the amount of future building designs that specify our products.” We have continued to work with DuctSox outside the scope of this project to help the company connect with potential customers and other experts in the industry.

- Researchers from IPRT’s Center for Nondestructive Evaluation (CNDE) developed a levee inspection system using ground-penetrating radar to improve on the current standard for levees, which is simple visual inspection. David Eisenmann, a CNDE scientist, points out that “improving levee and dam inspection would have immediate payoffs in terms of saving human lives and reducing the cost of flood damage,” while allowing for “timely repairs before flooding occurs.”

- ISU Extension and Outreach Center for Industrial Research and Service (CIRAS) helps Iowa’s economy prosper and grow by enhancing the performance of industry through applied research, education, and technical assistance. Cumulatively, over the past five years, CIRAS and its partners have reported impact from companies totaling more than $1.5 billion (sales gained or retained $1.2 billion, new investments $255 million, costs saved or avoided $92 million) with 22,264 jobs added or retained as a result of the assistance they received.

- In FY12, 1,372 businesses from 97 counties in the state received assistance on projects or attended educational workshops from CIRAS staff or partners. Companies responding to surveys reported $414 million in total impact — $352 million sales gained or retained $46 million in new investments and $16 million in costs saved or avoided. Company executives stated that 5,667 jobs were added or retained as a result of the assistance they received from CIRAS and its partners.

- Last year, CIRAS and partners provided assistance to Hagie Manufacturing in Clarion, Iowa, resulting in the company reporting 283 jobs created or retained and more than $25 million in impact. Projects included business continuity
planning, research on the creation and evaluation of a sprayer cab design using virtual reality applications, and training on growth strategies.

- CIRAS, working with the U.S. Department of Agriculture (USDA) and ASTM International, manages the USDA Biobased Product Certification and Labeling Program. The label provides an easier way for consumers to identify biobased products, as well as serving as a valuable marketing tool for the manufacturers and vendors of the products. To date, 801 products throughout the U.S. have been certified.

In addition to the labeling and certification program, efforts by CIRAS staff increased the database of biobased products available for consideration under the USDA BioPreferred® program to 491 Iowa products sold by more than 97 Iowa manufacturers and vendors. Nationally 27,484 products sold by more than 3,479 companies have been identified.

To maintain quality control of the USDA BioPreferred® catalog, which contains biobased products eligible for federal procurement preference and products that have earned the USDA Certified Biobased Product label, CIRAS and ASTM International conducted an audit to improve the accuracy of the product information in the catalog.

- CIRAS government contracting specialists work with Iowa businesses, from one-person operations to some of the state’s largest employers, to help them understand the government procurement process and to secure contracts. As the only organization in the state of Iowa providing contracting assistance at all three levels of the government market segmentation – local, state, and federal – CIRAS staff provided counseling to more than 1,000 companies. Companies reported more than $197 million in government contract impact due in part to the assistance they received. The Defense Logistics Agency, which funds CIRAS to provide assistance to Iowa companies, indicated this impact helped create or retain more than 3,900 jobs.

- More than 850 participants were trained in FY12 by attending conferences and workshops offered through a partnership of CIRAS; Civil, Construction, and Environmental Engineering; Electrical and Computer Engineering; Alliant Energy; Black Hills Energy; CIPOC; Corn Belt Power Cooperative; Iowa Association of Electric Cooperatives; Iowa Association of Municipal Utilities; Iowa Energy Center; Iowa Office of Energy Independence; Michaels Energy; MidAmerican Energy; and Van Meter, Inc. Energy efficiency workshops held across Iowa provided education on compressed air systems and motors. Continuing education was provided for civil engineering practitioners in engineering survey, structural engineering, transportation engineering, geotechnical engineering, water resources, and environmental engineering. Attendees were able to obtain professional development hours towards retention of their Iowa engineering licenses.

- CIRAS is working with the BEST of Iowa (Business Expansion and Strategic Trends), a coalition of Iowa utility concerns, Iowa Economic Development Authority (IEDA), Iowa Innovation Council, Iowa Workforce Development, Association of Business and Industry (ABI), Iowa Area Development Group, Iowa
Business Council, Iowa Department of Education, and Community Colleges to provide a statewide coordinated business retention and expansion program. Economic developers throughout the state use the Synchronist data system to interview executives of Iowa industries to create an Iowa Competitive Capacity ScoreCard for the state. This report provides a detailed analysis of Iowa's situation and identifies opportunities and risks to be addressed. The Governor and Lieutenant Governor of Iowa use the data to assist with scheduling visits with trade cluster companies around the state.

- During federal FY11, which is the most recent full year for the program, the Small Business Development Center (SBDC) provided business assistance to individuals and companies totaling 2,695 clients and 11,259 counseling hours. The SBDC also conducted 232 training workshops in which 3,727 individuals participated.

- The ISU SBDC, along with the ISU Pappajohn Center for Entrepreneurship, provided 530 hours of counseling assistance to startup and existing companies; served 116 clients with one-on-one counseling; educated 396 attendees through workshops; provided advice to several hundred clients via telephone and e-mail; and advised 16 technology companies in the areas of licensing, equity-based financing, market entry, and numerous operational areas.

- Every year the SBDC commissions Professor James J. Chrisman to review the economic impact of the SBDC's clients who receive five or more hours of counseling from the SBDC, which account for only 20% of the total SBDC client base. In a report on this client segment published by Professor Chrisman, *Economic Impact of Small Business Development Center Long-Term Counseling Activities in Iowa: 2010-2011*, it was shown that for every $1.00 in state and federal funding invested in the Iowa SBDC in FY10, the total tax dollars returned to the State of Iowa and the federal government by SBDC clients in 2011 was $1.76. Among the clients in this segment there were 903 jobs saved, 558 jobs created, and over $40 million in new sales generated. The SBDC helped these clients raise over $27 million in financing for their businesses.

- Technologies originating at ISU and licensed to Iowa companies have resulted in over $101 million in sales by those companies in calendar year 2011. Total sales of ISURF-licensed technologies were $686 million, not including germplasm.

The Office of Intellectual Property and Technology Transfer began supporting SBIR (Small Business Innovation Research) and STTR (Small Business Technology Transfer) outreach efforts in FY06. Since then, SBIR and STTR funding in Iowa has rebounded. Preliminary data for FY12 report that 15 different Iowa companies won 21 new or continuing SBIR and STTR awards worth $6.2 million. An emphasis has been placed on outreach and training activities. This includes a monthly newsletter and workshops presented by federal program managers. In addition, comprehensive proposal preparation support has contributed to an increasing number of companies applying for funding. Twenty-one Iowa companies were assisted in the preparation of 23 proposals during FY12. The funded projects reflect Iowa's strengths in biotechnology, information systems, manufacturing and agriculture. Over $2.5 million in support was awarded by NIH for diverse projects that range from the development of medical
imaging and analysis technologies to new animal models for human diseases. An additional $1.8 million was received from the Department of Defense for projects that include development of underwater sonar transducers to methods for characterizing free-play in control surface to performance assessments for human and systems in operational environments.

