

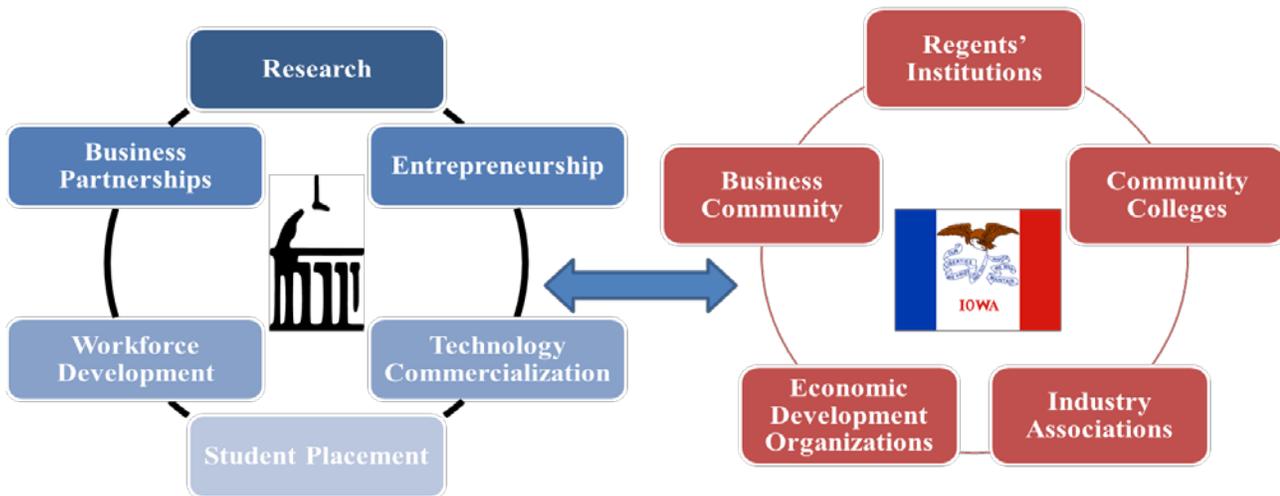
**The University of Iowa
FY 2013 Annual Economic Development Report**

EXECUTIVE SUMMARY

Throughout FY 2013, the UI economic development team met with business, economic development and community college leaders across Iowa to better understand the economic development challenges and opportunities in their respective regions. The findings were consistent across communities:

1. Workforce development – the need to ensure a sufficient, highly-skilled workforce to capitalize on technology advances and global opportunities.
2. Economic and job growth – the need to strengthen and diversify the Iowa economy through existing business expansion and new venture creation.
3. University/business collaboration – the need to better connect businesses with university resources to solve real-world problems, connect students to Iowa companies, and stimulate collaborative innovation.

The UI is implementing a new economic development strategy focused on: 1) increasing hands-on engagement with Iowa companies; 2) improving integration and coordination of UI resources and programs to support economic growth, job creation and entrepreneurship; and 3) fostering faculty/company collaborations to stimulate discovery, innovation and commercialization. A critical component to this effort is forging new partnerships and expanding existing collaborations to create an integrated, statewide economic development ecosystem.



Beginning in FY 2014, the UI is:

- implementing new on-campus programs to engage UI faculty in forging business partnerships to drive discovery and technology innovation.
- expanding strategic business consulting and technology services delivered to Iowa companies by UI faculty, staff and students.
- developing IT boot camps to provide hands-on, intensive training programs in software as well as IT tools to provide new skill development and skill refresh for existing workforce.
- launching new entrepreneurial training programs that incorporate the lean business model with direct support for technology development and new venture formation.
- enhancing UI faculty entrepreneurship education and technology commercialization services to stimulate

- licensing of technology to Iowa companies and creation of new startups through the Ventures @ Iowa program.
- expanding student experiential learning and internship opportunities with small to medium-sized Iowa companies

This new approach is already yielding important economic development impact as highlighted below.

- Through JPEC's Entrepreneurship: Business Consulting course, a total of 58 Iowa small to medium-sized businesses received strategic business consulting services provided by UI faculty and undergraduate student teams. The program is designed to provide high quality assistance to Iowa companies while providing real-world experience and connectivity to the Iowa business community for UI students.
 - Market research and analysis conducted for an Algona, IA area entrepreneur who has invented a fence-post hole digging device.
 - Competitive and SWOT analysis performed for SpendSmart, a Clive, IA company that has developed a secure payment system that helps to teach teens responsible spending habits.
- Forty-eight student businesses were under development through the John Pappajohn Entrepreneurial Center's (JPEC) student incubator program housed at the Bedell Entrepreneurship Learning Laboratory.
 - Tutor Universe is a social networking-based market for online tutoring services. It was formed out of the Bedell Entrepreneurship Learning Laboratory in 2011 by UI graduate students in Computer Science Thomas Hornbeck and Hung Tran.. The company has raised in excess of \$500,000 in investment and was named the UI Student Startup of the Year at the inaugural Hawkeye Innovation Summit in FY 2013.
 - TranslaCare is a UI student startup that has recently been awarded \$100,000 from the Iowa Economic Development Authority. Ryan Ries, a UI Neurobiology and Linguistics major, started the company in 2011 from the Bedell Entrepreneurship Learning Laboratory. TranslaCare is developing a software application for individuals with speech disabilities; the company plans to begin beta testing during the fall of 2013 with a product release scheduled for 2014.
- Two new companies located at the University of Iowa Research Park added over 160 jobs to the region;
 - MediRevv, a revenue cycle management company, opened their new facility on the research park in August 2012. MediRevv currently employees approximately 130 people. Plans are underway to expand their presence on the park by building an addition to their current facility in FY 2014.
 - Leapfrog Technologies, a custom computer software development company for higher learning, located on the park in FY 2013. The company currently employs 32 people.
- Kirkwood Community College and the University of Iowa announced a joint partnership to build a regional STEM education center on the UI Research Park. The center will focus on enhancing technical education and examining new models to stimulate additional student interest in STEM careers and four-year degrees. The location will provide students unique learning opportunities to interact with the State Hygienic Laboratory and other technology companies and UI research facilities located there. It is scheduled to open in fall 2015.
- The University of Iowa Research Foundation (UIRF) executed 8 option and license agreements to startups based on UI intellectual property in FY 2013. In the past 6 years, UIRF has executed a total of 31 licenses and options with 21 startups based on UI technologies. Of those 21 companies, 19 are still in operation. Over the last two years, the UIRF has increased efforts to increase the rate of technology disclosures; over this two year period, the UIRF received 200 disclosures compared to the prior three year total of 208.
- In partnership with several regional and statewide organizations, the UI co-sponsored and/or hosted several entrepreneurial and business development programs including the Innovation Expo (600+ attendees), Pitch and Grow (14 company presenters) and multiple community lectures (350+ attendees each).
 - This October, the University will be hosting the UP America Summit—an event bringing 150-200 entrepreneurs and community leaders to the region to discuss strategies for enhancing community entrepreneurial and business ecosystems.

**Economic Development Team
The University of Iowa**

Research drives innovation at the University of Iowa. In FY 2013, The University of Iowa generated extramural support totaling \$424 million. This places the UI among the nation's elite public research universities and is especially significant in the face of challenging economic and research funding conditions in the U.S. This robust research enterprise coupled with integrated economic development activities plays an important role in supporting economic development in Iowa. UI economic development activities are directed by the Office of the Vice President for Research and Economic Development. The IOWA Centers for Enterprise (ICE), an alliance of several UI organizations identified below, provides infrastructure and services to enhance technology transfer and commercialization of UI technologies, new company formation, support of Iowa companies and workforce development. ICE currently includes the following elements:

Office of the Vice President of Research & Econ. Dev.	<ul style="list-style-type: none"> • Research Support • Core Research Facilities • Community Partnerships
UI Research Foundation	<ul style="list-style-type: none"> • Intellectual Property Management • Technology Licensing • New Venture Support
UI Research Park	<ul style="list-style-type: none"> • Business Incubation • Business Expansion • Advanced Research and Educational Facilities
John Pappajohn Entrepreneurial Center	<ul style="list-style-type: none"> • Academic Programs • Student Business Incubation • Entrepreneurial Training • Community and Business Partnerships
UI Colleges	<ul style="list-style-type: none"> • Academic Programs • Faculty Research • Business Partnerships • Student Interns and Placement

The following sections of this report will directly respond to specific areas as requested by the Board of Regents. These include: the impact of University of Iowa activities on the economic growth in Iowa, institutional activities and services that indirectly promote economic development, quantitative information regarding economic development activities in FY 2013, a summary of outreach and service activities, direct economic development assistance to Iowa communities, a summary of RIF expenditures, and emerging trends in the area of economic development.

IMPACT OF UI ECONOMIC DEVELOPMENT ACTIVITIES ON ECONOMIC GROWTH IN IOWA

Job Creation and Wealth in Iowa

University of Iowa Research Park (UIRP)

The University of Iowa Research Park (UIRP) is a blended campus consisting of a multitude of commercial ventures and a variety of university academic programs and infrastructure assets. As of June 2013, nine established companies, 23 startup companies and six University anchor laboratories were located in the park. These companies have access to university research infrastructure including high-speed internet, access to UI libraries and research facilities (i.e. core research facilities to support chemistry, biology, computation and instrumentation), faculty for joint collaboration, business support centers (i.e. JPEC, SBDC and UIRF) and students as interns or employees. In FY 2013, the

companies affiliated with UI Research Park and Technology Innovation Center reported over 1,700 employees.

BioVentures Center (BVC)

The UI BioVentures Center located at the UI Research Park opened in November 2008. This 35,000 sq. ft. state-of-the-art biosciences incubator and office facility offers entrepreneurs and early-stage technology companies high-quality wet laboratories, a shared laboratory, a large multi-purpose room, multiple executive conference rooms and general shared space to meet their various business needs. Currently there are 13 companies located in the BVC employing 67 people. Twelve of the 20 wet labs have been leased to startup companies, seven of which were formed from technology created by UI faculty. Past economic development (GIVF) funding was critical in enabling the design and construction of this facility.

Thirteen companies (ASL Analytical, Bio::Neos, Inc., Cellular Engineering Technologies, CQM Systems, Exemplar Genetics, Hennepin Life Science, KemPharm, Inc., Memcine, NanoMedTrix, Redox BioCat, Terpenoid Therapeutics, Inc, Vertex Pharmaceuticals, and VIDA Diagnostics) occupy 12 laboratories and 23 offices in BVC. Two floors of the west wing of the BioVentures Center have been fit out for UI units previously housed in Oakdale Hall. The 3rd floor of the West side was recently occupied by the Iowa Lions Eye Bank, a new tenant in FY 2013.

Technology Innovation Center (TIC)

The Technology Innovation Center provides office space and a nurturing business environment to new technology-based ventures that do not require wet laboratories. In FY13, the TIC reported a total of 10 companies and 31 employees. Since TIC opened in 1984, 111 companies have been in residence in the UI incubation program; of those companies, 52 are still in business--41 of which are in Iowa.

Bedell Entrepreneurship Learning Laboratory (BELL)

The Bedell Entrepreneurship Learning Laboratory is the University of Iowa's student business incubator. The 10,000 sq. ft. facility, which has 17 furnished offices and several conference rooms, offers a campus wide program open to students from any major or college. The students receive intense mentoring and support as they launch or expand their businesses. The program, one of the first of its kind in the nation, has incubated over 200 businesses since opening in 2004. In FY 2013, 48 student businesses were being incubated at the BELL.

Institutional Activities and Services that Indirectly Promote Economic Development

University of Iowa Research Park, BioVentures Center and Technology Innovation Center

A variety of educational and training programs were offered for UIRP/BVC/TIC tenants in FY 2013. These included: Lunch and Learns, quarterly roundtables and mixers, a service industry speaker series providing guidance on legal issues, human resources and financial management, Iowa Innovation Council programs, etc.

UI Research Park hosts quarterly roundtable meetings for company executives representing all park companies. The BVC multi-purpose room was utilized by over 50 outside groups for, including but not limited to, legislative and state agency meetings, vendor shows, Pitch and Grow competitions, Chamber events, Iowa City Area Development forums, STEM education meetings, and the bi-monthly meetings of the Corridor Business Alliance. The state-of-the-art meeting and executive conference rooms at the BVC have become a vital meeting hub for both regional and state organizations.

Additionally, a Regents Innovation Development Fund Proposal competition was held for our BVC and TIC tenants with \$100,000 awarded to seven companies to provide critical capital for growth. Award winners were:

- ASL Analytical, developing chemical monitors for the bio-manufacturing market - \$20,000
- Memcine , which is developing a needle-free vaccine platform technology - \$20,000
- KemPharm, Inc. a pharmaceutical discovery and development company - \$15,000
- Exemplar Genetics, which has developed innovative models of human disease - \$15,000
- Bio::Neos, a bioinformatics software technology company - \$10,000
- NanoMedTrix, developing novel multimodal, targeted contrast agents for use across a range of disciplines, including regenerative technology and targeted radiology - \$10,000
- Higher Learning Technologies, creates digital test prep programs for nursing and dental students - \$10,000

John Pappajohn Entrepreneurial Center (JPEC)

JPEC offers one of the most comprehensive entrepreneurial education and business support programs in the nation. Featured programs supporting economic development include:

- Providing business consulting services to small companies located across Iowa through its faculty/student field study program (58 companies assisted in FY 2013)
- Hosting/sponsoring elevator pitch and business plan competitions to support innovation and new venture creation (14 competitions held)
- Supporting the creation and launch of student-based businesses at the Bedell Entrepreneurship Learning Laboratory (BELL) located on the UI central campus; student entrepreneurs receive office equipment, computers and access to high speed internet.
 - In FY 2013, total of 48 businesses participated in the BELL. Since its opening in 2004, a total of 363 students from nearly every UI college have been impacted by the facility and associated programs.
- JPEC delivers campus-wide and online undergraduate entrepreneurial education and technology innovation coursework in the MBA program.
 - In FY 2013, there were 3,738 total student enrollments in 145 sections of courses and 323 students graduated from one of the Certificate or BBA programs offered by JPEC.
- The Jacobson Institute for Youth Entrepreneurship is a comprehensive program that enriches K-12 students' lives through classroom and practical educational experiences.
 - During FY 2013, the Jacobson Institute impacted 3,252 youth and worked with 387 high school teachers in Iowa who are using the Institute's YouthBiz Central online curriculum. In addition, 145 youth participated in summer camps held across Iowa.

University of Iowa

The IOWA Centers' senior staff participated in a large number of economic development organizations in FY 2013.

Statewide:

- Iowa Innovation Council
- Iowa Innovation Corporation
- Iowa Biotechnology Association, Board of Directors
- Technology Association of Iowa, Board of Directors
- Technology Association of Iowa, Panelist Reviewer for TAI annual awards
- BEST of Iowa
- STEM Advisory Board

Local and Regional:

- Cedar Rapids Metro Economic Alliance Economic Development Committee
- Corridor Business Alliance
- East Central Iowa Council of Governments, Loan Review Committee

- Economic Development Center (EDC), Board Member
- Iowa City Area Chamber of Commerce, Member
- Iowa City Area Development Group, Board of Directors and Executive Committee
- Midwest Engineering Entrepreneurship Network (MEEN)

National:

- Small Business Administration (SBA)
- Global Consortium of Entrepreneurship Center (GCEC), Leadership Circle
- University Economic Development Association (UEDA)
- United States Association for Small Business and Entrepreneurship (USASBE)
- Colligate Entrepreneurship Organization (CEO)
- Students in Free Enterprise (SIFE)
- National Collegiate Inventors and Innovators Alliance (NCIIA)
- National Science Foundation (NSF) SBIR program, Mentor for Phase I-II awarded startups
- NSF SBIR program, Panelist for Proposal Reviews
- NBIA National Business Incubator Association
- AURP Association of University Research Park and Association of University Midwest Research Park Directors
- NCIIA – National Collegiate Inventors and Innovators Alliance

METRICS DESCRIBING ULECONOMIC DEVELOPMENT ACTIVITY FY13 & FY12

	FY13	FY12
a. Number of disclosures of intellectual property	98	102
b. Number of patent applications filed		
• U.S. Applications	85	72
• National Applications	28	27
• Patent Cooperation	29	17
• Total Applications	142	116
c. Number of patents issued	74	59
d. Number of license and option agreements executed on institutional intellectual property (The 29 license/option agreements were for a total of 44 different UIRF disclosures)	29	21
• In Iowa	8	7
e. Number of license and option agreement yielding income	92	94
f. Revenue to Iowa companies as a result of licensed technology	\$2.38MM	\$2.2MM
g. Number of startup companies executing licenses or options for UI technologies	8	2
• In Iowa (Redox BioCat, Exemplar, Terpenoid, IDx, ViewPoint Molecular, Iowa Approach and NanoMedTrix)		
h. Number of companies in research parks, incubators and graduates located in Iowa	47	41
i. Number of new companies in research parks and incubators	4	2

j. Number of employees in companies in research parks/affiliates and incubators	1,707	1,812
k. Royalties and license fee income	\$1.38MM	\$7.05MM
l. Total sponsored funding	\$424.1MM	\$438.1MM
m. Corporate sponsored funding for research and economic development <ul style="list-style-type: none"> • In total • In Iowa 	\$62.0MM \$ 1.5MM	\$52.9MM \$ 1.1MM
n. Iowa special appropriations for economic development in the following categories <ul style="list-style-type: none"> • Annual state appropriations for ongoing programs (TIC, ORP and CADD) • RIF appropriations 	\$209,279 \$1,050,000	\$209,279 \$576,000
o. Estimated jobs created by SBDC clients	111	114

**DIRECT AND HANDS-ON TECHNICAL ASSISTANCE TO BUSINESSES, FACULTY
INVENTORS & ENTREPRENEURS**

John Pappajohn Entrepreneurial Center (JPEC)

- **Assistance to Businesses:** JPEC faculty and staff provide one-on-one and faculty/student team-based consulting services to technology-based entrepreneurial companies located at the UI Research Park, the BELL and throughout Iowa's Creative Corridor.
 - JPEC staff provided consulting services to over 100 regional entrepreneurs and business startups, totaling over 700 hours of assistance.
 - An estimated 6,000+ hours of research, analysis and strategic planning services were performed for 58 Iowa companies assisted through the JPEC faculty/student team consulting courses.
 - MBA students completed six technology commercialization feasibility studies for nascent technologies being developed by UI faculty.
- **Six-Week Start-Up** – JPEC delivers this intense entrepreneurial training program for start-up and growing businesses. The initiative prepares aspiring entrepreneurs to launch new ventures and existing companies to grow their businesses. Two classes were held in Iowa City in FY 2013.
- **Seminars/Workshops/Lecture Series** – JPEC hosted 12 different opportunities last year for students, faculty and persons from the community. In FY 2013, over 2,700 attendees came to learn from experienced entrepreneurs on a variety of topics including: the Technology Export Roundtable, various tax workshops, Entrepreneurial Boot Camps and lecture series.
- **Wellmark Venture Capital Fund** – JPEC is the regional administrator of the \$5M Wellmark Venture Capital Fund that supports the creation and growth of new businesses throughout the state. JPEC screens applicants, performs due diligence, evaluates business concepts, and assists applicants with their business plans. JPEC partners with area angel investors, equity fund managers, lenders, the Iowa Economic Development Authority, and the Small Business Administration to help business owners secure additional venture funding.
- **Elevator Pitch Competitions** – Two Elevator Pitch Competitions were held with \$44,000 in cash prizes awarded. One contest was open to any current UI faculty, staff, or graduate student; 38 teams participated in the

competition and 14 winners received \$27,000 in funds. A separate competition was held for UI students in which \$17,000 was awarded to 9 undergraduate student teams; 40 undergraduate teams competed.

- **UI Business Model Competition** – JPEC and UIRF hosted the Spring 2013 Business Model Competition. This competition was open to all UI students, faculty and staff, as well as startup companies with a principal address at UI-affiliated incubators. Over 35 teams competed for \$65,000 in total cash prizes. The top student team received an additional \$5,000 and the opportunity to participate in the International Business Model Competition held at Harvard University.
- **Iowa Medical Innovation Group** – This unique student led program focuses on identification of solutions to clinical problems through collaborations between the Colleges of Medicine, Engineering, Business and Law. Students work on creating medical devices and/or Health IT solutions with the assistance of staff from JPEC and UIRF; to date, over 40 interesting technologies have been identified and reviewed and two are currently moving forward in advanced phases of development in anticipation of forming startup companies.

UI Small Business Development Center (SBDC)

- In FY 2013, the UI SBDC, which provides small business counseling services and training in Cedar, Johnson, Iowa, Poweshiek and Washington counties, served 269 entrepreneurs and small businesses, resulting in 21 new business starts.
- SBDC clients raised over \$5.5 million in external financing and created an estimated 111 jobs.
- The SBDC also sponsored 12 entrepreneurial training workshops and provided over 800 hours of one-on-one counseling.

University of Iowa Research Foundation (UIRF)

The UIRF aspires to maximize public benefit through commercial use of UI technologies, excellence in commercialization and long term sustainability. In pursuit of this vision, UIRF's primary functions are:

- Licensing - finding suitable partners for commercializing UI technologies and inventions
- The Ventures@UI Program - identifying and developing new high growth UI technology spinout companies suitable for venture capital financing. The Ventures program includes:
 1. An active discovery program to seek out and identify entrepreneurial faculty and staff, and new discoveries
 2. A pro-active process to develop new ventures based on UI technologies
 3. Education of inventors/founders, one-on-one, through volunteer business mentors
 4. Support from UIRF staff and student teams to evaluate market potential, and develop Go-to-Market plans, business plans, and investor presentations
 5. Manage a GAP Fund to prepare high potential IP for licensing and spinout
 6. Assist new ventures in raising external public and private funding
- Intellectual property services which include protecting UI inventions through patents and copyrights, advising on intellectual property terms for Clinical Trials and Sponsored Research and executing outgoing material transfers
- UIRF's economic development emphasis is heavily focused on startup formation. Working directly with UI faculty, entrepreneurs, and investors in selecting, evaluating and developing new companies, these activities include: IP analysis for viability of proposed company products and IP protection strategies and execution; UIRF fronts the cost of IP protection
- Due diligence on the viability of UI spinout companies
- Business model development for UI spinout companies
- Provide mentors for high new priority UI companies
- Provide gap funding for highest priority projects
- Licensing to UI spinout companies

- Extensive mentoring and education of faculty in new company formation

UIRF, in collaboration with the ICE and outside experts, worked to vet new projects, and provide proof of concept funds for projects that could lead to new company formation. A summary of projects evaluated in FY 2013 is listed in the first table below. A Historical View of GIVF Commercialization Funding that Stimulated Start Up Activity is also provided in Appendix A

2013 Commercialization & Business Development Funding Awards

Title	PI(s)	Venture/License	GAP Funding \$(K)	Additional Funding \$(K)	Type of IP
Prototype System Development for Interstitial Rotating Shield Brachytherapy of Prostate Cancer	Flynn, Ryan	pxAlpha	\$75		Medical Device
Commercialization of a Nanoparticle Respiratory Dose Device	Peters, Thomas	Licensed	\$72		Environmental Engineering
Separation of a mixture of fatty acids into individual fatty acids using a nanofiltration membrane to increase the value of soybean oils	Bowden, Ned	Ventzuren	\$50		Chemistry
Rapid and Sensitive Detection of Coliform E. coli in the field	McNamara, James	License ready 1/2014.	\$100		Public Health Testing
Operationalizing the FxRedux Articular Fracture Reduction Planning Service	Anderson, Don	FxRedux Solutions	\$75	\$202	Software
Biomedical Applications of Multimodal Nanoparticles	Assouline, Jose	NanoMedTrix	\$75	\$175	Diagnostic Drug
Commercialization of Electromechanical Modeling and Simulation System	Marler, Tim & Ozobolat, Ibrahim	Virtual System Engineering	\$74		Software
Making Atrial Fibrillation Ablation Safer, Faster, Easier, and Less Expensive: The Ring of Fire Rapid Ablation System & Prospective Trial.	Mickelsen, Steven	Iowa Approach	\$75	\$200	Medical Device
Iowa Clubfoot Brace Prototype	Morcuende, Jose & Grosland, Nicole	Clubfoot Solutions	\$74		Medical Device
Percutaneously-Delivered Cellulose Based Aortic Heart Valve Prosthesis	Raghavan, Madhavan L		\$89		Medical Device
Utilizing Immunoplexing Technology to Develop an Intranasal Universal Flu Vaccine	Vanden Bush, Tony & Gail Bishop	Memcine	\$100	\$771	Therapeutic vaccine
Electro-stimulation Garment	Wahls, Terry	xCellerator	\$70		Medical Device

Totals **\$929** **\$1348**
 Enabled SBIR Applications **\$500**

DIRECT ECONOMIC DEVELOPMENT ASSISTANCE TO IOWA COMMUNITIES

John Pappajohn Entrepreneurial Center (JPEC)

- **Online Education** – Students who cannot come to Iowa City may still earn a BBA or Certificate in Entrepreneurial Management online through the UI's Division of Continuing Education. The certificate is also accessible through JPEC's partnership with several Iowa community colleges.
- **Business Consulting Services** – Through the Entrepreneurial Management Institute, JPEC offers business consulting services to entrepreneurial and startup companies around the state. In FY 2013, 58 projects were completed for Iowa-based companies and organizations.

Corridor Business Alliance

The Corridor Business Alliance was created in December 2009 and is composed of leaders from the Cedar Rapids Metro Economic Alliance, the Entrepreneurial Development Center, the Iowa City Area Chamber of Commerce, the Iowa City Area Development Group, Kirkwood Community College, MidAmerican Energy, Kirkwood's Small Business Development Center, the *University of Iowa's Small Business Development Center, the Research Foundation and the John Pappajohn Entrepreneurial Center*. More information on this regional approach is available at <http://corridor2020.com/2009/11/corridor-business-alliance/>. The overarching goal is to identify and leverage the region's unique educational, business development and industrial assets to enhance recruitment of new companies, development of innovative startup companies and retention of existing industry. The three ICE units highlighted above have been central in the maturation of this regional philosophy and economic development success.

ECONOMIC DEVELOPMENT SERVICES PROVIDED BY THE RESEARCH PARKS, INCUBATORS SIMILAR SERVICE/ UNITS

The University of Iowa Research Park, BioVentures Center and Technology Innovation Center

Corporate tenants of the Park benefit from sustained relationships with UI in the form of access to specialized research facilities, library access, faculty consultation, research collaboration and access to students as interns and employees. UI resources also provide smaller companies with assistance in business planning, identification of professional service providers, introductions to local and state government agencies and the regional business community, help in identification of potential sources of investment and other funding and communications. For a list of companies and developers associated with the Research Park, BioVentures Center and Technology Innovation Center see Appendix B.

University of Iowa Core Facilities

In addition to campus-based core university facilities, four specialized UI laboratories reside within the Research Park. These facilities provide technical support services critical to the growth of startup companies as well as UI and existing industry partners. These units provide Iowa with unique capabilities that IEDA and local economic development entities have utilized to recruit outside companies to the Research Park, the region and the state. These facilities include:

University of Iowa Pharmaceuticals

The University of Iowa Pharmaceuticals is a division of the University of Iowa College of Pharmacy that offers contract analytical, development, and GMP manufacturing services to the pharmaceutical and biotechnology industry. CADD, the analytical segment of UIP, is a U.S. Food and Drug Administration (FDA) registered and current Good Manufacturing Practices (cGMP) compliant laboratory that works closely with the manufacturing groups at University of Iowa Pharmaceuticals, housed on the central University campus. The focus of CADD as part of UI Pharmaceuticals is the development of analytical methods and testing to support the manufacture and control of clinical supplies of new drugs entering initial clinical trials. They are particularly attractive to smaller pharmaceutical/biotechnology companies that have new drugs moving into the clinic but have not developed

their own analytical or manufacturing capabilities.

CADD as a part of UI Pharmaceuticals has an extensive recurrent client base of mainly smaller biotechnology and pharmaceutical companies and a growing pool of U.S. and foreign pharmaceutical firms. CADD is particularly well positioned to work directly with discoveries from Iowa university research laboratories, thereby providing an opportunity to hasten technology transfer and shorten the time to market. The presence of these FDA registered facilities along with the Center for Biocatalysis and Bioprocessing makes UI unique among U.S. universities to facilitate the development of new therapeutics from pharmaceutical and biotechnology-based companies as well as serving to enhance the translational science research occurring within the University of Iowa.

Center for Biocatalysis and Bioprocessing (CBB)

The CBB is a microbial pilot plant facility and education center reporting to the Vice President for Research and Economic Development. The center links university scientists from six different colleges who focus on biocatalysis and bioprocessing. The center also performs scale-up of products ranging from ethanol to proteins, process research and development. CBB serves industries from Iowa, U.S. and around the world for fermentation and bioprocessing of food products, biofuels, bio-pharmaceuticals and other products of biotechnology. The center collaborates with start-up biotechnology companies from Iowa for production of small molecules to complex proteins, such as alcohols, vaccines, antibiotics, anticancer drugs, polymers, biochemicals, enzymes, pharmaceutical intermediates and derivatives of bioactive compounds. In the Research Development and Process Laboratory, they conduct extensive process research including first level production from the bench-scale to 1000 liter fermentation. For example, CBB is now developing Simulated Moving Bed Chromatography for protein and small molecule separations. The center also has a current Good Manufacturing Practices (cGMP) production facility for biotherapeutics (products produced under cGMP conditions can be used in Phase I human clinical trials) at a scale of up to 300 liters.

The CBB is central to the University's efforts to attract Biotechnology R&D and industrial fermentation companies to Iowa. CBB has worked with ICE, IEDA and other Iowa economic development agencies to recruit companies to Iowa. CBB is the leading bioprocessing facility located in a U.S. university setting and the only biopharmaceutical production facility in the State of Iowa with a state-of-the-art fermentation and bioprocessing laboratory to produce biotherapeutics for Phase I human trials. This positions the UI on the cutting edge of biotherapeutics production.

National Advanced Driving Simulator (NADS)

The National Advanced Driving Simulator (NADS) is a center for driving simulation excellence located at the University of Iowa's Research Park. This center has the mission of improving driving safety for everyone by researching the connection between humans and motor vehicles. Development and research conducted at NADS is sponsored by government, military, and industry partners, saves lives and improves quality of life for motorists, and advances the cutting edge in driving simulation. This facility is home to the one of the world's most advanced research driving simulators, the NADS-1. In addition, NADS has developed an in-house portable driving simulator, the MiniSim™, which is currently being marketed to research institutions around the country. Recent research at NADS has focused on detection of impaired drivers, distracted driving, drowsy driving, advanced vehicle crash warning systems, and future vehicle communication systems. In FY 2013, UIRF executed a license with Cognitive Research Corporation for a customized mini-sim based driving simulator developed at NADS which is used to evaluate the effects of age, trauma, neurologic disease, alcohol and fatigue on driving performance.

State Hygienic Laboratory

The State Hygienic Laboratory (SHL) was established in Iowa law in 1904 to provide laboratory services to both

governmental and private sector individuals and organizations concerned with the health and environment of the state. Today SHL conducts more than 500,000 tests for clients in all of Iowa's 99 counties through disease detection, environmental monitoring, and newborn and maternal screening. Clinical laboratory tests provided include virology, serology, microbiology, molecular biology, blood lead screening and biological and chemical terrorism response. State-of-the-art chemical, biologic and enzymatic analytical methods are used in this testing, which is performed at 3 SHL facilities, the UI Research Park in Coralville, on the DMACC campus in Ankeny and at the Board of Regents Lakeside Lab in Milford, Iowa. The SHL makes these services available to both for profit and not for profit organizations as well as individuals on a fee for service basis. The State Hygienic Laboratory also offers unique training facilities for companies and personnel associated with the clinical laboratory specialties, as an experiential education site for community and four-year college students studying laboratory chemistry. A new, state of the art training facility in Coralville is due to be completed in the Spring of 2014 which will allow for additional hands on and distance-learning for public health professionals across Iowa.

COLLABORATION FOR ECONOMIC DEVELOPMENT WITH IOWA ENTITIES

Kirkwood Regional Center at the University of Iowa - Providing solutions to the workforce needs in Iowa

Construction of the Science, Technology Engineering and Mathematics center, which is a partnership between the University of Iowa and Kirkwood Community College, began in August, 2013 with completion planned for Summer, 2015. The facility will also house the Professional Development staff of the Grant Wood Area Education Agency and provide STEM related coursework and/or Career Academy experiences to high school students from 6 regional school districts who elect to spend a part of their day at the center. College of Education faculty will partner with the schools and Grant Wood AEA to also provide K-12 Professional Development for teachers and the advanced TILE-like classroom design within the UI space of the center will serve to assess new models of teaching and learning as well as serve to train high school and community college teachers in active learning delivery strategies. A variety of private park technology companies and university centers and laboratories including the State Hygienic Laboratory, the National Advanced Driving Simulator, UIHC, the Center for Computer Aided Design and the Flood Center will serve as experiential sites to augment career academy experiences and serve to make a strong connection between STEM reform and workforce development for a higher technology economy envisioned for Iowa. Additionally UI health science colleges will engage in adding value to Kirkwood's highly successful Health Science Career Academies across all health disciplines. This unique center will also serve as a programmatic home for the Southeast Regional STEM hub created under the Governor's STEM taskforce.