- The Regents Innovation Fund (formerly Grow Iowa Values Fund) program at Iowa State has a competitive research component that pairs ISU faculty members with Iowa industries to create economic benefit for the companies. Surveys completed by companies on projects funded from June 2006 – June 2011 (surveyed one year after project completion) documented more than 114 jobs created or retained and an annual sales impact of more than $15.8 million due to the research projects conducted in partnership between ISU and the companies.

1B. Training Opportunities for Staff of Local Economic Development Agencies and Other Activities that Indirectly Promote Economic Development

The ISU Extension and Outreach Center for Industrial Research and Service reports several economic development training and other activities.

- CIRAS developed and delivered a training curriculum for Iowa businesses to provide education on the new federal vendor registration portal named the System for Award Management (SAM). The federal government requires all businesses to be successfully registered in SAM in order to be awarded and paid on federal contracts. Eleven workshops, in addition to one-on-one counseling sessions, were held throughout the state with more than 300 attendees receiving assistance.

- As Iowa faced unprecedented drought conditions in FY12, CIRAS educated companies by providing information to help them plan, prepare, and protect their operations from water shortage crises. Information included possible changes in the water supply for businesses located in non-metropolitan cities where the Iowa DNR identified concerns with the ground water levels. Material was distributed directly to companies as well as to Safeguard Iowa Partnership, Iowa Association of Business and Industry, and Iowa Farm Bureau Federation to broaden awareness.

- The Electric Power Research Center (EPRC) is a consortium of 10 utilities that sponsor multidisciplinary power systems research at Iowa State University. Eight of the 10 companies provide services in Iowa; the remaining two are international. Funds provided by the companies are used to conduct research on the reliable and economic operation of power systems. In addition, the research deals with the integration of increasing amounts of wind energy into the grid and the implications of the electrification of transportation. EPRC research helps ensure that Iowa, the U.S., and the world have a supply of electric power that is cost-effective, reliable, and sustainable.

- Keeping Iowa youth interested and participating in STEM initiatives will create a better prepared future workforce and ultimately help improve economic
development in the state of Iowa. The College of Engineering plays a vital role in filling the engineering pipeline by providing critical leadership to K-12 outreach efforts such as FIRST LEGO League, Junior FIRST LEGO League, Project Lead the Way, engineering summer kids’ camps, Mom’s Night out for STEM, and multiple other outreach events and hands-on activities. In FY12, more than 6,000 middle and high school students attended Project Lead the Way courses at 183 sites across the state. The College of Engineering also supported more than 3,000 participants as part of FIRST LEGO League, hosted nearly 700 youth in engineering summer kids’ camps, and engaged approximately 30,000 other Iowans through events across the state.

In 2012, CIRAS was engaged in three significant research projects in support of the biobased products industry. Research efforts continued to focus on two major areas of importance to industry: economic impact and barriers to development and adoption.

Using the expertise of faculty and staff from the Survey and Behavioral Research Services, the College of Agriculture and Life Sciences Department of Economics, and the College of Liberal Arts and Sciences Sociology Department, CIRAS research expanded the development of benchmark data, heightened industry input and increased knowledge of potential growth and impact of the biobased products industry. Reports on the analysis of the second biobased products industry survey data, the evaluation of the automotive industry potential, and the Iowa consumer acceptance survey were released, as well as Phase II of the green jobs study.

Ongoing research in the use of biobased adhesives in wall-board products, and continuing industry input surveys will help expand and improve the growth and impact of this important economic sector.

2. Please provide the following information for FY12: (If your institution utilizes additional metrics specific to your institution’s specialized areas of research or service, please include them here)

   Note: Unless noted, the data provided below are FY12 data.

   a. Number of disclosures of intellectual property: 102
   b. Number of patent applications filed: 56
   c. Number of patents awarded: 16
   d. Number of license and option agreements executed on institutional intellectual property, in total and in Iowa: 50 total, 19 in Iowa
   e. Number of license and option agreements yielding income: 188
   f. Revenue to Iowa companies as a result of licensed technology: $101 million (CY10)
   g. Number of startup companies formed, in total and in Iowa (through licensing activities): 0 total, 0 in Iowa
   h. Number of companies in research parks and incubators: ISU Research Park: 46 private and 13 university-related; Plant Sciences Institute Innovations Development Facility (IDF): 4 (all university-related or affiliated)
i. Number of new companies in research parks and incubators: ISU Research Park: 8 private, 0 university-related and 0 affiliates; Plant Sciences Institute IDF: 1 (university-affiliated)

j. Number of employees in companies in research parks and incubators: ISU Research Park: 838 private and 234 university-related; Plant Sciences Institute IDF: 6 FTE (all university-related or affiliated)

k. Royalties and license fee income: $9.9 million

l. Total sponsored funding received: $360.2 million of which $207.9 million is for research

m. Corporate sponsored funding received for research and economic development, in total and in Iowa: $23.4 million total, $11 million in Iowa

n. Iowa special appropriations for economic development in the following categories:
   o Annual state appropriations for ongoing economic development programs (such as research parks, SBDC, IPRT): $2.4 million—includes $936,345 SBDC (includes state-wide programs), $122,355 ISU Research Park, and $1,365,602 IPRT
   o Regents Innovation Fund appropriations: $576,000 and $105,000 for SBDC

o. Research expenditures (federal, state and local; business; nonprofit; institution funds; all other sources): $267.6 million—Note that this is the FY11 total reported to NSF for its Higher Education Research and Development (HERD) Survey

p. Licenses and options executed per $10 million research expenditures: 4 (est.)—Note that this is an FY11 figure, the most recent number available

q. Sales of licensed products by Iowa-based companies: See d. above

r. Number of employees for current Research Park tenants and incubator, as well as former tenants that are still in existence in basic form world-wide: 3,422

3. Please describe the ways in which your institution is engaged in the following activities (For example, what is the nature of the outreach and service activities? Which units provide it? What kinds of people and organizations benefit?)
   A. Direct and hands-on technical assistance to businesses and entrepreneurs
   B. Direct economic development assistance to Iowa communities
   C. Economic development services provided by research parks, incubators or similar service units

3A. Direct and Hands-on Technical Assistance to Businesses and Entrepreneurs

ISU System for Innovation
Iowa State University is charged with advancing economic development and technology transfer activities that promote growth and benefit all citizens. While creation of knowledge remains the basic responsibility of a research university, the way we share knowledge determines our success. ISU shares knowledge and expertise with students (learning and teaching), communities (engagement), and business and industry (technology transfer and economic development). ISU ranks as one of the most successful universities nationwide in several categories of technology transfer and economic development. The activities of the colleges, institutes and centers are coordinated through the Research and Economic Development Council that advises the Vice President for Research and Economic Development. The Vice President and this
Council continuously communicate with economic development entities within the State such as the Iowa Department of Economic Development, the Iowa Innovation Council, the Iowa Business Council, the Greater Des Moines Partnership, the Ames Economic Development Commission and other local and regional agencies.