Shovel Ready Site Initiative/Certification - Enabling companies to grow in Iowa

The Shovel Ready Site Program initiative was spearheaded by the Iowa City Area Development Group. The program is designed to give the UI Research Park a competitive edge in the site selection marketplace. The goal of the program is to have selected sites shovel ready, connect to utilities and other physical infrastructure, clear swift procedures for permitting and incentive programs that can be quickly applied to a project. The UI Research Park, along with two other area sites, was chosen as a pilot project site. Gaining shovel ready certification provides a very positive boost to recruitment of technology based companies to UI Research Park and multiple additional sites are nearing shovel ready classification as the interest in locating within the park continues to grow. In FY 2012 we began a roads and sewer project in collaboration with the City of Coralville; upon completion of this project, projected for the fall of 2015, all 15 remaining lots will become Shovel Ready.

The Iowa Initiative for Sustainable Communities (IISC)

The Iowa Initiative for Sustainable Communities (IISC) is a campus-wide effort at the University of Iowa to enhance the capacity of Iowa's communities to address the economic, environmental, and social/cultural issues faced today and to build a more sustainable future. The IISC does this by partnering students and faculty at the University of Iowa with Iowa's urban and rural communities to identify, design and implement sustainability-focused projects. In doing so, the

IISC provides significant outreach to Iowa's communities while transforming teaching and learning at the University of Iowa. Since 2009, the IISC has put 118 University of Iowa graduate students to work on projects such as coordinating with city managers and city councils on redeveloping comprehensive city plans, community event planning, educational programs, planning for adaptive reuse of historic downtown buildings, market analysis and recommendations for site planning. The communities who have benefited from these projects have been small and medium-sized communities in Iowa, including Anamosa, Burlington, Charles City, Columbus Junction, Decorah, Oskaloosa, Wellman, and most recently, Dubuque.

The Dubuque program is a two-year long partnership with a goal of implementing a total of 10 projects, with the help of 70+ University of Iowa graduate students. These projects include:

- *Dubuque County Smarter Planning Indicators*
- *Increasing Mobility in Dubuque: Developing Alternative Mode-sharing Opportunities*
- *Housing for a Vibrant Dubuque*
- *Schools, Neighborhoods, and Student Outcomes*
- *Survey of Best Practices for Redevelopment of Dubuque's South Port and Creation of a Redevelopment Plan*
- *Indicator and Indicator Measurements for Dubuque's 11 Sustainability Principles*
 - An award winning project for its Contribution of Planning to a Contemporary Issue
- *Renewable Energy Asset Map and Return on Investment and Policy Analysis*
- *A Portrait of Poverty in Dubuque*
- *Local Foods and Local Institutions Guide, and Local Foods Action Plan*
- *Design of the Green and Healthy Homes Program*

The IISC has also partnered with the Blue Zones Project and the Healthiest State Initiative to improve health and wellness in communities across Iowa and to meet the challenge of becoming the healthiest state by 2016.

FY 2013 REGENTS INNOVATION FUNDS (RIF)

RIF Impact for the University of Iowa and the Iowa Centers for Enterprise (ICE)

In 2013, RIF provided UI critical support to build the infrastructure needed to better transform UI faculty discoveries into new businesses and/or licensing opportunities. Funds have been used in the following general categories:

- to stimulate commercialization and provide proof of concept funding for promising UI research
- create an infrastructure through personnel and facilities to support growing startup companies
- provide comprehensive entrepreneurial education and business support programs
- lead regional economic development strategy for the Cedar Rapids/Iowa City/Coralville corridor and work closely with existing industry in terms of science and business development
- funding to further develop UI faculty discoveries for commercialization, foster new company formation and support existing business expansion.

Successful Technology Transfer, Commercialization and Business Startups enabled by RIF Proof of Concept Support

Higher Learning Technologies

Higher Learning Technologies (HLT) specializes in customized test prep and educational software. This year HLT was a winner in the Business Model Competition and received three awards in the Silicon Prairie Awards, the most out of any company. They received the "New Startup of the Year", "Mobile App of the Year", and "Innovation of the Year" awards.

HLT has raised \$235,000 so far and the company is talking with several investors to raise \$565,000 and hopes to close the investment round by the end of October, at which time the company will have raised just over \$600,000 to date. They were also awarded \$100,000 from the State of Iowa's Demonstration Fund in July. Since the launch of two apps in May, they have generated \$112,000 in sales in just over three months. A nursing app has ranked in the top 10 grossing educational apps in Apple's iStore and the #2 grossing education app in the Google Play store. Both Apple and Google have over 100,000 educational apps available. By the end of the year Higher Learning Technologies plans to launch 10 additional apps.

HLT has recently hired Cramer Development's Josh Cramer as its Chief Technology Officer. HLT is also in discussions to add a Silicon Valley investor to the team. Together, these two individuals will bring entrepreneurial and investment experience to the company.

Memcine Pharmaceuticals

Professor Gail Bishop and Dr. Tony VandenBush received GIVF/RIF funding in FY11, FY12, and FY13 which led to the formation of **Memcine Pharmaceuticals**. The company is based in the BioVentures Center at the University of Iowa Research Park. Memcine has been able to use the funding to hire an experienced CEO, open their offices at BVC and to raise an additional \$650,000.

Memcine Pharmaceuticals Inc. is an early-stage biotech company focused on enhancing vaccine efficacy to improve human and animal health globally. Their current portfolio of potential infectious disease vaccine targets includes influenza, Hepatitis B, and Ebola. They have also conducted pre-clinical experiments in a mouse model of breast cancer, where their vaccine technology showed considerable promise as a therapeutic treatment. Their pipeline is based on Memcine's Immunoplex™ technology platform, which is designed to use the body's own naturally occurring targeting system to deliver vaccine components to immune cells and stimulate a robust response.

The platform technology, Immunoplex™, enables a universal approach to the development of immune complex vaccine production. Traditionally, the production of an immune complex vaccine required the identification, production, and regulatory testing of each antibody needed for each vaccine. Despite industry interest in their development, immune complex vaccines have yet to be commercially produced due to time and cost prohibitive hurdles of vaccine specific antibody production and testing. Immunoplex™ circumvents these hurdles by creating a system that uses a single antibody for all immune complex vaccines. This single antibody can be used to facilitate the formation of an immune complex from any vaccine antigen.

ASL Analytical, Inc.

Professors Mark Arnold and Gary Small in the UI Department of Chemistry were able to use proof of concept funds to translate and commercialize their research by creating **ASL Analytical, Inc.** in 2005. ASL is housed in the UIRP Bioventures Center, currently has eight full-time employees including a full-time CEO and recently hired a Director of Operations and Manufacturing. <http://www.asl-analytical.com/>

ASL Analytical, Inc. is developing real-time, on-line chemical monitors for bioreactors with products that target game-changing advances in the production of biopharmaceuticals. Many of these biologics are life-changing medications, but can be very expensive to develop and manufacture. ASL's chemical monitors enable the measurement and control of these complex processes essential to decrease development cost and drive more rapid time to market. ASL Analytical is housed in the BioVentures Center, their Pichia Bioprocess Monitor is currently in Beta Testing, and they are moving into a manufacturing phase and plan to use Iowa companies for supply chain materials.

**Regents Innovation Fund projects for
FY 2012-FY2013**

RIF Program Summary	Description of Program	FY13 – RIF Expenditures From FY12 and FY13 Match Funds Source	Progress through June 30, 2013 ROI DATA
<u>VP for Research</u>	<p>These funds have been instrumental in enabling UI to expand the economic development infrastructure. These funds supported critical economic development functions associated with University Research Park, BioVentures Center, Technology Innovation Center and IOWA Centers for Enterprise.</p>	<p>EXPENDITURES: \$464,886</p> <p>MATCH: UI BioVentures Center in-kind contribution; College of Engineering; College of Liberal Arts \$464,925</p>	<p>Staff support for UIRP, BVC and TIC and to add a concierge service staff member to assist faculty navigate IP and commercialization.</p> <p>Competition for BVC/TIC tenants to assist in further developing proof-of-concept.</p> <p>RIF funding, in collaboration with TIF funding from the City of Coralville was used to purchase laboratory equipment for the BioVentures Center shared lab space to be used by the BVC early stage tenants. These items include, incubators, -80 freezers, shakers, and etc. This high dollar equipment is crucial to the success of these companies.</p> <p>Funding was also used to assist companies in obtaining legal and accounting services. Educational sessions were held at the BVC to allow our tenants direct one-on-one access to these service providers to assist them in furthering their business concepts and assure they meet state and federal guidelines</p> <p>RIF funding was used to assist The Engineering Machine Shop at UI, in the purchase of a 3-D printer that would allow our BVC/TIC tenants access to creating 3-D models out of ABS plastics, for concept and further research and development of their business models.</p> <p>The University of Iowa is an important partner in the IC CoLab, a new coworking space directed by the Iowa City Area Development Group. Several UI student companies have transitioned from the BELL to the CoLab upon graduation. Additionally, UI has provided several student interns to CoLab companies to assist in business and growth planning activities.</p>

<p><u>John Pappajohn Entrepreneurial Center</u></p>	<p>To fund expenses associated with training, consultation and outreach for Iowa entrepreneurs. JPEC continues to expand outreach programs for Iowans: 1) Support the development, implementation, and expansion of entrepreneurship programs; 2) Enhance support for faculty and area technology and high potential startup and early stage companies through one-on-one consulting, education seminars and workshops, and student/faculty field study projects and 3) Continue support for elevator pitch and business concept competitions for UI-based new and emerging ventures.</p>	<p>EXPENDITURES: \$195,422</p> <p>MATCH: JPEC in-kind contribution \$195,422</p>	<p>Employed a Project Manager to work with UI faculty / staff / students in the areas of strategic business planning, market research, operations and financial assessment. Project manager also identified and managed projects for existing Iowa-based companies to work with UI student consulting teams.</p> <p>JPEC hosted 12 different opportunities last year for students, faculty and persons from the community. In FY13, 6,672 attendees came to learn from experienced entrepreneurs on a variety of topics including: Technology Export Roundtable, various tax workshops, and a six-week start-up training program.</p> <p>JPEC held various elevator pitch and business plan competitions for UI faculty, staff and students and tenants of the BVC and TIC. Over 320 entrepreneurs participated and 86 received a total of \$282,100 in seed funding.</p>
<p><u>University of Iowa Research Foundation (UIRF)</u></p>	<p>UIRF focused on two primary activities: 1) continue its contribution to the integrated model of new company formation and 2) educate faculty in key colleges and departments in identifying viable technologies that have potential to create intellectual property which can lead to new companies and/or licensing opportunities. Since university derived intellectual property is by nature very nascent in terms of its readiness for forming companies and attracting additional investment capital, RIF and GIVF have been critically important to assist in establishing proof of concept in several of our most exciting technologies in advance of forming companies. These funds also are very helpful in helping attract additional proof of concept funds from federal and private sources</p>	<p>EXPENDITURES: \$343,191</p> <p>MATCH: UIRF Seed Grants \$333,497</p>	<p>Funds were utilized to support existing projects that continue to demonstrate commercial merit. This support included specialized technology experts, external grant identification and application, intellectual property evaluation and strategy, external partnership development and assistance in securing investment and management for startups.</p> <p>RIF (prior GIVF) funding has been critical in creating a culture of commercialization and enabling the creation of highly innovative startups based on faculty research. These investments can be directly linked to 19 startups through the end of FY13. See Appendix A for Historical perspective of RIF/GIVF funding that Stimulated Start Up Activity</p>

EMERGING TRENDS IN UNIVERSITY ECONOMIC DEVELOPMENT AND TECHNOLOGY TRANSFER

Entrepreneurship continues to be a driving force in global economic growth and wealth creation. For individuals to be successful in today's competitive world they must have interdisciplinary skills that prepare them for the many opportunities and challenges they will face throughout their professional lives; entrepreneurship is one such critical skill set. Regardless of a student's major field of study, learning the entrepreneurial mindset serves as the basis for the University of Iowa's entrepreneurship program—preparing students to innovate, lead and succeed in their chosen field of study. Growing the Regents' entrepreneurship activities coincides with Governor Branstad's priority to build Iowa's economy through high-wage job creation and economic diversification. Primary areas of focus for FY 2014 are to expand undergraduate educational opportunities across campus and statewide in partnership with Iowa community colleges, to increase business support services to Iowa companies by expanding faculty/student experiential learning opportunities, to accelerate statewide new company formation through new entrepreneurial training coupled with technical support, and to provide new opportunities for collaboration and connectivity to Iowa entrepreneurs and investors.

Expanding STEM Education – The University of Iowa's John Pappajohn Entrepreneurial Center (UI JPEC) and Jacobson Institute for Youth Entrepreneurship seek to significantly increase access to entrepreneurship education at all levels and across academic disciplines within K-12 education. The initiative aims to leverage existing capabilities and services fostering creativity, critical thinking, problem solving, and preparing students for success in careers relating to business, entrepreneurship, and STEM. The Jacobson Institute has established a partnership with the University of Iowa's College of Education, Belin-Blank International Center for Gifted Education & Talent Development, and the Iowa HUBS for STEM education to develop new ways of teaching entrepreneurship as part of the Iowa Governor's STEM Initiative. Through this joint partnership, Iowa school districts will receive teacher professional development workshops, access to curriculum resources, and experiential learning through competitions offering students the opportunity to better understand entrepreneurship, business development and technology commercialization. A key component of the University's K-12 STEM Entrepreneurship initiative is to build greater awareness and understanding for the role that entrepreneurship and economic development play in STEM Education.

Access to Management Talent – Technology startups are also challenged to find seasoned management to help lead operations during the early stages of new enterprises. Some companies have had success in attracting experienced entrepreneurs back to Iowa to lead new ventures; others have benefited from temporary CEO's through local mentors or Entrepreneur-in-Residence programs. While these efforts have yielded positive results in the short term, in the long run it is critical for the state to accelerate efforts to develop management talent within Iowa in addition to encouraging former Iowans to return and assume the reigns of technology startups. It is also important to create an integrated network of startups, service providers, industry organizations and educational institutions to better connect young entrepreneurs with experienced entrepreneurs, mentors and service providers. In FY 2014, UI will continue efforts to work with state partners to build a network of management and technical talent to support new and existing technology business across the state.

Availability of Early Stage Capital – In order to build an innovation-based entrepreneurial ecosystem, it is critical that pre-startup and early-stage ventures have access to capital for proof of concept and initial prototyping of new products and software applications. State of Iowa funding through the Regents Innovation Fund and previous Grow Iowa Values Funds have been crucial to the creation of many of the UI-based technology start-up companies. These funds have been used to advance technology development and have proven very important to sustain operations during future technology development and fundraising efforts. Aside from this type of state funding (along with other funding through the Iowa Economic Development Authority), federal support through SBIR/STTR programs also serves as a vital source of funding for technology-based startups. Without these early stage sources of capital, many of the UI nascent technologies and very early stage companies would struggle to advance through the "Valley of Death" that faces technology firms. The state's efforts to provide both early stage funding, as well as efforts to increase the availability of venture capital is crucial to growing an advanced technology economy. In FY 2014, UI will continue to maximize the effectiveness of UI gap funding as well as improve support for accessing state, federal and private capital.

Appendix A

Summary of Historical GIVE/RIF Commercialization Funding Stimulating Startup Activity

	Total Funded Projects	Potential Startup Identified	Startup Formed	Year Company Started	Company Name	Startup Is On-Going	Remains Under Consideration for Startup	GIVE/ RIF stimulated What Result	UIRF Option or License
2013									
Anderson	37	√	√	2011	FxRedux Solutions	Yes	√	Product Beta	Licensed
Assouline	36	√	√	2012	NanoMedTrix	Yes	√	Startup Formation	Optioned
Bowden	35	√	√	2013	Venturen	Yes	√	Startup Formation	Under negotiation
Flynn	34	√	√	2013	pxAlpha	Yes	√	Startup Formation	
Marler/ Ozobolat	33	√	√	2013	Virtual Systems Engr.	Yes	√	Startup Formation	Under negotiation
Martins/Mickelsen	32	√	√	2011	Iowa Approach	Yes	√		Licensed
McNamara	31							Continued product testing	
Morcuende/ Grosland	30	√	√	2012	Clubfoot Solutions	Yes	√	Startup Formation	Under negotiation
Peters	29								Under negotiation
Raghavan	28							Continued product testing	
Vanden Bush/Bishop	27	√	√	2010	Memcine Pharmaceuticals	Yes	√		Optioned
Wahls	26	√	√	2011	Xcellerator	Yes	√		Under negotiation

2012									
Adams/Welsh	25	√	√	2012	Emmyon	Yes	√	Startup Formation	Under negotiation
Davidson	24	√		2013	AAVenue	Yes	√	Startup Formation	Under negotiation
Das	23	√		2012			√	Product discontinued	
Flynn	22	√	√	2013	pxAlpha		√	Startup Formation	
Howard	21	√	√	2012	Direct Spinal Therapeutics	Yes	√	Startup Formation	Licensed
Martins/Mickelsen	20	√	√	2011	Iowa Approach	Yes	√	Startup Formation	Optioned

Salem	19	√	√	2009	PolyImmunex	No	√	Startup Formation	
Wahls	18	√	√	2011	Xcellerator	Yes	√	Startup Formation	Under negotiation
Vanden Bush/Bishop	17	√	√	2010	Memcine	Yes	√	Startup Formation	Optioned

2011

Anderson	16	√	√	2011	FxRedux Solutions	Yes	√	Startup Formation	Licensed
Baker	15	√	√	2010	Tansna	Yes	√	Startup Formation	Optioned
Doddapaneni*	14							Product discontinued	
Comeron, Manak	13							Product discontinued	
Vanden Bush/Bishop	12	√	√	2010	Memcine	Yes	√	Startup Formation	Optioned
Howard	11	√	√	2012	Direct Spinal Therapeutics	Yes	√	Startup Formation	Licensed

2010

Schultz	10	√	√	2009	ViewPoint Mole. Diag.	Yes	√	Startup Formation	Optioned
Adams	9	√	√	2012	Emmyon	Yes	√	Startup Formation	Under negotiation
McCray	8							Research ongoing	
Lim	7	√	√	2007	JL Meditech	No	Not viable	Lack of viability	Lack of viability
Leddy	6	√	√	2009	Voltesla	No	Not viable	Startup Formation	Optioned then terminated

2007

Abramoff	5	√	√	2010	IDX	Yes	√	Startup Formation	Licensed
Arnold	4	√	√	2005	ASL Analytical	Yes	√	Industry Partner	Company formed, no license
Hohl	3	√	√	2005	Terpenoid Therapeutic	Yes	√	Startup Formation	Licensed
Welsh	2	√	√	2007	Exemplar Genetics	Yes	√	Startup Formation	Licensed
Wolgennaunt	1	√	√	2006	OMR Sensors	No	Not viable	Lack of viability	Lack of viability

TOTAL 25

*Projects funded more than one year.