The Iowa State University “System for Innovation” was developed to focus on the transfer of university technologies into commercial applications in startup or existing companies. Functions of the ISU System for Innovation include:

- **Business Development and Assistance and Entrepreneurial Activities**: Efforts related to startup companies, including business assistance services and SBIR/STTR applications.
- **Technical Assistance and Technology Development**: Solving technical problems, assisting in product development and process improvement projects for existing businesses. This includes the current efforts of no-cost technical assistance and cost-sharing projects.
- **Industry Relations**: Facilitation of a multitude of interactions between ISU and its industry partners, including the management of research relationships and interactions with economic development groups, legislative groups, and other third parties.
- **Community Development**: To disseminate and develop programming, facilitating community organizations, fostering community planning, and coordinating with community and regional economic development networks and organizations.
- **Technology Transfer and Licensing**: The transfer of intellectual property (patentable inventions, copyright works and proprietary materials) to business and industry through license agreements.
- **Physical Space**: Physical space for business incubation is available in the ISU Research Park, the Plant Sciences Institute, and the Center for Crops Utilization Research.
- **Research and Instrumentation Facilities**: Iowa State University maintains more than 20 central research facilities that also serve communities and businesses on a fee-for-service basis.

**Senior Capstone Design Projects and Other Student Opportunities**
The College of Engineering and the Extension and Outreach Center for Industrial Research and Service (CIRAS) partnered to upgrade the manufacturing teaching and research laboratories including purchasing equipment (Faro laser tracker, Faro metrology equipment, and fatigue testing equipment) that is used for research, to provide hands on opportunities for students with equipment used in industry, and to assist Iowa companies in their manufacturing efforts.

Senior capstone design projects are the culmination of engineering education for undergraduate students. Iowa companies, through a partnership between CIRAS and the College of Engineering, provide students the opportunity to apply their engineering knowledge to real-world applications as a final step in preparation for joining the workforce.

By working with the students, companies gain a new perspective on difficult engineering problems, with many achieving innovative solutions that enhance productivity and lower costs. Companies have a heightened understanding of the value engineers bring to an
organization and are able to showcase their company to students nearing graduation. Companies also gain a better understanding of the value of making an investment in their workforce by providing higher level, higher wage jobs.

In addition to the senior capstone design projects, engineering students have worked with companies on projects related to cellular lean, materials, and facility planning.

During the past two years, students worked on 45 projects with 30 different companies. Companies responding to surveys reported impact of more than $10 million for these projects.

3B. Direct Economic Development Assistance to Iowa Communities

Sustainable Economies Program

In FY12, CIRAS continued efforts under a 3-year grant from the Economic Development Administration (EDA) University Center program to develop and implement the Sustainable Economies Program in the state of Iowa. This program provides Regional Trade Centers (RTCs) in rural Iowa with an in-depth economic assessment of the financial, social, and environmental “triple bottom line” well-being of the region coupled with technical assistance to the critical organizations and businesses of the region.

During year two of the program, CIRAS continued assistance in the region of Carroll and launched similar efforts in Lee County (Fort Madison and Keokuk) and Appanoose County (Centerville). In addition to the economic analysis, 23 technical assistance projects were launched within the communities and businesses participating in the program. Projects included technical assistance in entering “green” markets, developing a local leadership development program and an economic impact assessment for a regional health care provider.

A broad base of resources from throughout the university collaborated to provide the resources necessary for regional economies to move toward economic sustainability. Extension and Outreach professionals and faculty from the College of Engineering, College of Design, College of Agriculture and Life Sciences, College of Human Sciences, and the College of Business all contributed to the program. FY12 impact generated by the program exceeded $2.8 million.

3C. ISU’s Key Units Engaged in Economic Development

Iowa State University, as part of the higher education system in the State, is charged with advancing technology transfer and economic development activities that promote growth and benefit all citizens. The University evolves these goals by contributing to workforce development, creating intellectual property, advancing ideas to the stage of market readiness, supporting creation of new companies, offering assistance to existing companies, and attracting new companies to the State. The University’s economic development/technology transfer support system includes the following units that are coordinated through the Research and Economic Development Council:
Pappajohn Center for Entrepreneurship and the Small Business Development Center at ISU (SBDC)

These units work with researchers to define the technologists’ role in the company, evaluate markets, assist in the creation of a business plan and help the company develop connections with a network of business resources including consultants, accountants, attorneys, prospective employees and investors. In a typical year, the Pappajohn Center, working with IPRT, the Plant Sciences Institute, ISURF/OIPTT and other research centers, identifies approximately 25 prospective new technologies. These technologies can take six to 26 months to develop sufficiently to justify the formation of businesses. During this time the researcher receives assistance from, among others, the Small Business Development Center at ISU in moving the technology from the researcher's bench to the marketplace. The Pappajohn Center helps the researcher develop the model for the business and establish the network of resources necessary to implement the plan. These resources can include business assistance, students or capital. The Pappajohn Center/SBDC also continues to provide a referral network and facilitates the recruitment of students including access to internships.

Institute for Physical Research and Technology (IPRT)

Through IPRT’s Company Assistance Program, Iowa companies can leverage the expertise of the IPRT research centers and other ISU capabilities in order to solve technical problems, create new products and processes, and increase productivity and quality. IPRT Company Assistance provides help through both its R&D cost-sharing program and through short-term, no-cost technical assistance. IPRT actively collaborates with Iowa companies on technology development projects. Many successful businesses have emerged from IPRT technologies, including Mechdyne of Marshalltown and BodyViz of Ames. In addition, startup companies such as Iowa Powder Atomization Technologies of Ames and Avello Bioenergy of Boone have received assistance from IPRT and are showing great commercial potential.

The staff members of the Materials Group and the Nondestructive Evaluation Group within Company Assistance provide significant and broad expertise to help Iowa manufacturers address material and inspection issues. These programs offer state-of-the-art knowledge to business, and both groups have expanded their capabilities and facilities to keep pace with research advances and modern industrial needs. This direction allows them to interact with various industrial clients and tackle an increasingly wide range of challenges.

Iowa State University Research Park

The Iowa State University Research Park is a 230-acre development with over 382,000 square feet of building space and is located south of the Iowa State University campus. The ISU Research Park is more than just land and buildings; it is a technology community that encourages commercialization of University research.

Extension and Outreach Center for Industrial Research and Service (CIRAS)

CIRAS helps companies grow and prosper. The CIRAS mission is to improve the quality of life in Iowa by enhancing the performance of industry through applied research, education, and technical assistance. CIRAS has been working with companies in communities across Iowa for nearly 50 years and has a vision for Iowa of healthy communities through business prosperity. Because multiple resources are necessary to
meet the needs of Iowa businesses, CIRAS partners with Iowa’s universities, community colleges, government agencies, and business associations throughout the state.

- Account managers meet with clients to assess needs and provide links to resources that companies can use to increase their competitiveness. Solutions are offered through a combination of direct assistance from center staff, university faculty, partner organizations, and outside consultants.

- CIRAS staff have expertise in engineering, biobased products and biorenewables, energy systems, management practices, government contracting, productivity, growth services, supply chains, quality systems, safety, supply chain management, sustainability and community-business economic development. Service to industry includes technical assistance in conjunction with ISU College of Engineering labs; regional economic development studies to better understand rural economies; engineering workshops for utilities, county, and city engineers; and educational workshops and mentoring for small to medium sized businesses.

- CIRAS manages the statewide National Institute of Standards and Technology’s Hollings Manufacturing Extension Partnership (MEP), a program of the Department of Commerce. The MEP mission is to act as a strategic advisor to promote business growth and connect manufacturers to public and private resources essential for increased competitiveness and profitability. The objective of the program is to enhance productivity, technological performance, and strengthen the global competitiveness of small to medium sized manufacturers. CIRAS provides companies with the training, tools, and connections to accelerate innovation, leading to new opportunities in domestic and export markets.

- The USDA BioPreferred program, enacted as part of the 2002 and 2007 Farm bills, has a goal of increasing the purchase of biobased products by the federal government. CIRAS has helped USDA build this program since its inception in 2002. CIRAS staff manages implementation of the program by gathering industry input, developing government focused marketing strategies, testing biobased content, and facilitating participation in the program. Staff educates public and private stakeholders, manages the biobased product certification and labeling program, and assists with the development of programmatic infrastructure and policy.

- The Defense Logistics Agency, on behalf of the Department of Defense, administers the Procurement Technical Assistance Program (PTAP). The purpose of the program is to generate employment and to improve the general economy by assisting business firms in obtaining and performing under federal, state, and local government contracts. CIRAS is responsible for this program in the state of Iowa. Staff helps businesses determine if they are suitable for government contracting, provides workshop training and outreach events, assists businesses with capturing government sales, and provides post award contract assistance.

- CIRAS manages the Economic Development Administration (EDA) University Center Program in Iowa. The EDA’s mission is to lead the federal economic development agenda by promoting innovation and competitiveness, preparing
American regions for growth and success in the worldwide economy. CIRAS was awarded a three-year grant to develop and implement the Sustainable Economies Program. This program integrates detailed economic studies with financial, social, and environmental technical assistance to communities and businesses in rural trade centers across Iowa. This integrated, scientific-based approach to sustainability and the triple bottom line helps the businesses, communities, and overall regional economy begin the process of reliable, long-term growth.

ISU Research Foundation (ISURF) and the Office of Intellectual Property and Technology Transfer (OIPTT). ISURF owns and ISURF and OIPTT jointly manage, market, and license the intellectual property for Iowa State University. ISURF/OIPTT works with faculty members in regard to the reporting and protection of innovations, including patenting inventions. It markets the innovations to find commercial partners interested in licensing. It also funds projects within the University that have potential for broadening the intellectual property protection or providing value for its commercial potential. ISURF also provides assistance to Iowa companies, including ISU faculty startups with SBIR and STTR applications.

Innovations Development Facility (IDF). This is a business incubator operated by the Plant Sciences Institute to promote the commercialization of plant biotechnology. IDF encourages ISU faculty, staff, and students to commercialize their research in the plant sciences and promotes the development of startup companies among aspiring entrepreneurs. IDF is housed in the Roy J. Carver Co-Laboratory and consists of six well-equipped laboratory modules and three office spaces. The facility offers an environment to transition research from a university to a business setting. The IDF facility is a productive research location where scientists from academe and industry can work together to advance the mission of the Plant Sciences Institute and to promote economic development in Iowa.

Extension to Communities and Economic Development (CED)

- **Iowa’s Living Roadways Community Visioning Program**
  For 16 years, the Community Visioning Program has helped rural communities plan transportation enhancements using state funds from the Iowa DOT. To date, 191 Iowa towns have completed the process and collaborated with design teams to create conceptual transportation enhancement plans. Documented impacts of the program since 1996 include:

  - Ninety-four percent of participating communities complete at least one project.
  - Internet research of state funding shows that to date, 124 visioning communities received funding from five state programs to do 285 projects. Seventy-seven percent of the projects were directly related to visioning concept plans and 27% were not directly related to the program.
  - More than $16.9 million in state funds was awarded to visioning projects and $12.4 million to non-visioning projects.
  - Estimated cash matches from awardees exceed $12.6 million for an estimated $42 million generated.
  - In FY 12, 12 communities completed the visioning process and 12 new communities started the process. ISU contracted with five landscape
architecture firms, which employed 12 ISU design students as interns. Contracts to private sector firms totaled $204,767.

- **West Liberty Economic Area Development (WE-LEAD)**
  WE-LEAD is a nonprofit 501(c)(3) corporation organized in 2006 to create, develop, and maintain strong business relationships, and to establish a climate in which new and existing businesses can flourish. As part of this initiative, the City of West Liberty (75%) and ISU Extension and Outreach Community and Economic Development (CED) (25%) jointly hired a community development specialist.
  - In FY 2012, WE-LEAD trained 200 community leaders, elected officials, youth, industry leaders, and minorities by sponsoring a Chick-fil-A Leadercast event on May 4. WE-LEAD secured cash and in-kind sponsorships totaling $15,150. With first-year expenses of approximately $11,000, the event yielded $4,000 in profit, which will provide the necessary money to sustain the Leadership West Liberty program and create an endowment for sustainability of the program.
  - Leadership West Liberty is a community-focused leadership program designed to grow the next generation of leaders in West Liberty. Thirty-five students have graduated from the five-year-old program. Completion of a community project is a requirement and more than 15 projects have been completed.
  - In 2012, Extension and Outreach CED and the Keokuk Area Chamber of Commerce hired an executive director/extension community development specialist based on the WE-LEAD model.

- **Tourism**
  ISU Extension CED specialist Diane Van Wyngarden, PhD. developed a model travel program for Iowa and marketed it to a national audience through Road Scholar. Current programs include: Exploring Uncommon Communities: a Touch of History, a Taste of Utopia; Upper Mississippi River Reflections: Historic Towns, Trails and Tales; and Missouri River Reflections: a Ribbon of Legends through Four States.
  - In FY 2012, 115 people participated in the Road Scholar Program. Tuition is $1,000 to $1,500 per participant.
  - In FY 2012 the program affected more than 100 businesses, and the estimated dollar value of those impacts is $194,692. The program is self-supported, and the money generated goes directly to travel-related businesses along tour routes.