Appendix B

Name of Business or Other Entity Served	City and County where this Project is in Place		University Unit that interacted with business or other entity
	City	County	
BUSINESS INCUBATOR TENANTS			
AMBI Group	Coralville	Johnson	Technology Innovation Center
ASL Analytical	Coralville	Johnson	BioVentures Center
Bio::Neos, Inc.	Coralville	Johnson	BioVentures Center
Brain Image Analysis	Coralville	Johnson	Technology Innovation Center
Cellular Engineering Tech	Coralville	Johnson	BioVentures Center
Componica	Coralville	Johnson	Technology Innovation Center
Corvida Medical	Coralville	Johnson	Technology Innovation Center
CQM Systems	Coralville	Johnson	BioVentures Center
Digital Artefacts, LLC	Coralville	Johnson	Technology Innovation Center
Exemplar	Coralville	Johnson	BioVentures Center
Higher Learning Technologies	Coralville	Johnson	Technology Innovation Center
Hennepin Life Sciences	Coralville	Johnson	BioVentures Center
Innomatix, LLC	Coralville	Johnson	Technology Innovation Center
KemPharm, Inc.	Coralville	Johnson	BioVentures Center
Memcine	Coralville	Johnson	BioVentures Center
NanoMedTrix	Coralville	Johnson	BioVentures Center
Ramaanchar Technologies, Inc.	Coralville	Johnson	Technology Innovation Center
Redox BioCat	Coralville	Johnson	BioVentures Center
Santos Human	Coralville	Johnson	Technology Innovation Center
Tansna Therapeutics	Coralville	Johnson	BioVentures Center
Terpenoid Therapeutics, Inc.	Coralville	Johnson	BioVentures Center
The Thomas Group	Coralville	Johnson	Technology Innovation Center

Vertex Pharmaceuticals	Coralville	Johnson	BioVentures Center
VIDA Diagnostics	Coralville	Johnson	BioVentures Center
RESEARCH PARK TENANTS			
LMS North America	Coralville	Johnson	UI Research Park/TIC Graduate
Stanley Environmental, Inc.	Coralville	Johnson	UI Research Park
General Dynamics Information Technology	Coralville	Johnson	UI Research Park
Integrated DNA Technologies, Inc.	Coralville	Johnson	UI Research Park/TIC Graduate
Noel-Levitz	Coralville	Johnson	UI Research Park
Leepfrog Technologies	Coralville	Johnson	UI Research Park
Cargill International	Coralville/Cedar Rapids	Johnson	UI Research Park
Brighton Group	Coralville/Des Moines	Johnson/Polk	UI Research Park
MediRevv	Coralville	Johnson	UI Research Park
OTHER BUSINESS INCUBATOR GRADUATES ACTIVE IN IOWA			
Ecolotree, Inc.	Lowden, North Liberty	Cedar, Johnson	Technology Innovation Center
Corcoran Communications, Inc.	Iowa City	Johnson	Technology Innovation Center
Innovative Software Engineering	Coralville	Johnson	UI Research Park/TIC Graduate
Bio-Research Products, Inc.	North Liberty	Johnson	Technology Innovation Center
aJile Systems, Inc.	Cedar Rapids	Linn	Technology Innovation Center
CompuTerra, Inc.	Cedar Rapids	Linn	Technology Innovation Center
HomeSafe	Coralville	Johnson	Technology Innovation Center
The Patient Education Institute	Coralville/Iowa City	Johnson	UI Research Park/TIC
Police Law Institute	Coralville/North Liberty	Johnson	UI Research Park/TIC
Corridor Business Journal	Coralville	Johnson	Technology Innovation Center
Applied Fullerene	Davenport	Scott	Technology Innovation Center
Enlev Marketing	North Liberty	Johnson	Technology Innovation Center
Sebesta Blomberg, Inc.	Cedar Rapids	Linn	Technology Innovation Center
Vive Media	Washington	Washington	Technology Innovation Center
DEVELOPERS			
Myriad Developers, Inc.	Cedar Rapids	Linn	UI Research Park
TMD, L.L.C.	Solon	Johnson	UI Research Park
Midwest Development & Invest.Corp.	Fairfield	Jefferson	UI Research Park
Liberty Growth	Iowa City	Johnson	UI Research Park

Hunter Companies	Cedar Rapids	Linn	UI Research Park
S & S Developers	Iowa City	Johnson	UI Research Park
EMRICO	Iowa City	Johnson	UI Research Park
Ryan Companies, US	Cedar Rapids	Linn	UI Research Park
LMC, LLC	North Liberty	Johnson	UI Research Park
Oakdale 8, LLC	Iowa City	Johnson	UI Research Park

**IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY**

**FY13 Board of Regents, State of Iowa,
Annual Economic Development and
Technology Transfer Report**

**PRESENTED BY
DAVID OLIVER,
INTERIM VICE PRESIDENT FOR RESEARCH
AND ECONOMIC DEVELOPMENT,
AND
MICHAEL CRUM,
SENIOR POLICY ADVISER ON ECONOMIC DEVELOPMENT,
OFFICE OF THE PRESIDENT**

October 23-24, 2013

FY13 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 promotes economic growth in Iowa by moving research ideas to the market, supporting creation of new companies, offering assistance to existing companies, attracting new companies and entrepreneurs to Iowa, contributing to workforce and entrepreneurial development, and creating intellectual property.

Two recent examples of moving research ideas to the market come from Iowa State's NSF Center for Biorenewable Chemicals. Two startup companies based on research by the Center have won grants supported by the National Science Foundation to develop their technologies for potential commercialization. Center leaders say the grants will allow the companies to "de-risk" their technologies for business and industry.

- OmegaChea Biorenewables LLC of Ames won a one-year, \$225,000 Small Business Technology Transfer Phase 1 grant. The grant will help the company develop a new manufacturing platform that will use microorganisms modified to use unique enzymes for the production of biorenewable chemicals. The chemicals can be used to produce detergents, lubricants, and polymers.
- Glucan Biorenewables LLC of St. Louis won a six-month, \$150,000 Small Business Innovation Research Phase I grant. The grant will allow the company to prove that its bio-based reaction system works with actual biomass to produce chemicals that can be used to make packaging, insulation, and other products.

Faculty and staff researchers, whether in departments, centers, or institutes, often work with experts in several key units to help fulfill ISU's economic development efforts.

The ISU Research Park is a resource provider and business incubator that encourages commercialization of university research. The Innovations Development Facility (IDF), part of the Plant Sciences Institute, incubates new plant biotechnology companies. The Institute for Physical Research and Technology (IPRT) Company Assistance Program, Small Business Development Center (SBDC), and the ISU Pappajohn Center for Entrepreneurship interact with companies across Iowa to solve technical, production, and management problems. The improved production resulting from these interactions allow businesses to retain and often expand their workforce. The ISU Research Foundation (ISURF) and Office of Intellectual Property and Technology Transfer (OIPTT) manage, market, and license the intellectual property of ISU researchers and work with them to patent inventions and market the innovations to commercial partners. Finally, ISU Extension and Outreach's Center for Industrial Research and Service (CIRAS) works with companies to enhance their performance, and Community and

Economic Development (CED) programs offer a variety of technical assistance, consulting, and educational programs to improve the quality of life in Iowa communities.

The following are some examples of the direct impact that these ISU units have had this past year.

- The ISU Research Park continues to be successful in initiating as well as nurturing numerous new businesses. Three new companies and affiliates joined the Park in FY13, bringing the historical total to 221 companies, research centers, and affiliates. Currently, there are 53 companies and research centers and 14 affiliates located in the Park, employing 1,240 and 139 people, respectively.
- There are currently three 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. 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 benefit from the services of IPRT Company Assistance. IPRT Company Assistance is composed of three segments that each aid Iowa's businesses in unique ways: materials, nondestructive evaluation, and research cost-sharing. The Materials and Nondestructive Evaluation groups provide limited duration (typically up to 40-60 hours) no-cost technical assistance. The Research Cost-Sharing Program helps Iowa smaller companies utilize ISU's faculty and facilities for research by providing a 1:1 cash-match on research projects. By working with these three groups, Iowa companies report positive impacts affecting their sales, investments, and operating costs throughout the languishing recovery from the economic recession of 2009-2013. Based on survey data, IPRT Company Assistance had a positive cumulative impact exceeding \$100 million over the five years between FY2008-2012.

During the period FY2006-2013, IPRT had more than 700 interactions with Iowa companies covering 71 of Iowa's 99 counties. In FY2012 alone, the companies that responded to the impact survey reported adding an estimated 20 new employees as a result of their interactions with IPRT Company Assistance. Additionally, the Company Assistance program has helped with the development of 30 startup companies in Iowa since 2002. There is potential to grow the economic impact of IPRT's Company Assistance activities and utilize a wider range of ISU's capabilities to increase its ability to help Iowa's businesses.

- IPRT Company Assistance's Materials Group worked with Insta-Pro International in Urbandale to test its replacement extruder parts. Insta-Pro manufactures extruders, presses, and other processing equipment for the feed and food industry. The extruders operate under demanding processing conditions involving high pressures and temperatures. Even high-quality components will exhibit wear over time and require periodic replacement. Insta-Pro came to IPRT seeking assistance in determining how well its replacement extruder parts stack up against the after-market

competitors. Insta-Pro replacement parts performed well when compared to the competition. Insta-Pro used the results from the performance comparisons to develop new marketing materials showing its product's superiority. Because of this, IPRT Company Assistance's materials group was able to play a key role in helping Insta-Pro grow its Iowa-based manufacturing. The longer term impact is still developing, but indications are this project had a significant positive impact on the company's growth.

- Quatro Composites in Orange City turned to IPRT Company Assistance's Nondestructive Evaluation Group for inspection of its parts. Quatro Composites manufactures carbon fiber for a variety of industries. To become an approved manufacturer of certain aerospace components, the company needed to ensure quality and establish the capability to perform nondestructive inspection on them. IPRT's Nondestructive Evaluation Group worked with the company and identified a suitable inspection protocol that met the industry standards. This interaction allowed the company to develop the knowledge needed to fully implement the inspection potential provided by test systems, enabling them to successfully enter a demanding market. The result was a significant increase in sales for the company, as well as the creation of several jobs in a new inspection department that was created at Quatro.
 - IPRT Company Assistance's Research Cost-Sharing Program helped Cedar Rapids' Diamond V Mills start a research project at ISU for its animal nutrition products. Diamond V Mills' products are designed to optimize digestive function and nutrition key to animal and aqua health, productivity, efficiency, and profitability. IPRT helped set up and fund the research project with the company and ISU's Biomedical Sciences Department to investigate the immunological benefits of Diamond V Mills' proprietary product in dairy calves. Researchers will evaluate the anti-colonization properties of the product on Salmonella in dairy calves. While the project is still under way, the research may confirm that Diamond V Mills' proprietary product reduces Salmonella colonization during calves' most vulnerable stage in life. If confirmed, this product will significantly enhance food safety and animal health. In turn, this will lead to reduced animal loss for dairy farmers and will open up new markets for Diamond V Mills.
- During federal FY12, which is the most recent full year for the program, the SBDC provided business assistance to individuals and companies totaling 2,646 clients and 11,018 counseling hours. The SBDC also conducted 221 training workshops in which 3,483 individuals participated.

The ISU SBDC, along with the ISU Pappajohn Center for Entrepreneurship, provided 546 hours of counseling assistance to startup and existing companies; served 117 clients with one-on-one counseling; educated 433 attendees through workshops; provided advice to several hundred clients via telephone and e-mail; and advised 32 technology companies in the areas of licensing, equity-based financing, market entry, and numerous operational areas.

- Technologies originating at ISU and licensed to Iowa companies have resulted in over \$45 million in sales by those companies in calendar year 2012. Total sales of ISURF-licensed technologies were \$647 million, not including germplasm.
- OIPTT began supporting SBIR (Small Business Innovation Research) and STTR (Small Business Technology Transfer) outreach efforts in FY06. Preliminary award reports indicate that SBIR and STTR funding will be decreased compared to FY12. This is largely due to the impact of sequestration, which has resulted in agencies reducing the number of awards they make or delaying contract negotiations and release of funding. Outreach and training activities in addition to providing proposal preparation support has continued, and 21 companies received assistance in preparing 25 proposals through the Office of Intellectual Property and Technology Transfer in FY13. To date, awards worth \$4.8 million have been reported for FY13, with 15 different Iowa companies winning 17 new or continuing SBIR and STTR awards. The Department of Defense, National Institutes of Health (NIH), and the National Science Foundation are funding this year's Iowa SBIR/STTR award winners. The funded projects reflect Iowa's strengths in biotechnology, information systems, manufacturing, and agriculture. Nearly \$3.8 million in support was awarded from NIH for projects that range from the development of new medical devices and medical imaging technologies to new animal models for human diseases. In addition, nearly \$1 million has been received from the National Science Foundation for projects that include the development of educational games and biomanufacturing applications.

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 (primarily new to young startups) to create economic benefit for the companies. Surveys completed by companies on projects funded from June 2006–June 2012 (surveyed one year after project completion) documented more than 118 jobs created or retained and an annual sales impact of more than \$16.1 million due to the research projects conducted in partnership between ISU and the companies.

- ISU Extension and Outreach's CIRAS helps Iowa's economy prosper and grow by enhancing the performance of industry through applied research, education, and technical assistance. CIRAS has been working with companies in communities across Iowa for more than 50 years and has a vision for Iowa of healthy communities through business prosperity. Cumulatively, over the past five years, CIRAS and its partners have reported impact from companies totaling more than \$1.8 billion (\$1.5 billion in sales gained or retained, \$227 million in new investments, \$100 million in costs saved or avoided) with 25,675 jobs added or retained as a result of the assistance they received.
 - Governor Terry E. Branstad officially recognized the contributions of CIRAS as the industrial extension arm of the university helping the College of Engineering and Iowa State University Extension and Outreach carry out the land-grant mission through a 50th anniversary proclamation from the State of Iowa Executive Department. The proclamation acknowledged that CIRAS was established in 1963 after receiving authorization and appropriated funds from the General Assembly, along with unanimous Board of Regents approval.

- Last year, 1,613 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 \$389 million in total impact — \$333 million in sales gained or retained, \$35 million in new investments, and \$21 million in costs saved or avoided. Company executives stated that 5,638 jobs were added or retained as a result of the assistance they received from CIRAS and its partners.
- Power Engineering and Manufacturing (PEM) LTD in Waterloo, Iowa, completed a Theory of Constraints (TOC) project with CIRAS that focused on improving throughput, communication, and profitability. PEM reported more than \$9 million in impact due to this project — \$6.1 million in sales gained or retained and \$3.4 million in costs saved or avoided.
- Impact of more than \$937,000, retention of 30 jobs, and the creation of one additional job was the reported result of CIRAS technical assistance provided to ADA Enterprises, Inc., a manufacturer of plastic-coated steel outdoor furniture and agricultural supplies in Northwood, IA. The assistance helped the company design and implement a process for generating ongoing business improvement and greater profitability.
- 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 1,200 companies. Companies reported more than \$153 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 3,070 jobs.
- More than 240 participants were trained in FY13 by attending conferences and workshops offered through a partnership of CIRAS and the College of Engineering (Civil, Construction, and Environmental Engineering, and the Electric Power Research Center) and the Iowa Energy Partnership for Industrial Energy Efficiency, which includes CIRAS, MidAmerican Energy, Michael’s Energy, Black Hills Energy, Iowa Association of Municipal Utilities, Alliant Energy, Corn Belt Power Cooperative, Iowa Association of Electric Cooperatives, Central Iowa Power Cooperative, Iowa Economic Development Authority Energy Team, and Van Meter Incorporated.