- **Sustainability**
  The ISU Extension and Outreach sustainability specialist serves the 9,200 Fairfield residents, as well as southeast Iowa and the state, facilitating community sustainability programs initiated by businesses, industry, and other organizations.
  - Fairfield is participating in the Hometown Rewards Program, a comprehensive, citywide energy efficiency campaign working with Alliant Energy. The sustainability specialist is helping the community develop a two-year program to engage 50% of residents (4,750 people). In FY 2012 more than 400 trees were planted and more than 700 people were trained in tree planting and energy efficiency techniques. Information was
distributed on energy reduction, including audits and pledges, and the website was revamped. A loan loss reserve fund was set up to put $4 million in potential loans into the community.

- In FY 2012, 523 citizens attended Backyard Conservation Workshops, resulting in 17 new beehives added, 15 new farmers’ market vendors, 12 contractors trained in energy efficiency, 60 people interested in backyard chickens, 15 solar panels built, and 1,500 fruit trees sold.
- Fifteen nonprofit employees were trained as part of an ongoing process to develop a sustainability plan for Youth and Shelter Services in Des Moines, which serves more than 10,000 people.

- **Latino Business and Community Development**
  ISU Extension and Outreach Community and Economic Development currently employs one Spanish-speaking community development specialist based in Ottumwa. This specialist is responsible for Latino business and community development for the entire state. However, in light of the increasing demand for these types of services, CED submitted a proposal for a 2012 VPEO strategic initiatives grant to fund a new community development specialist with expertise in minority businesses and leadership. The proposal was funded and the search for the position is nearly complete. The new community development specialist will be based at the Town/Craft center in Perry.

  During the past year, CED specialists trained 32 Latino business leaders and entrepreneurs, helped 18 minority entrepreneurs start or improve their businesses, and assisted with the creation of 13 jobs and the retention of 100 jobs for minority employees. Community development specialist Himar Hernández maintains contacts with Latino business owners throughout the state and has facilitated the development of Latino business networks in southeast and central Iowa.

  CED partnered with the University of Minnesota to develop a proposal to assess the financing and technical assistance needs of underserved entrepreneurs and identify barriers separating them from providers of those services. The proposal, titled “Helping nonmetro communities and underserved entrepreneurs grow together,” was funded by the North Central Regional Center for Rural Development through a grant competition. The project began with a two-day roundtable discussion at the Town/Craft center in Perry, a community with a population that is 35% Latino. The outcome of the project will be a proposal to develop, pilot, and implement new curricula for Extension professionals to use in working with underserved entrepreneurs, financial institutions, and technical assistance providers in nonmetro areas.

- **Office of State and Local Government Programs**
  The Office of State and Local Government Programs offered several training opportunities to local government leaders and officials. With the addition of Extension program specialist Cindy Kendall, OSLGP has been able to offer more training in fiscal and budget management.

  - 297 local government representatives attended the Municipal Leadership Academy Parts One and Two in November and December 2011.
  - 620 local government fiscal officers attended Budget Seminars in fall 2011.
The OSLGP hosted the 2011 Annual Finance Report training webinar, which was attended by 30 participants.

The 2011 Municipal Professionals Institute and Academy were held in Ames July 18–29 for 264 municipal professionals.

In FY 2012, 247 local officials attended Introduction to Planning and Zoning workshops.

**Housing Needs Assessment after a Local Disaster**

In light of the 2008 floods and other recent natural disasters, the Iowa Economic Development Authority (formerly the Iowa Department of Economic Development), the Iowa Finance Authority, and the Rebuild Iowa Office engaged Iowa State University and ISU Extension and Outreach Community and Economic Development to undertake a study of eight communities heavily impacted by the 2008 floods. The purpose of the study was to gain an understanding of how recovery program implementation differed by the size and type of community and to identify the unique challenges these communities encountered in their recent experiences with housing loss caused by a natural disaster. A mixed method research project was conducted on eight communities affected by the 2008 floods: Cedar Rapids, Charles City, Columbus Junction, Coralville, Iowa City, Mason City, Waverly and Waterloo. Six major issues emerged from the study:

1. Economic impact analysis revealed that the recession has had a greater economic impact on the study communities than the 2008 floods.
2. Only four of the eight study communities have a statistical need for more housing.
3. Municipal and nonprofit capacity in case management and outreach services is needed for recovery programs to operate effectively.
4. Disaster recovery programs can be created before a natural disaster and legislatively funded when a disaster response is needed.
5. Accurate and accessible data are needed for local decision-making and long-term planning.
6. The housing market gap should be evaluated by units lost and by the difference in value of replacement housing.

The results of the study were published in a comprehensive report as well as individual reports for each study community. Based on the study findings, ISU Extension CED trained representatives from the councils of government on pre- and post-disaster planning strategies.

**Local and Regional Housing Trust Funds**

The Iowa Finance Authority (IFA) administers a state housing trust fund offering forgivable loans to rehabilitate existing housing; however, many Iowa communities do not have the structure in place to apply for and administer such loans. Through an agreement with IFA, ISU Extension and Outreach CED is helping communities, counties, and regions develop local housing trust funds (LHTF), with which they can apply for seed money from the state to use for affordable housing.

Existing housing trust funds cover 52% of Iowa’s population. Primary clientele include counties and regional COGs. Extension CED has incorporated the LHTF development format into regional housing trust fund development. In FY 2012, 14
county and regional housing trust funds received $2,561,110 in state affordable housing grants.

- **Consultations with Farmers and Agribusinesses**
  Agricultural and Natural Resources (ANR) Extension and Outreach provided 8,594 individual consultations with farmers and agribusinesses. These one-on-one consultations at the client’s requests included trouble-shooting on crop and livestock production, advice on financial and strategic management and input on investment decisions.

- **Dairy Profitability Education**
  The ANR Dairy Team contacted 20 dairy producers who participated in a dairy profitability educational meeting were compared to producers who did not attend the event, using the Dairy Herd Improvement Association records. The evaluation was conducted one year after the event. Those who attended increased revenue an average of $40,961 per herd or a total of $1.6 million per year compared to herds that did not participate, based on improved milk production and milk quality premiums.

- **Lowering Costs for Beef Producers**
  The ANR Iowa Beef Center cow nutrition program worked with beef producers to significantly reduce their overall cost of production. Of the attendees surveyed six months after the event, 28% indicated they reduced their feed costs by $1,250. Based on the attendance, this resulted in $136,500 in reduced costs or increased profits. With the 2.59 economic output factor, this results, conservatively, in $353,535 in additional revenue in rural economies.

- **Pesticide Applicator Certification**
  The ANR Pest Management and Environment program served 3,122 Iowa businesses last year by providing the required training for their approximately 8,000 employees to receive or maintain pesticide applicator certification. The training, required by the Iowa Department of Agriculture and Land Stewardship, addresses worker and customer safety, regulations, and environmental protection.

- **Manure Applicator Certification**
  The ANR Manure Applicator Certification program served 580 Iowa businesses last year by providing the required training for their 2,400 employees and managers to receive or maintain Iowa manure applicator certification. The training, required by the Department of Natural Resources, addresses worker safety, regulation, and environmental protection issues.

- **Workshops for Technical Service Providers**
  ANR delivered three workshops titled RUSLE2 and Iowa Phosphorus Index to technical service providers in Iowa. A total of 49 workshop evaluations were received. Those reporting worked with or managed approximately 475,000 acres and 1,009 clients on an annual basis. They also reported developing more than 1,000 nutrient management plans annually. Participants indicated an average gain from completing the training of $301 per client serviced or $0.47 per acre serviced. The overall average gain was reported as more than $3,600 per participant.
Business Feasibility Studies and Market Analysis
The Value Added Agriculture Program at Iowa State University Extension and Outreach conducted 10 full business feasibility studies, examining in-depth the economic, market, technical, management, and financial aspects of a proposed business start-up or expansion. Total capital investments by these businesses moving forward totaled $77,920,000, with gross revenues of $84,824,000 and payrolls of $11,570,000. Additionally, staff conducted five market analysis studies for businesses in Iowa. Market analyses done by VAAP focus on businesses expanding rural development in Iowa. These market analyses had direct capital investments of more than $12 million to Iowa’s economy and an estimated payroll of $880,000 to Iowans.

Value Added Agriculture - Technical Assistance
Staff with the Value Added Agriculture Program of Iowa State University Extension and Outreach provided direct technical assistance to 44 businesses on a variety of topics, including vineyard/winery feasibility, food safety planning/GAPs certification, local foods and agritourism, organizational structure, specialty crops, and business feasibility. This assistance enabled 44 businesses to continue operations and maintain or grow personnel, resulting in new or retained jobs for Iowans. Businesses ranged from sole proprietorships to cooperatives to limited liability corporations.

Value Added Agriculture - Support Team
The Value Added Agriculture Program at Iowa State University Extension and Outreach sits on the Value Added Agriculture Support Team (VAAST), a working group created to assist in the development of value-added ag projects. Members include six state agencies, various commodity groups, and farm membership organizations. These members and their collective resources provide technical and financial assistance to emerging value-added ag businesses and initiatives. Meetings offer an opportunity to these emerging businesses to visit with the entire VAAST group at one setting. This process speeds up the initial steps needed to develop a business. During 2011, VAAST met with 10 businesses. Collectively, VAAST aids these businesses in access to capital, facilitates planning, and zoning requirements, and pools resources to facilitate rural entrepreneurship and economic development.

Value Added Agriculture/ISU Grain Quality Lab
ISU Value Added Agriculture Program and ISU Grain Quality Lab work together to offer assistance to grain handlers and processors in inventory management and quality control. Key to both operations is accurate and rapid measurement of nutrient and quality factors of inbound grain and outbound products. This year, VAAP and the lab have helped a food-grade soybean processing company by developing initial calibrations for their near infrared grain analyzer and training their research director to update and develop future calibrations. Similarly, VAAP and the lab worked with two large grain cooperatives to develop and update near infrared analyzer calibrations for their feed mills, mainly for the purpose of checking nutrient levels in inbound ingredients. In either case, accurate quality measurements help companies more efficiently use ingredients to meet contract specifications in their outbound products. Efficiencies translate into cost savings, in part due to the ability to evaluate suppliers’ quality standards.
ISU Value Added Agriculture Program and ISU Grain Quality Lab also assisted two near infrared analyzer manufacturers to evaluate new instrument prototypes intended to measure nutrients and other quality factors in Midwest grains. Each company has moved ahead with calibration and standardization algorithms developed by ISU for certification by the National Type Evaluation Program within the National Institute of Standards and Testing. Increased competition in the analyzer-sales industry has led to more uniform testing and cost savings. Rapid measurement ability ultimately leads to improved quality and fairer trade.

STEM Skills for Iowa’s Future Workforce
In order for Iowa youth to be successful in the 21st century, they must be prepared with science, technology, engineering, and math (STEM) skills necessary to meet Iowa’s workforce needs and economic development plans. Iowa State University Extension and Outreach’s 4-H Youth Development program, in partnership with many local and national organizations and businesses, provided STEM opportunities for youth in every Iowa county. These programs inspire and prepare today’s youth to become science literate citizens and meet future Iowa workforce needs. ISU Extension and Outreach plays a vital role in filling the STEM pipeline for Iowa companies. 4-H provides leadership for pre-collegiate (K – 12) STEM outreach, including the State Science and Technology Fair of Iowa, 4-H STEM projects and exhibits, STEM Camps, County STEM programming, 4-H STEM special events at the Iowa State Fair, Iowa 4-H State Technology Team, and STEM focused 4-H clubs. In FY12, 650 6th through 12th grade students participated in the State Science and Technology Fair of Iowa. County Extension and Outreach programs engaged 35,258 participants in STEM focused programs or 4-H STEM projects ranging from environmental stewardship to geospatial mapping – from which 77 STEM exhibits advanced to the Iowa State Fair. In addition, 68 youth participated in STEM events at the Iowa State Fair, 22 participated in the Iowa 4-H State Technology Team, and 85 youth participated in STEM camps at the Iowa 4-H Center.

Volunteer Income Tax Assistance Helps Families Build Financial Security
The Earned Income Tax Credit (EITC) augments the wages of low- and moderate-income workers and, in turn, this flow of income makes a substantial economic impact in local communities. EITC recipients circulate their refunds through the local economy, creating a ripple effect that exceeds the size of the original refund. This money strengthens neighborhoods, assists small businesses, and spurs local economic development. ISU Extension and Outreach worked with community partners to recruit and train 60 volunteers to provide free tax preparation services to low- and moderate-income families through the Volunteer Income Tax Assistance (VITA) program. In 2012, VITA volunteers working at 34 VITA sites helped 1,621 low- and moderate-income Iowans complete income tax returns. Special efforts were made to increase awareness of the EITC and VITA in rural Iowa. As a result, 795 filers qualified for the EITC and received $1,091,572 in the 29 counties that participated in the Extension-community partnerships to expand VITA programs in rural Iowa.

Early Childhood Programs
The Better Kid Care New Staff Orientation program has been adopted by Iowa as a key component for stabilizing workforce turnover and providing a basic level of
knowledge for new early childhood teachers and assistant teachers who may have limited education and experience. This outstanding program provides new teachers with 30-lessons over a four-month period. Teachers view DVD demonstrations, practice and fulfill on-site activities and complete workbook lessons, which are sent into Iowa State University for review. Currently 225 centers and preschools (15% of Iowa licensed programs) participate in the Better Kid Care New Staff Orientation (NSO) program. As a result of participating in the NSO program, 678 child care center staff teachers have completed a total of 10,848 training hours and 116 child care center directors completed 696 training hours. All report making significant gains in knowledge and program improvements.