Energy efficiency workshops held across Iowa provided education on industrial lighting and steam systems. Continuing education was provided for civil engineering practitioners in geotechnical engineering, water resources, and environmental engineering. Attendees were able to obtain professional development hours toward retention of their Iowa engineering licenses.

- The ISU College of Engineering Industrial Assessment Center partnered with CIRAS in providing energy audits to eight manufacturing companies. ISU teams comprised of faculty and students, both graduate and undergraduate, visited company sites to collect data and conduct analyses. Reports were then created recommending ways each company could reduce energy consumption and increase profitability.
 - 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 Iowa's Regents universities 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 work with the local economic development partners to interpret the results and cultivate additional resources to assist business development strategies, with an emphasis on trade cluster companies around the state. The data also are used to affect statewide programs of change to address the varying needs of the state economy.
 - CIRAS is working with the regional economic development marketing groups across Iowa to address economic development strategies in their particular regions. Strategic planning, workforce development, business outreach, buyer/supplier efforts, and industrial assistance programming is provided within each of the separate groups.
- To meet the increasing demand for Latino business and community development assistance, Community and Economic Development (CED) Extension and Outreach 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. The city of Ottumwa and Hernández were featured on NBC's TODAY Show in a piece on how communities adapt to changing populations. The TODAY Show learned about Ottumwa and Hernández's work there in an article in the Wall Street Journal on November 8, 2012. Hernández's work also was mentioned in *The Chronicle of Higher Education*. (TODAY Show video: <http://www.today.com/video/today/51515671#51515671>)
 - CED Extension and Outreach specialists started and supported 18 local/regional housing trust funds with a dollar value of \$10,029,720 in new and rehabilitation housing construction last year, generating approximately 140 jobs in Iowa (80

jobs due to direct effect and 60 jobs due to indirect and induced effects). The housing trust fund initiative was supported by the Iowa Finance Authority.

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 (CIRAS) reports several economic development training and other activities.

- CIRAS held the second annual corridor procurement conference in Cedar Rapids, IA, educating companies on the key elements of capturing business sales with government agencies or partnering with prime contractors. The event provided opportunities for 50 companies to network with government buyers including contracting personnel from the city of Cedar Rapids, Linn County, Iowa State Prison Industries, Iowa Department of Administrative Services, Iowa Department of Transportation, and the Rock Island Arsenal.
- The Iowa Area Development Group (IADG) and CIRAS formed a partnership to expand the level of support for manufacturers and businesses based in rural areas across the state. The partnership combines CIRAS manufacturing and technical expertise with IADG's financial acumen to provide comprehensive growth services to rural manufacturers.
- The College of Engineering 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 and solar 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 FY13 more than 6,000 middle and high school students attended Project Lead the Way courses at 200 sites across the state. The College of Engineering also supported more than 4,000 youth participants as part of FIRST LEGO League, and hosted nearly 800 youth in engineering summer kids' camps.
- A cooperative agreement between the U.S. Department of Agriculture (USDA) and CIRAS leveraged resources and the university's expertise in biofuels, biobased chemicals, and end-use biobased products to develop rules, procedures, and infrastructure needed to operationalize the national BioPreferred® Program, which was created by the 2002 Farm Bill and expanded

by the 2008 Farm Bill. CIRAS developed systems to collect and access information on the biobased industry, and worked with the ASTM International standards committee to perfect the methodology for determining biobased content, and collaborated with USDA to establish programmatic policies to support operations, rules for designating biobased product categories, and regulations for the biobased certification labeling program. CIRAS identified more than 3,500 companies across the U.S. that represented more than 27,000 biobased products and assisted with the labeling of more than 900 biobased products.

ISU involvement with the USDA BioPreferred Program concluded in FY13 but the CIRAS contributions allowed USDA to take the next steps in operationalizing the systems that were developed and helping the biobased industry grow by gaining access to government markets.

Agriculture and Natural Resources Extension and Outreach reports several economic development training and other activities.

- *Economic Benefits from Hands-on Ventilation Workshops*
A multistate, interdisciplinary team of Extension and Outreach specialists (South Dakota, Minnesota, Nebraska, and Iowa) developed a training program on ventilation system management that producers can understand and adopt into their operations supported by pork producer associations. The workshop incorporated a hands-on method that allowed participants to learn, not only from the specialists, but also from putting the newly acquired information into practice. Specialists worked together to build a model swine facility on wheels that contains all the equipment, inlets, and controllers needed to let producers practice ventilation principles.

In Iowa 15 workshops reached 254 pork production operations and/or systems; 189 post-workshop surveys were completed; those completing the survey had influence over 10.7 million market hogs, representing a third of Iowa's swine industry. After-workshop survey results indicated that participants had increased their confidence to make the proper changes to their system. About half of the participants estimated a value change in energy savings and improved farm air quality for their operation. The total benefit for all participants was reported at \$411,600 in production improvements and energy cost savings.

- *Successful Intergenerational Transition of Farmland Ensured through Education*
Access to capital and/or land ownership is a huge limitation for beginning and non-traditional farmers trying to enter into agricultural production and processing. Developing strategies to access capital for new start-up businesses or transferring land and farm operations from generation to generation is critical to a smooth transition from one owner to the next. More and more women are assuming farm management roles in existing operations or have become landowners through purchases or inheritance and are seeking ways to better manage and sustain the profitability of these farming operations.

In conjunction with an ISU Extension and Outreach farm management specialist, Value Added Ag staff helped train and prepare educational leaders to conduct Annie's Project farm management programs fostering improved problem solving,

record keeping, and decision making skills for farm women with an emphasis on estate planning, retirement, and succession planning. Survey results from 74 attendees indicated improved awareness and a request for additional in-depth training in estate planning (54 percent); 61 percent developed new support networks and identified new professionals to support their farm management tasks. Participants learned strategies that they plan to implement on their own farms.

➤ *Local Foods Potential Expanded*

One of the major obstacles constraining local food production in Iowa is limited availability due to seasonality. Producers have expressed great interest in expanding their production potential through the use of high tunnels (HT) to extend their growing season and improve production quality and quantity. Extension and Outreach developed two related publications on rainwater catchment and vegetable production budgets for HT. Staff also conducted seven one-day workshops introducing HT production to growers across the state that reached 158 current or future growers. Four additional conference presentations that focused on high tunnel production introduced 100 additional growers to the production methodology.

A high tunnel publication has been downloaded more than 150 times; 86 growers attended workshops on the topic. These attendees provided feedback and requests for additional training on crop specific production methodology. Portions of these workshops also were presented as breakout sessions at numerous local foods workshops across the state. Survey results show that as a result of these workshops 60 percent of attendees plan to increase their fruit and vegetable production and marketing.

➤ *Lowering Costs for Dairy Producers*

More than 40 percent of dairy producers in Iowa are milking in stall barns or antiquated milking parlors that are achieving only 25 cows milked per person per hour. This not only creates a labor and financial drain, but also impacts human health and animal performance. An exceptionally useful tool for producers considering milking system decisions would be a database of costs, benefits, and economic ranges of income and expense variables and responses by producers who have already implemented decisions on building low cost parlors or automatic milking systems.

The ISU Extension and Outreach Dairy Team analyzed surveys from producers with whom they had worked who had already installed a low cost parlor (LCP) or automatic milking system (AMS) on their farm. Surveys were completed by 90 percent of LCP producers (18/20 surveyed) and 8 AMS producers (50 percent of all AMS farms, since this is a very recent technology). Those that built an LCP are milking 55 percent more cows on average, while decreasing milking labor 28 percent (2.44 hrs/day). LCP milking labor costs decreased from \$1.83/cwt milk to \$0.95/cwt (0.98/cow/day to \$0.50/day). LCP producers saw a 15 percent increase in milk production (8 lbs), 23 percent decrease in SCC (improved milk quality), and a 4 percent reduction in culling rate, equating to more than \$80,000 of income increase per farm per year. These changes led to more than \$2 million of additional annual income from the 26 farms completing the survey.

- *Drought Response Helps in Economic Decisions*
The drought of 2012 highlighted the ability of ISU Extension and Outreach to accurately assess the situation and proactively provide research-based information and resources for farmers and service providers to help manage their operations in the face of an extreme weather disaster. Two rapid response drought webinars efficiently conveyed expert information to a statewide audience, giving producers the option of viewing the archived version at their own convenience. In addition, dozens of live regional drought meetings were held in cooperation with industry partners, with 5,300 farmers attending.

ANR Extension and Outreach specialists at Iowa State University conducted a drought educational webinar on Aug. 21, 2012, that was hosted at 51 sites across Iowa. A survey of participants showed a significant increase in their knowledge about grain quality concerns, feed implications, harvest considerations, fall fertility decisions, tillage, cover crops, and residue. More than 70 percent of respondents indicated that they plan to check and clean engine compartments more frequently to reduce the risk of combine and field fires, conduct soil tests, and adjust rates before applying fertilizer.

Fifteen percent indicated a likely economic impact from the knowledge they gained during the webinar of more than \$50,000, followed by \$10,001-25,000 (11 percent), \$501-1,000 (10 percent), \$1,001-5,000 (10 percent), \$5,001-10,000 (10 percent) and \$25,001-50,000 (9 percent). Participants identified teaching tools such as webinars (32 percent) and emails (32 percent) as most useful in receiving drought related farming information.

- *Food Safety Education Allows Local Food Providers to Improve Business*
Iowa fruit and vegetable farms received assistance in writing food safety plans for on-farm production and post-production processes, resulting in more local food providers being able to continue in business by producing safe and healthy food and non-food agricultural products, taking into account economical, social, and environmental sustainability. Arranging for their GAP audits on the same day they received assistance in writing food safety plans resulted in a cost savings of up to 50 percent. Through education, Extension and Outreach creates an environment in which local food providers can support public health by making healthy food readily available, thus reinforcing good nutrition.

- *Local Food Providers Learn Good Ag Practices (GAP)*
The growing demand for local and regional food offers an unprecedented market opportunity for small and mid-sized farms and holds great promise for increasing the access to healthy and affordable food for rural areas. However, participation in the food system beyond the local direct market often demands that farms demonstrate compliance with complex GAP certification. Working with the Northeast Iowa Food & Farm Coalition, ISU Extension and Outreach used a grant to achieve two goals: 1) to develop a training program to equip food safety “coaches” who could provide technical assistance to farmers to implement GAP and prepare them for food safety certification, and 2) to create a GAP cost-share program to assist farmers with the cost of an audit.

Through the coaching program, 21 Iowa fruit and vegetable farms received assistance in writing a food safety plan. The mock audit helped participants

identify food safety areas of concern, so they could address them prior to paying for a real audit. Following the mock audit, 11 farms requested a USDA GAP audit for their farm and 100 percent passed, allowing these growers greater market access for their produce.

➤ *Beef Producers Increase Profitability through Technology*

Beef cow numbers in the United States are the lowest since the 1950s. The ISU Iowa Beef Center and the Iowa Cattlemen's Association hosted 10 Heifer Development Clinics across Iowa in January, February, and March 2012. Participants who completed a post meeting evaluation managed an average of 103 cows and retained 20 heifers each year. Over 90 percent of the attendees showed improved understanding of technologies available to develop heifers, management practices to improve conception and longevity and keys to successful heifer development. The majority of participants plan to retain heifers in the future and more than 20 percent plan to increase the number retained. Participants managed more than 61,800 cows and retained 12,000 heifers each year.

➤ *Improving Efficiencies in Grazing Helps Producers Increase Production*

Improving productivity of pastures through better management allows increased beef production per acre of land. Improved productivity in turn incentivizes marginal land to remain in forage production. Profitable forage production on marginal land improves economic activity in rural Iowa, reduces soil erosion, and improves water quality. Extension and Outreach initiated the Iowa Certified Grazier Program in 2012, targeting advanced grazing managers to pilot a new curriculum for an advanced grazing school, and grazing mentor program.

Survey responses indicated participants managed an average of 129 cattle and 235 acres. Seventy percent of the respondents improved beef production per acre by at least 20 percent. The median economic value resulting from these educational efforts was more than \$1,000 per operation. The impact resulted in \$1.1M in added economic activity to rural communities and improved the productivity equivalent to 64,000 acres, or the forage to support more than 35,000 beef cows.

➤ *Timely Farm Management with Online Ag Decision Maker and Estate Planning Workshops*

Farmers, financial lenders, farm managers, and agriculture educators understand that having current, unbiased agricultural economics and business information is important to making sound farm management decisions. Knowing where to go in a rapidly changing agricultural environment to access up-to-date information that includes new and emerging issues is critical to their success.

The Ag Decision Maker (AgDM) website, www.extension.iastate.edu/agdm, is such a resource. The website currently has more than 3,200 visitors per day, and an average of 65,000 unique users each month. These visitors spend a total of 500 hours on the site every day. Of visitors who visit more than once, the average number of visits is five to six times each month.

AgDM materials were the key component to the Evaluating Your Estate Planning (EYEP) workshops across the state. Participation went beyond initial

expectations, with 13 meetings and 395 participants in the first year; 19 more meetings are planned. Evaluations found that after attending, 95 percent of participants knew the kind of information about their estate plan they should take to an attorney. Eighty-seven percent currently had a will, and 87 percent of participants were likely to visit their attorney to revise their will as a result of what they learned at the EYEP program.

A follow-up survey nine months after the EYEP meetings found 64 percent of participants had visited an attorney regarding their estate plan as a result of the program. Those who had not visited an attorney hadn't because they didn't feel a need to, already had a plan in place, or were still deciding what to do. Participants who visited with an attorney post-meeting went into that meeting more prepared and were able to save legal time and money by making decisions prior to the visit. More than 60 percent involved their family in decision-making and increased communications. Sixty-nine percent had held a family meeting to discuss their estate plan with their spouse, estate planning team, and/or heirs.

The Center for Agricultural Law and Taxation (CALT), the primary source of professional educational training in agricultural law and taxation, presented educational opportunities for attorneys regarding legal issues pertaining to estate planning and farm taxes. Approximately 1,500 attorneys from Iowa, North Dakota, and Kansas have participated in seminars and webinars on Agricultural Law, Farm Estate and Business Planning, and Farm Income Tax, ensuring that farm families have access to attorneys with current legal information to address their needs.

4-H Youth Development reports the following economic development training activity.

➤ *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. ISU 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, and STEM focused 4-H clubs. In FY12, 590 sixth through twelfth grade students participated in the State Science and Technology Fair of Iowa. County Extension and Outreach programs engaged 20,379 participants in STEM focused programs or 4-H STEM projects ranging from environmental stewardship to geospatial mapping — from which 35 STEM exhibits advanced to the Iowa State Fair and 11,646 youth were enrolled in groups using STEM curricula or engaging in STEM activities in 4-H programs. In addition, 68 youth participated in STEM events at the Iowa State Fair, 12 youth participated in a STEM workshop at the State 4-H Youth Conference, and 12 youth participated in STEM workshops at the Iowa 4-H Center.

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 Iowa Governor's STEM Advisory Council established the North Central STEM Hub at ISU. As part of the STEM Initiative the North Central Hub supported STEM events in the region that had 155 youth attend and also hosted a STEM Festival event at VEISHEA that was conducted by 25 youth with an estimated attendance of more 2,000 youth. 4-H supported and participated in the Regional Scale-Up program that was overseen by the hub managers that as an aggregate of all regions had 283 Scale-Up programs reported, documenting 10,046 K-12 participants.

Human Sciences Extension and Outreach reports the following economic development training activity.

- *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 2013, VITA volunteers working at 24 VITA sites helped 1,633 low- and moderate-income Iowans complete their 2012 income tax returns. Special efforts were made to increase awareness of the EITC and VITA in rural Iowa. As a result, 675 filers qualified for the EITC and received \$959,550 in the 25 counties that participated in the extension-community partnerships to expand VITA programs in rural Iowa.

Ames Economic Development Commission

The Ames Economic Development Commission's (AEDC) five-year plan focuses on building key infrastructure, supporting business growth, and collaborating with Iowa State University and the Research Park on new ventures. AEDC has also developed its Workforce Development Initiative (WDI) that will target high-value projects and train skilled workers for a variety of industries.