NSO program data indicate that 4,934 individuals completed Better Kid Care New Staff Orientation and 1,286 directors have participated in the NSO Directors’ Training since the program’s inception in 2007.

- ServSafe®
  Iowa State University Extension and Outreach Nutrition and Health Specialists are registered instructors for the National Restaurant Association’s Educational Foundation’s internationally recognized food safety certification program. ISU Extension and Outreach Specialists have taught the ServSafe® food safety certification program for more than 15 years. From July 1, 2011 through June 30, 2012, more than 1,000 Iowans participated in an ISU Extension and Outreach taught ServSafe® course, with 92% successfully earning certification. Of the 1,098 participants, about 60% were from for-profit commercial operations that prepared and/or sold food to people away from home. Commercial operations recognize the value of training staff in safe food handling procedures, as an incidence of a foodborne illness can be devastating for business. Other participants were involved in foodservices in non-profit operations, such as schools, hospitals, and nursing homes. Proper preparation, holding and service of food is critical in these locations, as participants in these meal programs are frequently considered at greater risk of contracting a foodborne illness due to compromised immune systems.

The Office of the Vice President for Research and Economic Development works closely with all of the above units, including the Office of the Vice President for Extension and Outreach, in promoting the University’s mission related to technology transfer and economic development.

- The Research and Economic Development Council (chaired by the VPRED) coordinates ISU research, technology transfer, and economic development activities. Members meet periodically to discuss problems, update each other on activities, assess the state and national environment for technology transfer, and propose policy and procedures to encourage technology transfer and economic development activities at ISU. This council, formed in 1993, is comprised of representatives from all units on campus that have a primary role in economic development and technology transfer as well as representatives from each of the seven colleges.

- The units within the VPRED office have been focusing on increased coordination. The technology transfer associates, industry contract negotiators, and industry
relations professionals have all been co-located in the same building to facilitate a team-based approach.

The above units are the key units that focus attention on economic development and technology transfer at ISU; however, significant additional related activity also occurs across campus in individual academic departments, centers and institutes, and colleges.

4. Please briefly describe two or three examples of major economic development collaborative projects with such other entities as Regent universities, Iowa community colleges, the Iowa Department of Economic Development, Iowa Workforce Development, or other state agencies.

**Major Economic Development Collaborative Projects**

**NSF EPSCoR**
ISU collaborated with UNI and the U of I on an NSF EPSCoR proposal that received funding ($20 M) in September 2011. The grant develops a statewide energy plan for the State of Iowa, covering two renewable energy platforms--wind and bioenergy--a third platform dealing with energy efficiency, and a fourth platform on energy policy. The ultimate outcome will be an energy plan leading to energy efficiency and sustainability for the state. Other partners include the Iowa Economic Development Authority, the Iowa Energy Center, community colleges and other four-year institutions in Iowa, and industry.

**Economic Development**
The state is providing the Regent universities with financial resources to expand technology transfer and commercialization efforts. In addition, limited funds are provided for core support for infrastructure in the Research Park, Pappajohn Center, and the VPRED office. Each year, projects are funded that pair ISU researchers and Iowa companies. More information appears later in this report (Appendix 1).

**Innovate Iowa Proof of Concept Initiative**
Iowa State has established an initiative that focuses on increasing the transfer of technology while reducing the time to commercialize. Technology and business development will occur in parallel by engaging staff from the ISU Research Foundation, the ISU Research Park, the Pappajohn Center for Entrepreneurship, and technology experts. This initiative will provide a single, visible interface for faculty, staff, and students seeking opportunities and provide simplified, coordinated communication. This is a collaborative effort with the Iowa Innovation Corporation. The Board of Regents institutions are currently assessing Proof of Concept programs across the system with the intent of partnering and strengthening the process.

**A reinvigorated process for prospect development and startup company acceleration**
A Research and Economic Development Council Committee chaired by Steve Carter, director of the ISU Research Park and the Pappajohn Center for Entrepreneurship, is engaged in a strategic partnership to reinvigorate and leverage the university’s approach to building a collaborative, university-wide network that engages students, staff, and faculty in entrepreneurial startup activities. This process is broad-based and inclusive,
with discussion taking place campus-wide (Center for Biorenewable Chemicals, Bioeconomy Institute, colleges’ entrepreneurial programs, ISU Research Foundation, ISU Research Park, Pappajohn Center for Entrepreneurship, etc.).

**State-wide committees**

Many people from ISU serve on committees that promote economic development programs, such as the Iowa Innovation Council, the Iowa Innovation Corporation, the Biosciences Alliance of Iowa, the Iowa Innovation Council’s Iowa Advanced Manufacturing Committee, Iowa Meat Processors Association, Institute of Food Technologists-Iowa Section, the Iowa Lean Consortium, the Partnership for Industrial Energy Efficiency, Professional Developers of Iowa, the Iowa Business Council, the Iowa Alliance for Wind Innovation and Novel Development (IAWIND), Innovate Iowa!, and Capital Crossroads.

5. Please provide the following information about Grow Iowa Values Fund projects for FY 2012:

A. Identify and briefly describe each project or initiative which received GIVF funding in FY 2012 including information on outcomes or progress made
B. Identify metrics which were used to measure outcomes for each project and report progress on each metric for FY 2012
C. Provide a description of the sources of the matching institutional dollars for each GIVF-funded project

The Regents Innovation Fund (formerly Grow Iowa Values Fund [GIVF]) program has a competitive research component that pairs ISU faculty members with Iowa industries to create economic benefit for the companies. See Appendix 1 for a complete report.

6. Optional: If desired, please include observations regarding:

A. Availability of startup and venture capital for technology entrepreneurs
B. Suggestions for new programs or activities that could further enhance the impact of university technology transfer and service on creation of jobs and wealth in Iowa.

**6A. Availability of startup and venture capital for technology entrepreneurs**

The Values Funds to the universities have provided a valuable source of funding for proof of concept/early-stage development funding for the innovations that will become the next generation of businesses. Iowa State University has established a Proof of Concept Initiative (POCI) to fill a portion of the funding gap created by the loss of Values Funds. The POCI provides very early stage funding and commercialization assistance to researchers with promising discoveries.

Iowa has multiple seed funds, most of which are regional with varying capabilities or capacity to make investments. The Wellmark Fund has also provided early-stage capital to early-stage companies.

There remain several challenges to overcome. There are very few true venture capital firms located in the state of Iowa actively investing funds at this point in time. Iowa continues to suffer from a lack of investment capital to start up and
rapidly grow technology and innovation-based firms. In addition, each fund has a particular focus, the investment profile further limiting choices and resulting in very little competition. Most venture firms invest with other venture firms, one as lead with the others in secondary positions to spread risk and assure the ability to continue to fund the needs of the company, and this is a major problem in Iowa. Firms must look outside the state for significant investments of more than $5 million. As always, really good businesses with really good management teams will attract money; developing experienced and skilled management teams remains a major challenge.