2. Please provide the following information for FY13: (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 FY13 data.

- a. Number of disclosures of intellectual property: 98
- b. Number of patent applications filed: 39
- c. Number of patents awarded: 24

- d. Number of license and option agreements executed on institutional technologies, in total and in Iowa: 79 total, 39 in Iowa
- e. Number of license and option agreements yielding income: 173
- f. Revenue to Iowa companies as a result of licensed technology: \$45 million (CY12)
- g. Number of startup companies formed, in total and in Iowa (through licensing activities): 2 total, 1 in Iowa
- h. Number of companies in research parks and incubators: ISU Research Park: 40 private and 13 university-related; Plant Sciences Institute Innovations Development Facility (IDF): 3 (all university-related or affiliated)
- i. Number of new companies in research parks and incubators: ISU Research Park: 3 private, 0 university-related and 0 affiliates; Plant Sciences Institute IDF: 0 (university-affiliated)
- j. Number of employees in companies in research parks and incubators: ISU Research Park: 1009 private and 231 university-related; Plant Sciences Institute IDF: 3 FTE (all university-related or affiliated)
- k. Royalties and license fee income: \$9.1 million
- l. Total sponsored funding received: \$326.4 million of which \$193.8 million is for research
- m. Corporate sponsored funding received for research and economic development, in total and in Iowa: \$28.1 million total, \$13 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: \$1,050,000
- o. Research expenditures (federal, state and local; business; nonprofit; institution funds; all other sources): \$261.0 million—Note that this is the FY12 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 FY12 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 incubators, as well as former tenants that are still in existence in basic form world-wide: 3,802

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

Iowa State Economic Development

ISU has developed a comprehensive system to foster innovation. Our focus is on the transfer of university technologies into commercial applications in startup or existing companies. Functions 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's Innovations Development Facility, the Center for Crops Utilization Research, and the BioCentury Research Farm.
- *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.

ServSafe®

ISU 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, 2012 through June 30, 2013, more than 1,000 Iowans participated in ServSafe® courses taught by ISU Extension and Outreach, with 90 percent successfully earning certification. Participants are from commercial retail foodservices such as restaurants and institutional operations such as hospitals and schools. 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. In addition, promotion that staff members are certified in food safety can be a marketing advantage as many operations post these certificates. Proper preparation, holding, and service of food are critical in any place where food is served. Many of participants work in operations that serve those considered at greater risk of contracting a foodborne illness due to compromised immune systems; food safety training can avoid costly medical expense.

Technical Assistance for Startup Company

Harrisvaccines, located in the ISU Research Park, is a revolutionary animal health vaccine company started in 2005 by Dr. Hank Harris, a College of Agriculture and Life Sciences professor. The company turned to CIRAS to improve speed to market—accelerating their transition from start-up to an established corporation. Prior to the project, the company took eight to ten weeks to get a vaccine delivered. This decreased to four to six weeks as a result of the technical assistance. This project leveraged previous support from the ISU Research Park, Iowa Farm Bureau Federation and the Iowa Economic Development Authority.

\$17M Impact Generated by Student Projects with Companies

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 challenging opportunities 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 as well as the value engineers bring to an organization. As a result of the projects, many companies achieve innovative solutions that lower costs and enhance productivity. The ability to showcase the company and recruit engineering students nearing graduation is an added benefit to the partnering businesses.

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

In 2012, students worked on 53 projects with 27 different companies. Companies responding to surveys reported impact of more than \$17 million for these projects.

\$30 Million Impact Reported by Dyersville, IA, Manufacturer

ESAPCO, a manufacturer of fabric structures and greenhouses, in Dyersville, Iowa, saw an immediate impact from changes made as a result of a productivity improvement project with CIRAS. The company reported a \$26M increase in sales and \$3.9M in cost savings.

Department of Commerce and Department of Defense Programs Assist Company

Quality Machine of Iowa increased sales by \$1M due to combined expertise from two CIRAS managed federal programs. This technical assistance was provided through the Department of Commerce Manufacturing Extension Partnership (MEP) and the Defense Logistics Agency Procurement Technical Assistance Program (PTAP) administered on behalf of the Department of Defense. The Audubon, Iowa, company received technical assistance in defense contract marketing skills, resulting in an award of a five-year defense contract. Technical assistance in lean manufacturing techniques resulted in cost improvements.

Applied Research Project on Company Worksite Wellness Program

With the upcoming implementation of the Affordable Care Act, understanding the impact of a worksite wellness program is increasingly important. Through funding provided by the Economic Development Administration University Center Program, CIRAS and Human Sciences Extension and Outreach partnered to conduct a pilot worksite wellness

program with three Iowa manufacturers: The Graphic Edge in Carroll, Timberline Manufacturing, Inc., in Marion, and Rosenboom Machine & Tool in Sheldon.

Research suggests that worksite wellness programs can generate a return on investment (ROI) of \$4-8 per \$1 invested as a result of increased productivity and decreased absenteeism and healthcare claims. A goal of the pilot program is to examine the ROI for Iowa employers.

This year, 60 employees from each of the three worksites were recruited to complete a baseline health risk appraisal (HRA) as well as an emotional and financial assessment - with 30 employees then randomly assigned to the control group, receiving no additional programming, and 30 employees assigned to an intervention group, which completed a 6-month educational program.

In January, 2014 the HRA will be repeated with the 60 employees to examine effects of the program on the workers. Health claim information and absenteeism records will also be collected. An analysis of the results will help companies make better informed decisions about the ROI of wellness programs on the company's bottom line as well as the impact on employee well-being.

3B. Direct Economic Development Assistance to Iowa Communities

➤ *Sustainable Economies Program*

ISU Extension and Outreach CIRAS and Community and Economic Development partnered to leverage \$614,000 of state funding with \$614,000 of federal funding through a 3-year grant from the Economic Development Administration University Center Program (EDA UCP). This Sustainable Economies Program provided 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.

Technical assistance was provided in the Carroll region, Lee County (Fort Madison and Keokuk), Appanoose County (Centerville), and Cerro Gordo County. Assistance helped these rural areas to better understand their economic sustainability and provided support in taking steps to long-term prosperity. In addition to the economic analysis, technical assistance projects were launched within the communities and businesses participating in the program.

In 2012, more than 38 distinct clients were served with more than 400 regional stakeholders attending planning meetings and sustainability sessions facilitated by ISU Extension and Outreach focusing on the steps needed for long-term success in the RTC. Stakeholders included participants from the business sector, government, nonprofits, education, and interested citizens — uniting a variety of existing programs to create a common set of goals and actions for their region.

➤ *Student Involvement in Business and Community Development*

This year the Partnering Landscape and Community Enhancements (PLaCE) program involved nearly 200 students in outreach projects in dozens of Iowa

communities, including Mapleton, Cedar Rapids, Perry, Ottumwa, Des Moines, Dubuque, Cedar Rapids, Audubon County, and Sioux City. The ILR Community Visioning Program employed student interns to work in the Amana Colonies and seven other communities, and the Community Design Lab employed several interns to assist community design projects in Waukon, Maquoketa, and Clarinda. Funding through the ISU Provost office also has led to the development of the new Community Design Laboratory, providing a new venue for student engagement with Iowa's communities

- *Regional, State and Local Partnerships with ISU Extension and Outreach*
ISU Extension and Outreach maintains partnerships and shares joint community development specialist positions with the Chamber of Commerce of Keokuk, the City of Fairfield, the economic development organization of West Liberty (WE-LEAD), the development organization of Cedar County (CCEDCO) and the regional development organization of Southwest Iowa (SWICO). Each of the local economic development positions are jointly funded by ISU Extension and Outreach and a local partner for which the person serves as a local development official who provides economic development education part time.

ISU Extension and Outreach has established a unique partnership with the City of Dubuque and the University of Wisconsin to create a joint faculty position specializing in community planning and leadership. This partnership has resulted in a joint faculty hire who is located in Dubuque but serves both Wisconsin and Iowa. The agreement and joint appointment is one of the first of its kind in the country between two land-grant institutions. The person was hired at the rank of associate professor and is tenured at Iowa State University. Each state extension system pays half the associated costs. The research and extension programming focuses upon community leadership development extension education, and community leadership in response to natural disasters.

ISU Extension and Outreach cosponsors a joint educational position with the Iowa League of Cities, focusing upon local government finance. Joint programming coordinated through this position included the Iowa state municipal clerks institute and webinar series on tax incremental financing attended by more than 500 across the state.

In part because of collaborations with cities and organizations, and direct extension education and applied research assistance, ISU Extension and Outreach leveraged more than \$130 million in local grants, infrastructure development, local staff time, volunteer time, and loans within the communities served.

- *Iowans Walking Assessment Logistics Kit (I-WALK)*
First offered in 2010, I-WALK is a partnership of the Iowa Department of Public Health and ISU Extension and Outreach. The goal of I-WALK is to develop community coalitions and provide them with relevant, local information to help them continuously update, implement, and evaluate the infrastructure and programs to support a more walkable, healthy, and safe community. I-WALK has a heavy emphasis on data collection and analysis, with the goal of providing communities with the up-to-date information and data analysis necessary to

assist with identifying priorities that will make the best use of the limited financial resources available. To date, 31 sites representing 41 communities have participated in the program. More than 2,300 surveys have been completed in which 2,500 locations of barriers/opportunities were mapped. Teachers submitted 650 teacher tallies to formulate a baseline to use in grant applications, and more than 500 residents attended GPS workshops to collect infrastructure data. These GPS workshops yielded data for more than 8,200 midblock sidewalks, 5,300 intersections, and 2,500 additional features – all information for which the communities had no mapped data. In 2013 I-WALK was expanded and now includes assessment programs for both Safe Routes to Schools and Older Adults. More than 350 citizens have joined local coalitions, and although it often takes several years for efforts to materialize, several communities have used the generated data to submit grant proposals—a few of which have already been successful and will result in new infrastructure being built—to develop local programs (such as the Walking School Bus) and to develop plans for new sidewalks and trails to be constructed in the future.

➤ *Iowa's Living Roadways Community Visioning Program*

Since 1996 the Community Visioning Program has helped rural communities plan transportation enhancements using state funds from the Iowa DOT. To date, 200 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 the following:

- 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 percent were not directly related to the program.
- Nearly \$30 million has been awarded to communities that have participated in community visioning.
- Estimated cash matches from awardees exceed \$12.6 million for an estimated \$42 million generated.

For example, since completing the Iowa's Living Roadways Community Visioning process in 2012, the city of Manning has started the process of implementing concepts proposed through the visioning process, including new entrance signage, roadside plantings along Highway 141, Main Street improvements, and trail amenities. Estimated completion times for the signage and roadside plantings are Summer 2013 and Spring 2014, respectively.

<http://www.manningia.com/current-projects.html>.

➤ *Mapleton Rebuild and Recover*

The fall 2012 landscape architecture community design studio worked with the Mapleton Rebuild and Recover Committee and Foundation to identify landscape-based strategies for Mapleton's long-term recovery. In 2011, more than half of the community was damaged by a Category 3 tornado. Students conducted focus groups, surveys, interviews, and mapping workshops with Mapleton residents to gain a better understanding of the needs and desires of the community. Based on the information they gathered, the class developed a

series of project proposals that address community infrastructure, renewable energy, recycling existing resources, and new uses for open spaces—including those created by the tornado. Since the completion of the studio, Mapleton applied for and was accepted to the 2013 Iowa's Living Roadways Community Visioning Program through which they are continuing with transportation enhancement planning. Mapleton also applied for and was accepted to the 2013 Iowa's Living Roadways Projects Program to do roadside planting, which was completed in spring 2013.

- *Fairfield Receives Environmental Excellence Award*
Fairfield was one of three communities picked by Alliant Energy to participate in Alliant's Hometown Rewards efficiency program. CED sustainability specialist Scott Timm organized the program in Fairfield. Participation resulted in Fairfield's residential customers reducing their energy use by about 8.5 percent and commercial customers cutting energy use by about 8 percent. Because of the program, Fairfield earned Governor Terry Branstad's Environmental Excellence Award for Energy Efficiency/Renewable Energy. Since early 2012, 1,800 volunteer hours have been spent planting trees at various locations in town. With a \$1,000 grant from Home Depot, volunteers led by Timm weatherized 22 homes, half of which belong to military veterans. An energy-efficient Habitat for Humanity house is currently under construction.

3C. Services Provided—ISU's Key Units Engaged in Economic Development

The Office of the Vice President for Research and Economic Development has worked closely with all of the key units previously mentioned, including the Office of the Vice President for Extension and Outreach, in promoting the University's mission related to economic development and technology transfer. University administration has made some strategic changes for rapid expansion of the university's economic development efforts.

- President Steven Leath appointed Michael Crum the new Senior Policy Adviser on Economic Development to work with internal and external groups. In addition to representing Iowa State on economic development boards, he'll work to strengthen coordination with constituents that include those boards, business associations, government agencies, communities and foundations. Crum will serve as a gateway for Iowa's business community to the expertise and business services offered through Iowa State.
- The ISU Research Park now reports directly to the President's Office, to allow the university to be more aggressive and more nimble in pursuing partnerships.
- The Iowa legislature this past spring invested \$7.5 million to support Iowa State's Leading the Bioeconomy initiative. The investment is being used to leverage ISU's student education and to conduct research that strengthens Iowa's bioeconomy and leads to new biosciences jobs in the state of Iowa. The initiative will invest \$2.25 million to expand the Biorenewables Laboratory and the BioCentury Research Farm, providing new equipment, facilities and capabilities that both create discoveries and translate those discoveries into successful commercial processes. The initiative will invest \$2.75 million to expand work in eight new and existing research projects. Another \$1.45 million will be used to

renovate three existing laboratories: the Animal Science Nutrition Laboratory, the Livestock Health and Feed Efficiency Laboratory and the High Throughput Mass Spectrometry Laboratory. Iowa State will use \$500,000 to attract high caliber graduate students interested in the biorenewables field. This initiative will strengthen the university's research programs by awarding 12 one-year graduate fellowships in 2014, and support Iowa's bioeconomy workforce by offering new specialized courses in biorenewables.

Iowa State will invest \$600,000 (\$200,000 each) in efforts to build partnerships with companies and agencies on biosciences research projects; establish an industrial liaison office to work with Iowa biosciences companies; and expand the Biobased Foundry program of technological entrepreneurship.

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

Iowa State University Research Park

The Iowa State University Research Park is a 230-acre development with over 446,000 square feet of building space and is located south of the Iowa State University campus. Iowa's governor and legislators provided \$12 million in funding to support a new building in the Iowa State University Research Park. The new facility will bring together formerly scattered services and agencies that support technology transfer and economic development. Construction of the new building is expected to be completed within the next three years. Currently, the Research Park offers two types of incubator facilities.

- *Biotech Wet-lab Incubator*: ISU Research Park houses an 8,000 sq. ft. wet-lab incubator facility. The incubation facility provides laboratory space for the growth and development of start-up, spin-off and established biotechnology companies. Features include:
- *Technology Incubator*: The Technology Incubator identifies early-stage, tech-based concepts and businesses and aids in economic development and technology transfer. This provides an environment for growth by helping develop viable business plans and secure financial backing. To date, the Technology Incubator has supported over 80 start-up companies. To qualify, businesses must be Iowa companies formed under Iowa law, in the pre-venture capital stage of development, show potential for growth and development as an Iowa company, be based on a technology and related to ISU research and/or research services.

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.

Institute for Physical Research and Technology (IPRT)

Through IPRT Company Assistance, 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 capabilities to businesses, 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.

The Research Cost-Sharing Program is available to Iowa companies for pursuing research conducted at ISU. The program, offered through IPRT Company Assistance and funded by the state, provides an effective yet inexpensive way to access the facilities, expertise, and knowledge of the faculty and professionals working at Iowa State. Through the Cost-Sharing Program companies can receive 1:1 cash matching on their research projects.

The Virtual Reality Applications Center (VRAC) is an interdisciplinary research center under IPRT whose primary focus is developing computer interfaces that integrate virtual environments, wireless networking, pervasive computing and third generation user interface devices to amplify the creativity and productivity of people. Research facilities at VRAC assist companies in addressing a diverse range of challenging problems spanning science, engineering, and the humanities.

Small Business Development Center at ISU (SBDC) and Pappajohn Center for Entrepreneurship

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 business development assistance from, the Small Business Development Center and Pappajohn Center for Entrepreneurship to move 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.

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. ISURF also provides assistance to Iowa companies, including ISU faculty startups with SBIR and STTR applications. An FY13 reorganization brought the team responsible for negotiating industry-sponsored research agreements into OIPTT to more closely coordinate efforts to build public-private relationships.

- Iowa State University and the University of Iowa began offering a new research sponsorship option in 2013 that allows industry to pre-negotiate exclusive licenses to breakthroughs that grow out of their partnerships with university researchers. The new option spurs increased partnerships between Iowa's Regents universities and industry by giving companies more tools to protect their research investments, and increase the rate of technology transfer to the private sector.
- The ISU Research Foundation hired a part-time Entrepreneur in Residence, Kurt Heiar. The intent is that his experience as a private sector CEO and entrepreneur will assist university efforts to move technology into the marketplace and create jobs for Iowans. He assists faculty and researchers; builds databases of investor, state and corporate contacts who will assist ISU companies; helps young ISU-affiliated companies and fledgling entrepreneurs overcome problems to keep them moving forward; presents guest lectures to classes and student organizations; and reviews existing technologies at ISU to help determine which have business viability.

Extension and Outreach Center for Industrial Research and Service (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 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 has expertise in • engineering • innovation • government contracting • productivity • management practices • safety • supply chain management • sustainability • quality management • community-business economic development.

- Service to industry includes technical assistance and applied research in conjunction with ISU College of Engineering labs; regional economic development studies to better understand rural economies; development of company transformational plans for profitable growth; 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 objective of the MEP program is to be a catalyst for strengthening American manufacturing — accelerating its ongoing transformation into a more efficient and powerful engine of innovation driving economic growth and job creation. Through this program, CIRAS provides small to medium sized companies with the training, tools, and connections to accelerate innovation, leading to new opportunities in domestic and export markets.
- 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 serving as a resource for businesses pursuing and performing under contracts with the Department of Defense, other federal agencies, state and local governments and with government prime contractors. 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 integrated 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 helped the businesses, communities, and overall regional economy begin the process of reliable, long-term growth.

Agriculture and Natural Resources Extension and Outreach provides unbiased, research-based information and education to agricultural professionals to grow the economic base of Iowa agriculture. Extension and Outreach educates Iowans about local actions to produce a safe, sustainable, accessible, and affordable food supply for the state, the nation, and the world. Programs address all segments of the food supply chain, from productive capacity of Iowa's agricultural and human resources, to production and processing technology, market functions, and management. Programming also includes accessibility, affordability, and safety to reduce food insecurity of Iowa families. Assessment, analysis, and education are provided on a broad scope and scale of Iowa's food system.

- Commercial agriculture production programs provide research-based information and education on economically viable commercial production of commodity crop and livestock producers. Field days, research reports, webinars, meetings, peer groups, decision support software, and on-farm research and consultation help farmers and agribusinesses stay current on latest trends and technologies to improve efficiency and sustainability. Emphasis is placed on long-term economically and environmentally optimal production systems.
- Protecting Iowa's natural resources is essential to a sustainable agriculture based economy and for quality of life for all Iowans. Education, demonstration, and information programming address management decisions effecting farmed and natural landscapes as they relate to soil and water quality, conservation practices, tree management, recreational activities, energy efficiency, certification programs, and connecting youth and families with nature.
- Global market conditions and increasing climate volatility contribute to increased risk for farmers. Educational programming and decision support software provide farmers with methods to evaluate market conditions, government programs, crop insurance, farm leasing arrangements, and how production systems impact risk exposure.
- Financial management of farm businesses has a significant impact on long-term sustainability, growth, and overall success. Programs address economic decisions for crop and livestock production, land management and values, machinery investments, and human resource management. The farm population is aging and facing decisions about their retirement and estate and the next generation of farmers. Programs address the needs of new farmers and estate planning for farm families and tax and estate professionals.
- Local food production is rapidly growing in the Midwest to address the increasing demand for locally produced fruits, vegetables, and animal products. These farming operations typically are smaller with lower capital and provide opportunities for new farmers to get started or existing farms to diversify their operation. Programs address strategic and tactical decisions, as well as the day-to-day production and marketing decisions for these farms.

Community and Economic Development Extension and Outreach helps organizations and local governments develop and build their capacity to make Iowa communities better places to live and work.

- Extension and Outreach community and economic development specialists provide skills training each year for more than 40,000 community leaders, local government officials, business owners, entrepreneurs and volunteers.
- Community sustainability services focus on helping organizations and individuals meet the needs of the present without sacrificing the ability of future generations to meet their own needs. These services provide communities, economic developers, individuals, and businesses with the tools to manage the financial, social, and environmental issues they face to ensure success in the long run.

- CD-DIAL (Community Development — Data, Information, and Analysis Laboratory) works with communities and organizations to build decision-making capacity as they collect and use information about their local population. Iowa Community Indicators Program provides Web-based information products such as local retail trade analysis and demographic and economic indicators. Regional trade center analysis provides an in-depth economic assessment of the financial, social, and environmental "triple bottom line" well-being of a regional trade center.
- The Community Visioning Program empowers local leaders through a planning process that results in a transportation enhancement plan reflecting the values and identity of the community. Community tourism assessments help communities learn how their current tourism assets and readiness place them within today's tourism marketplace. In addition, they receive recommended steps for building tourism as a community economic tool.

Human Sciences Extension and Outreach provides research-based information and education to help families make decisions that improve and transform their lives.

- Programming focuses on activities and projects to help Iowans live healthier lives through improved healthy behavior and physical health, and enhanced family, work, and community environments. Programs address caregiving for the aging population, community health, financial health, nutrition and physical health, and parenting.
- Specialists help individuals, families, communities, professionals, and organizations assess their health and well-being needs; provide training, tools, and resources to meet those needs; and evaluate the impacts of these efforts to help Iowa reach the Governor's goal of becoming the healthiest state in the nation by 2016.
- Human Sciences Extension and Outreach addresses emerging issues that affect the economic viability of Iowa families. Specialists help unmarried parents or parents in unstable relationships who have young children to build the knowledge and skills necessary to form and sustain healthy family and co-parenting relationships. The Planning Your Financial Future program helps child care providers manage their money and plan for retirement. Interactive workshops are designed to increase consumer knowledge and self-confidence in making health insurance decisions, so consumers can meet both their health insurance needs and budget.

4-H Youth Development prepares Iowa's young people for future careers. One in every five Iowa youth develops communication, citizenship, leadership and life skills by participating in 4-H programs.

- Extension programs that engage Iowa youth in science, technology, engineering and math activities build skills to ensure that more students are well equipped to be knowledgeable citizens and begin college or career training prepared for success.

- K-12 outreach programming connects Iowa children and youth with Iowa State University's knowledge and research base to help them reach their full potential. Education and positive youth development experiences are offered on campus, within counties, and out of state.
- K-12 outreach includes both 4-H Youth Development programs as well as outreach partnerships through the Iowa State colleges. These experiences help youth get excited about learning and discover new career choices.
- Youth are challenged to actively pursue education beyond high school and build skills that improve their communities today. Programs are delivered through volunteers, community-based partners, educators, and county staff. Specialists assess youth programming needs, train adults who implement quality educational programs and experiences, ensure safe environments, and evaluate programs.

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

Iowa EPSCoR, a \$22 million NSF-supported effort of the three Regent university partners to boost the state's research capacity in renewable energy and energy utilization, aims to make impacts far beyond the universities' research labs. A Future Leaders in Advancing Renewable Energy (FLARE) Institute has been established. The statewide institute is designed to develop a skilled and diverse workforce that can meet the needs of Iowa's emerging green economy. The program works with Iowa's community colleges to strengthen their courses in science, technology, engineering, and math. And, the program is working to identify effective strategies for encouraging women and underrepresented minorities to enter science and technology fields. Iowa EPSCoR is also making connections with industry and policy leaders across the state and the country.

STEM education

Iowa State University is one of six Iowa STEM hubs selected by the Governor's STEM Advisory Council in May. Each STEM network hub will work with business, education institutions, non-profit groups and others in their region in a way that best fits local needs, interests and resources. The hubs will provide more equitable statewide access to outstanding Iowa STEM education programs.

Proof of Concept Initiative

In a collaborative effort with the Iowa Innovation Corporation, Iowa State has established an initiative that focuses on increasing the transfer of technology while reducing the time to commercialize. Technology development and business development 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 provides a single, visible interface for faculty, staff, and students seeking state-supported research funding opportunities and provides simplified, coordinated communication. More information appears in Appendix 1 of this report.

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 2013:
- A. Identify and briefly describe each project or initiative which received GIVF funding in FY 2013 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 2013
 - 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 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. Iowa State works with the Iowa Innovation Council and Iowa Economic Development Authority to identify breaks in the small business support system and to build supports in those areas.

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.** The SBDC helps its clients generate new taxes for the Iowa treasury in the form of income taxes on new jobs and sales taxes on increased sales. During the last full program year ending September 30, 2012, SBDC clients generated a total of \$2,300,400 in new taxes, resulting in a return on investment of \$1.72 for every Iowa tax dollar expended on the program. In addition, the SBDC helped clients avoid eliminating through layoffs or firm closings 524 jobs, resulting in a savings of unemployment compensation benefits of \$2,197,043. Additional state support to SBDC would increase the state's return on investment and retain Iowa jobs.
- **Iowa State University Research Park.** Any new funds to the ISU Research Park would be utilized to support costs associated with the planned expansion of the Park as well as to increase marketing efforts to attract new tenant companies.
- **Institute for Physical Research and Technology (IPRT).** The need for IPRT's expertise by Iowa industries is rapidly growing. Over 75% of the Iowa manufacturers that IPRT serves have fewer than 100 employees. This means that Company Assistance's typical industrial client will likely not have the needed expertise internally to address its material and inspection issues.

The Materials Group of the IPRT economic development program provides short-term technical assistance to Iowa manufacturers at no cost to the user, and this is often the first interaction that manufacturers have with the University. Additional 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 that directly meet the needs of Iowa manufacturers, such as in areas of IT and biotech.

The Nondestructive Evaluation (NDE) 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. Additional funding would help Company Assistance to leverage Iowa companies' limited resources. These are projects that impact the economy by introducing new products, addressing manufacturing processes, and improving quality. All of these areas strengthen Iowa's global competitiveness in the manufacturing sector.

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. Additional state funding 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.

- **ISU Extension and Outreach Center for Industrial Research and Service (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 FY13 CIRAS helped generate an additional \$1.39 of external funds for each \$1 of state funds provided, yielding approximately \$3 million of additional funding. More than \$1 million of CIRAS grant funds were distributed to other business outreach units on campus and to community colleges to help them expand their work with Iowa companies.

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, 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.

- **ISU Extension and Outreach works across ISU colleges** and with external partners to provide technical assistance, research-based education, and access to the resources of ISU to improve the quality of life in the state. Iowans want an economy that can form new businesses, grow existing industry, enhance communities, and recruit companies to the state. With Iowa STEM jobs expected to grow by 16% this decade, Iowans see the need to stop the “brain drain” and take steps to develop the state’s future workforce, connecting youth with opportunities here in Iowa. These are only a few of the basic needs and urgent trends facing this state. ISU Extension and Outreach has the capability to address these concerns with education for Iowa’s people, but needs additional resources to operate at the full capacity required to meet these challenges.
- ISU Extension and Outreach work in economic development is growing businesses and strengthening communities.
 - ISU Extension and Outreach tackles food and environmental challenges by supporting local actions to produce a safe, sustainable, and affordable food supply.
 - Programs for health and well-being are helping Iowa become the healthiest state in the nation.
 - Through K-12 youth outreach, ISU Extension and Outreach is preparing Iowa’s young people for the future, including through one of our most recognizable programs- 4-H.

ISU Extension and Outreach expects to leverage every \$100,000 in new state funds with \$180,000 in new federal matching funds, grants, fees and gifts to generate a projected \$2.8 million of impact and 28 new jobs throughout Iowa. For every \$100,000 of new funds, an estimated three additional staff will be hired to address growing demands and increase the depth and reach of work with families, businesses, and communities in all 99 counties across the state.



University of Northern Iowa Annual Economic Development and Technology Transfer Report FY 2013

Section 1. UNI's Economic Development Activities to Enhance Economic Growth in Iowa

Capitalizing on the niche strengths of unique outreach programs, UNI is a reliable resource for supporting Iowa's economic development efforts. Each year, these programs strive to deliver increasingly customized technical assistance, meeting the various needs of a statewide client base. Specific service areas for UNI include: entrepreneurship, community and economic development; market research; environmental research and service; sustainability; metal casting; and new Iowans. The Business and Community Services (BCS) division houses a host of programs that emphasize hands-on assistance to advance business, community and entrepreneurial development. Serving clients in each of Iowa's 99 counties, BCS programs capitalize on the intellectual resources of the University to better meet Iowa's economic development needs. BCS strives to also engage the broader university community – the faculty, staff and students – all of which play critical roles in providing practical assistance. Outcomes realized by key economic development/technology transfer programs during FY 2013 include:

Overall

- Provided service in all 99 counties to more than 1,273 unique business, community and local government clients with an additional 12,800 engaged in MyEnte.Net/IASourceLink.
- Involved 212 faculty members and nearly 2,000 students in the delivery of these services.
- Leveraged each \$1 invested by the state with \$5 in private grants, fees or federal funding.

Entrepreneurship, Business Incubation and Technology Transfer

- UNI's 2 incubator/accelerator programs and MyEnte.Net helped start or expand 221 ventures creating 430 FTE jobs.
- 12,800 individuals are now actively engaged in the MyEnte.Net online community.
- 60 innovators have graduated from the Innovation Incubator and 4th Street Incubator.
- MyEnte.Net provided on-demand business and market information to 302 businesses through its new Business Concierge service; another 183 clients were served by the UNI SBDC.
- 20 student businesses were tenants in the John Pappajohn Entrepreneurial Center's R.J. McElroy Student Business Incubator and 50 additional student entrepreneurs were assisted by the affiliate program.
- One of the UNI John Pappajohn Center's student incubator tenants was selected as National Student Entrepreneur of the Year by the Collegiate Entrepreneurs Organization.
- UNI faculty and staff submitted 10 new intellectual property disclosures.
- 2 patents were received and 4 new patents were filed.
- 2 new license agreements were approved and a total of 9 license agreements are currently generating income.
- Completed the pilot year of Advance Iowa, the state's certified economic gardening center, by providing job growth assistance to 12 second-stage Iowa companies.



Waste Reduction, Environmental Assistance and the Bioeconomy

- Environmental technical assistance and on-site reviews were provided to 160 small businesses.
- The GeoTREE program developed GIS applications to assist the Integrated Roadside Vegetation Management program and assisted multiple state and local agencies with geospatial mapping projects.
- Recycling and reuse project funding was provided to 42 companies and organizations; another 170 businesses or individuals were provided testing assistance for products using recycled materials.
- Buy Fresh, Buy Local participating restaurants and institutional buyers spent \$2.65 million on locally grown foods in 2012.
- Green Iowa AmeriCorps weatherized 404 homes and conducted 723 energy audits, saving nearly \$1.3 million in utility costs.
- The CEEE FREE loan program increased the understanding of energy for 12,225 students and 499 teachers. Eleven professional development workshops and classes reached 195 teachers. The program conducted 9 workshops for 4 STEM Hubs.
- The Tallgrass Prairie Center distributed native prairie seeds to 55 Iowa counties as part of its roadside vegetation project.
- The Tallgrass Prairie Center initiated a Plant Iowa Natives marketing program to increase prairie plantings.
- NABL developed a microwave biobased grease manufacturing process and licensed the technology to an Iowa company.

Local Economic Development

- The Institute for Decision Making (IDM) launched the Entrepreneurial Communities project in two economically distressed communities.
- IDM conducted workforce assessments in eastern and western Iowa in partnership with Iowa Workforce Development and community colleges.
- Community clients report creating approximately 1,500 jobs as a result of local economic development technical assistance from IDM.
- Strategic planning and comprehensive technical assistance was provided to 39 community partners and 5 regional groups and has served 700 communities across Iowa.
- Restructuring of Iowa's regions was led by IDM in collaboration with Professional Developers of Iowa.

Advanced Manufacturing & Market Research

- UNI's Metal Casting Center (MCC) provided custom technical assistance and outreach services to 30 foundries and suppliers.
- Continued DOE-sponsored research was successfully completed by the MCC to enhance the effectiveness of biobased foundry binders.
- Market research and competitive intelligence was provided to 9 Iowa companies and Strategic Marketing Services (SMS) has assisted 271 Iowa companies.
- Market research clients of SMS report an average sales increase of 14%, due in part to the competitive intelligence information provided by UNI.
- Customized painter training and testing was provided to 12 Iowa businesses by the Iowa Waste Reduction Center.



Section 2. Technology Transfer and Intellectual Property

FY 2013

	UNI
Number of disclosures of intellectual property	10
Number of patent applications filed	4
Number of patents awarded	2
Number of license and option agreements executed on institutional intellectual property	2
Number of license and option agreements yielding income	9
Revenue to Iowa companies as a result of licensed technologies	\$2,230,000
Number of start-up companies formed, in total and in Iowa	78/78
Number of companies in research parks and incubators	28
Number of <u>new</u> companies in research parks and incubators	18
Number of employees in companies in research parks and incubators	64
Royalties/license fee income	\$75,839
Total sponsored funding	\$41,192,000
Corporate-sponsored funding for research and economic development and revenue generation (excludes corporate philanthropy - all in Iowa)	\$1,153,500
i. Annual appropriations for economic development	\$574,716
ii. Regents Innovation Fund	\$900,000

Section 3. Overview of UNI’s Economic Development Programs

UNI outreach services for community and economic development activities are outlined in a table format on the following seven pages. The format provides a brief overview of each program, its purpose, those served and outcomes. Together, the programs served 1,273 unique businesses and organizations in the past year and another 12,800 individuals through the MyEntre.Net entrepreneurial development system.