6B. Suggestions for new programs or activities that could further enhance the impact of university technology transfer and service on creation of jobs and wealth in Iowa.

Restoration of funds for economic development and technology transfer activities due to budget cuts in the past several years would greatly enhance the University’s efforts in this area. The following is a summary of what benefits would occur if funds were restored in the units affected by budget cuts.

- **Small Business Development Centers.** In FY11, the legislature appropriated $994,930 to the SBDC. In FY12 the state line item appropriation was reduced to $936,345, with a further reduction in FY13 to $735,728. In addition, the $105,000 the program received from the Grow Iowa Values Fund in FY12 was eliminated for FY13 along with the GIVF program (the original allocation had been $355,000). Iowa State University contributed $200,617 in ISU funds and $105,000 in Regents Innovation funds to bring the program up to its FY12 funding level for FY13. Total state resource dollars directed to the program for FY13 is $1,041,345, down from $1,260,929 in FY09.

  As demonstrated by Professor Chrisman’s study of only a narrow segment of SBDC clients, for every Iowa tax dollar spent on the Small Business Development Center program, over $2.00 is generated in increased tax collections the following year from SBDC counseling services alone. The majority of any restored and new funds would be directed toward client counseling, resulting in an increase in tax revenues over tax expenditures.

- **Iowa State University Research Park.** The restoration of approximately $230,000 in funding to the Iowa State University Research Park would provide direct benefit to Iowa State University efforts to establish and support new technology ventures. New funds would be utilized to support the costs of providing incubator space and the support services required by new and early stage companies. The additional funds will increase the capacity for business incubation resulting in more new companies created and higher quality support for the young companies.

- **ISU Extension and Outreach Center for Industrial Research and Service (CIRAS).** CIRAS has successfully leveraged its state budget to bring in additional federal grants and fees to expand technical assistance, education programs, and economic development studies to support Iowa businesses. In FY12, CIRAS helped generate an additional $2.86 for each $1 of state funds provided, yielding approximately $4 million of additional funding. More than $1 million of CIRAS
funds were distributed to other business outreach units on campus to help them expand their work with Iowa companies.

CIRAS has lost more than $1.6 million (in 2012 dollars) from its annual budget in the past decade. This includes state appropriations and matching funds provided by the Iowa Department of Economic Development. These funds were used as match on the Department of Commerce/NIST Manufacturing Extension Partnership award and the Department of Defense Procurement Technical Assistance Program award. This loss of state funds reduces the extent of CIRAS assistance to companies and communities and limits the amount of additional funds that might be brought to Iowa via new business assistance grants.

The loss of annual funding from state appropriations and agencies equates to a reduction of approximately 13 full time staff, including salary and fringe benefits, and associated expenses. This can cause a further reduction of roughly 13 staff due to a loss of federal awards requiring matching funds from the state. Based on an analysis of data provided by Iowa companies, these staff positions might have generated nearly $60 million of impact and more than 700 jobs in Iowa companies — every year.

Using this same data, for every $100,000 of additional state funds that are made available, CIRAS would be able to leverage the funds to bring in an additional $150,000 from grants and fees and hire two new business professionals to provide services in the areas of engineering, biobased products and biorenewables, energy systems, management practices, government contracting, productivity, growth services, supply chains, quality systems, and community-business economic development. These two staff would help create nearly 50 jobs and $5,000,000 of new sales, cost savings, and investment impact in Iowa companies.

- **Institute for Physical Research and Technology (IPRT).** The IPRT economic development programs suffered losses of over $500,000 over the past three years. These losses follow $2,500,000 in budget cuts in 2003, which were never restored. These cuts came at times when the need for IPRT’s expertise by Iowa industries was rapidly growing. Although pieces of the program have survived the cuts, the program now serves only a fraction of the Iowa companies it once served. There has been a complete turnover in Company Assistance Research Cost-Sharing staff due to funding instability, with the concomitant decrease in efficiency as new staff are hired and trained. Companies seeking help outside the core competencies of the IPRT Company Assistance staff often cannot be assisted. In the past these potential clients were guided to work with faculty members through subsidized projects. Because of the budget cuts, IPRT has restricted the technical assistance it provides to Iowa companies to those services that fall within the core competencies of IPRT staff rather than pursuing these collaborative, cross-disciplinary projects. Also, fewer R&D cost-share projects that can lead to new products are pursued because of the declining funding. Over 75% of the Iowa manufacturers that IPRT serves have fewer than 100 employees. This means that the typical industrial client will likely not have the needed expertise internally to address their material and inspection issues.
The Materials Group of the IPRT economic development program provides short-term, no-cost technical assistance to Iowa manufacturers and is often the first interaction that manufacturers have with the University. Restoration of funding would allow for growth of materials assistance, enhancing the program’s delivery of services. The unit seeks to offer a wider scope of services directly meeting the needs of Iowa manufacturers.

The NDE (Nondestructive Evaluation) Group functions similarly to the Materials Group in that short-term technical assistance is provided to Iowa manufacturers on a no-cost basis. The focus of the NDE Group is to assist companies in areas of inspection and quality control. To that end, the NDE Group serves as an unbiased source of information, offering clients a broad range of expertise in various inspection methodologies. Manufacturers often do not have staff acquainted with these capabilities, so the NDE Group in effect complements the engineering capabilities of their clients. The unit assists client companies in addressing problem areas, ensuring product development and quality. This assistance requires robust budget support to maintain the needed flexibility to successfully address the wide range of industrial concerns.

The Company Assistance Research Cost-Sharing Program administers cost-sharing contract research projects, working with Iowa’s small to medium-sized manufacturers. These small companies have very limited R&D dollars and facilities, and now this unit does not have the funds needed to leverage Iowa companies’ limited resources. These are projects with obvious economic impact—introduction of new products, addressing manufacturing processes, and improving quality—all areas that impact Iowa’s global competitiveness in the manufacturing sector. Before the budget cuts of the last several years, the staff proactively marketed the R&D strengths of ISU’s faculty to potential Iowa industry partners. This outreach effort was eliminated because of constraints on staff time and funds available for these projects, with a resultant decrease in the number of projects funded.

A unique feature of the economic development program in IPRT is the active participation of scientists from internationally renowned ISU centers such as the Center for Nondestructive Evaluation, the Virtual Reality Applications Center, and the Center for Catalysis. These centers have excellent track records of spinning off new Iowa startup companies in the areas in which they excel. Restoring the budget cuts to IPRT units would have a rapid positive impact on Iowa’s manufacturing sector. An investment now would result in continuing benefits to Iowa’s companies, important opportunities to retain our brightest students, and new startup companies based on increased technology transfer from IPRT centers.