Section 3. Overview of UNI’s Economic Development Programs (continued)

Programs	Services	Those Typically Served	FY 2013 Results	Cumulative Results
Institute for Decision Making (IDM)	Hands-on community and economic development guidance and research	Economic development organizations, chambers, city councils, communities and others	<ul style="list-style-type: none"> ✓ Conducted in collaboration with IWD, the Iowa Corridor Alliance Regional Workforce Assessment ✓ Assistance and research provided to 39 community partners and 5 regional development groups ✓ Launched initial Entrepreneurial Communities Project 	<ul style="list-style-type: none"> ✓ Served 700 communities, counties and groups in all of Iowa’s counties to date ✓ Community clients report 1,500 – 2,000 new jobs annually as a result of IDM assistance ✓ Trained over 1,000 economic development professionals
Iowa Waste Reduction Center (IWRC)	Free, confidential, non-regulatory environmental assistance for small businesses	Small businesses throughout Iowa	<ul style="list-style-type: none"> ✓ Environmental technical assistance and on-site reviews were provided to 160 small businesses ✓ Online resources were provided to 158 registered businesses and 60 businesses were assisted in-person with Minor Source Emission Inventory documentation ✓ Created educational materials and developed interactive website to reduce the amount of food waste going into Iowa landfills ✓ Provided painter training and testing services to 12 Iowa businesses ✓ Certified 421 military and contractor painters at Cedar Falls facility and 10 satellite sites nationwide 	<ul style="list-style-type: none"> ✓ Provided 5,516 on-site reviews to Iowa small businesses ✓ Provided online resources to 315 businesses with Minor Source Emission Inventories ✓ Certified 2248 military and contractor painters



Section 3. Overview of UNI’s Economic Development Programs (continued)

Programs	Services	Those Typically Served	FY 2013 Results	Cumulative Results
National Ag-Based Lubricants (NABL) Center	Biobased lubricants research & development, testing services laboratory, development of performance standards, bio-lubricant product certification, and lubricant mfg. process research	Companies and individuals developing biobased lubricants, traditional lubricant companies, and lubricant consumers	<ul style="list-style-type: none"> ✓ Provided fee-based testing services to industry clients ✓ Completed first segments of field research activity to support wide-spread market adoption of biobased railroad greases ✓ Completed final tasks of 10-year federally funded research & development project ✓ Accomplished advanced crop oil testing to compile comprehensive catalog of biobased oil & derivative properties for future product formulation resource 	<ul style="list-style-type: none"> ✓ Licensed microwave-based grease manufacturing technology to industry ✓ Over 40 soy lubricants, greases, metalworking fluids and specialty lubricants developed to date. ✓ A national testing and certification center established, leading the nation’s biobased lubricants industry
Strategic Marketing Services (SMS)	Market research and analysis	Businesses, entrepreneurs and non-profit organizations	<ul style="list-style-type: none"> ✓ Market research and analysis services were provided to 9 Iowa companies 	<ul style="list-style-type: none"> ✓ Since 1990, market research and analysis services have been provided to 271 Iowa companies
New Iowans Center (formally the Iowa Center for Immigrant Leadership and Integration)	Iowa's leading research, training and consultation center on the challenges and opportunities associated with the state's rapidly growing and diversifying immigrant and refugee populations	Clients include school districts, health care providers, law enforcement agencies, first responders, and social service providers	<ul style="list-style-type: none"> ✓ Conducted research on ethnic disparities and outcomes in Iowa's child welfare system ✓ Delivered trauma-informed care for children in Northwest Iowa ✓ Created early childhood initiatives for diverse and underserved children 	<p>Trainings and consultations include:</p> <ul style="list-style-type: none"> ✓ Cultural responsive health care ✓ Multilingual communication for law enforcement and first responders ✓ Interpreter training ✓ Literacy ✓ Social marketing



Section 3. Overview of UNI’s Economic Development Programs (continued)

Programs	Services	Those Typically Served	FY 2013 Results	Cumulative Results
John Pappajohn Entrepreneurial Center (JPEC)	Research, entrepreneurship education, technology transfer, and capital investment programs	Students interested in entrepreneurship, UNI faculty and staff entrepreneurs, new ventures and rapidly growing small companies	<ul style="list-style-type: none"> ✓ 171 K-12 students and 23 teachers were served in FY13 with JPEC K-12 outreach via presentations, workshops, and camps ✓ 1,858 businesses and individuals were assisted through all JPEC programs ✓ 20 student business owners with 13 employees were provided space and services in the student business incubator ✓ 50 student business owners were provided services as part of the student business affiliate incubator program 	<ul style="list-style-type: none"> ✓ From FY08 to FY13, 9,155 people were served by JPEC programs ✓ The JPEC has provided 40 students with internships through its CIPCO program since FY05 ✓ The JPEC Student Business Incubator has provided space to more than 60 business owners since FY05 ✓ The JPEC has consulted with 287 faculty and staff from universities around the U.S. and world on student business incubation since FY08
Metal Castings Center (MCC) and Center for Advanced Biobased Foundry Binders (CABB)	Metal casting technologies, applied research, testing and training	Iowa casting users, foundries and foundry suppliers	<ul style="list-style-type: none"> ✓ Maintained active contracts with 24 companies, provided outreach projects to 2 Iowa foundries and technical assistance to 30 additional foundries ✓ Conducted DOE-sponsored research into bio-based foundry binders – 2 patents submitted ✓ Sponsored commercialization of bio-based foundry binders ✓ Collaborated with University of Iowa and Iowa State on DOD-sponsored research 	<ul style="list-style-type: none"> ✓ Over 50 industry-funded research projects have been completed to date



Section 3. Overview of UNI’s Economic Development Programs (continued)

Programs	Services	Those Typically Served	FY 2013 Results	Cumulative Results
Tallgrass Prairie Center (TPC)	Research, techniques, education and source-identified seed for restoration and preservation of native vegetation	Iowa counties, state and federal agencies, commercial native seed producers, the community, students, educators, restoration ecology discipline, and others	<ul style="list-style-type: none"> ✓ Continued <i>Carex</i> germination research and agronomic production of <i>Carex</i> seed ✓ Continued research on biomass production for electrical generation ✓ Continued research on wildlife response to prairie biomass production ✓ Distributed native seed to 55 counties in Iowa via federal transportation enhancement funding ✓ Provided financial and in kind support for Iowa Prairie Conference, 270 attendees ✓ Initiated a Plant Iowa Natives marketing program in eastern Iowa ✓ Completed survey of prairie planting techniques of Iowa counties 	<ul style="list-style-type: none"> ✓ More than 15,500 acres of Iowa counties rights-of-way have been restored to native vegetation ✓ Completed publication of Proceedings of 22nd North American Prairie Conference ✓ Made research information available to restoration ecology community ✓ Made <i>Carex</i> available to native seed growers ✓ More than 100 acres of prairie plantings on campus
Geoinformatics Training, Research, Education and Extension Center (GeoTREE)	Geospatial technologies, education, research, and outreach activities for federal, state, local and tribal agencies	Federal, state, local and tribal (FSLT) government agencies (NASA), non-profits	<ul style="list-style-type: none"> ✓ Worked with Dry Run Creek Watershed coordinator, City of Cedar Falls, City of Dubuque and UNI Facilities on urban water quality issues ✓ Continued to host Cedar Falls Utilities thermal web mapping application ✓ Developed web mapping application for Iowa STEM program ✓ Developed web GIS application to assist state Integrated Roadside Vegetation Management Program ✓ Assisted with Interdisciplinary Research Experience in Hyperspectral Imaging for 10 undergraduates 	<ul style="list-style-type: none"> ✓ Delivered greater than 60 terabytes of geospatial data throughout all counties in Iowa ✓ Provided free geospatial software tools downloaded by users throughout Iowa and the world ✓ GeoTREE has provided 19 training and educational workshops for approximately 560 federal, state, local and tribal government staff members



Section 3. Overview of UNI’s Economic Development Programs (continued)

Programs	Services	Those Typically Served	FY 2013 Results	Cumulative Results
<p>Regional Business Center/ Entrepreneurship Outreach,</p> <p>Small Business Development Center,</p> <p>Advance Iowa</p>	<p>Rural/ Urban Entrepreneurship development, online entrepreneurship resources, business consulting, business training, business incubation</p>	<p>Small and medium sized businesses, entrepreneurs, entrepreneurial service providers, community leaders</p>	<ul style="list-style-type: none"> ✓ Nearly 15,000 Iowans were served by an RBC program or online resource; 2,793 small business owners were directly served with MyEntre.Net resources: 1,240 participated in a webinar; 218 attended EntreFest ✓ A statewide program called Advance Iowa was launched in January. 12 firms from every quadrant of the state received an average of 36 hours of assistance ✓ The MyEntre.Net Business Concierge provided business intelligence to 302 businesses with 702 hours of research. ✓ Dream Big Grow Here attracted 225 entrant and 350 attended the pitch off events. More than 100,000 supporters visited the site during the contests ✓ 16 companies were served in the Innovation Incubator. Five new companies enrolled, seven graduated and 46 new FTE jobs were created ✓ UNI SBDC served 183 small business owners with 1:1 technical assistance 	<ul style="list-style-type: none"> ✓ MyEntre.Net online network touches 12,400 twice monthly. A partnership with Iowa Economic Development Authority rebranded the MyEntre.Net site to www.IASourcelink.com ✓ 4,440 small businesses attended a Webinar since 2003 ✓ 60 businesses have graduated from the RBC and Innovation Incubators ✓ The Innovation Incubator has generated 96 FTE jobs since inception ✓ MyEntre.Net social media reach grew to 3,580 across Facebook, LinkedIn, Twitter, and Pinterest
<p>Materials Innovation Service (MIS)</p>	<p>Mechanical, physical and chemical tests of metals, polymers and cementitious materials</p>	<p>Serving Iowa manufacturers and suppliers</p>	<ul style="list-style-type: none"> ✓ Technical assistance provided to more than 168 individuals and testing contracts from five companies 	<ul style="list-style-type: none"> ✓ Technical assistance or testing provided to approximately 160 individuals this year. More than 2,000 hours of testing provided since the beginning of the program



Section 3. Overview of UNI’s Economic Development Programs (continued)

Programs	Services	Those Typically Served	FY 2013 Results	Cumulative Results
Center for Energy and Environmental Education (CEEE)	Technical assistance, educational programs and leadership in energy conservation and renewable energy, environmental conservation and community-based agriculture	Iowa cities, counties, Iowa schools, teachers, farmers, businesses, elected officials, state agencies, community leaders, citizen organizations	<ul style="list-style-type: none"> ✓ Green Iowa AmeriCorps members weatherized 404 homes, performed 723 energy audits, engaged 1,683 volunteers, and saved \$1,269,500 in utility costs ✓ The CEEE FREE loan program increased the understanding of energy for 12,225 students and 499 teachers. ✓ UNI Local Food Program facilitated the formation of the Cedar Valley Community Garden Network. Buy Fresh, Buy Local participating restaurants and institutional buyers in the Black Hawk County area spent \$2.65 million on locally grown foods ✓ Making Energy Use Visible Through Neighborhood Competitions reached 70 Cedar Falls residents and provided education to help them reduce their energy use ✓ Get Energized Iowa energy reduction competition among four small Iowa communities engaged many of the 5,400 community members, educating them on how to reduce their electric usage ✓ In 2013, CEEE's waste reduction initiative reached 85 teachers and 70 pre-service teachers. They, in turn, reached about 2,000 students 	<ul style="list-style-type: none"> ✓ Since 1998, UNI’s Local Food Program has facilitated purchase of \$18 million dollars worth of locally grown fruits, vegetables, meats, eggs and dairy from hundreds of area farmers by institutional food buyers



Section 3. Overview of UNI’s Economic Development Programs (continued)

Programs	Services	Those Typically Served	FY 2013 Results	Cumulative Results
Recycling and Reuse Technology Transfer Center (RRTTC)	Recycling and by-products research, education and outreach	Serving Iowa businesses the recycling industry and Iowa citizens.	✓ Outreach services and project research related to recycling and reuse continues to be an ongoing focus to the UNI campus, the community and Iowa businesses	✓ Over 42 RRTTC funded research projects. Over 170 reports and publications available ✓ Outreach and services provided to more than 2,600 individuals this year, including business/industry, K-12 students and teachers, and Iowa citizens



Section 4: Grow Iowa Values Funding Projects

UNI's 2013 Regents Innovation Funding Annual Report has been submitted and is on file with the Board of Regents.

Section 5: Collaborative Projects

Metal Casting Center (MCC) Collaborates with Ames Laboratory, ISU and UI

- The MCC is collaborating with the Ames Lab at Iowa State University to investigate the casting of aluminum castings with Ultra-hard boride-based matrix reinforcement.
- The MCC is collaborating with the University of Iowa on a project funded by the Iowa Energy Center. UNI has been subcontracted to pour castings for UI and assist in the determination of thermo physical properties of foundry insulating materials and a grant awarded by the Iowa Energy Center to investigate Ablation casting of steel components.

IDM Collaborates with IEDA and PDI and Iowa Workforce Development and MidAmerican Energy

- IDM, in collaboration with the Professional Developers of Iowa, Iowa Economic Development Authority and Mid America Energy are working on the Regional Development for Iowa 2.0 project. The objective of this project is to move Iowa's regional economic development efforts to the next level. This project is also intended to provide a basis for analyzing the state's economic regions to better understand intra-regional economic relationships as well as the impact of the national and international economic environment on Iowa's economic regions.
- *Creative Corridor Clusters Employment and Staffing Pattern Summary Study*
IDM collaborated with Iowa Workforce Development (IWD) to complete the study "Clusters Employment and Staffing Pattern Summary" to assist the Iowa City Area Development Group (ICAD), Cedar Rapids Metro Economic Alliance, Kirkwood Community College and other local economic development organizations in the Creative Corridor Region to better understand the workforce needs of specific industries in order to help existing and prospective businesses. The study contains a detailed review of the region's composition and labor characteristics within thirteen primary industry clusters based on key employers in the region. Information from this project is being used to seek community and employer input regarding the region's workforce challenges and potential workforce solutions for the region. The study describes the staffing patterns and skill capabilities that are necessary to support our growing industrial base.

Iowa Waste Reduction Center Collaborates with State and National Partners

- The IWRC's STAR4D painter training program continues to work with and be funded by the United States Marine Corps (USMC) Corrosion Prevention and Control (CPAC) office. CPAC provides oversight to the initiatives taken throughout the year, as well as



the subcontracts with Science Applications International Corporation and Vision Point Systems. Initiatives include providing painter training to U.S. military base spray painters and completing research and development projects.

- Beginning in October 2012, the IWRC began work on the Iowa Food Waste Reduction Project, funded by an Iowa Department of Natural Resources (IDNR) Solid Waste Alternatives Program grant. The project consists of developing food waste reduction and diversion resources and workshops in which the IDNR provides oversight to ensure grant requirements are fulfilled.

Regional Business Center Partnerships Key to Success

- IASourceLink: UNI MyEntre.Net and the Iowa Economic Development Authority have partnered to deliver one of the top SourceLink models in the nation to Iowa business owners. Through collaborative outreach, additional state and national resource partners have been recruited to assist in this exciting initiative - ISED Ventures, Women's Business Center, Iowa Department of Revenue, Technology Association of Iowa, Pappajohn Entrepreneurial Center, Connect Iowa, Iowa Waste Reduction Center, U.S. SourceLink, U.S. Small Business Administration, Iowa Small Business Development Centers, Iowa Farm Bureau/Renew Rural Iowa, Iowa Area Development Group, Iowa Association of Business and Industry, BizStarts, and more. Only eight months old, this new web portal has achieved impressive results, including: almost 20,000 visitors, 888 direct interactions with Iowa business owners via the MyEntre.Net Business Concierge and IEDA Business License Information Center services. Additionally, 12 UNI MyEntre.Net powered webinars made available on IASourecLink have attracted 519 attendees – an average of 40+ business owner attendees per online presentation.
- UNI MyEntre.Net Webinars: UNI MyEntre.Net has entered into a new collaborative effort with the Iowa Department of Revenue to provide tax specific webinars to Iowa's small business community. The partnership has been hugely successful; attracting almost 200 attendees through just two presentations thus far (Iowa Sales Tax Basics & Sales Tax for Landscaping Firms). On-going work together is anticipated, with future webinars scheduled until the end of this calendar year and discussions to continue to cooperate into the fall of 2014.
- Dream Big Grow Here: UNI Entrepreneurship Outreach, the Iowa Bankers Association, the Technology Association of Iowa, Renew Rural Iowa, the Iowa Economic Development Authority, Delta Dental and eight regional economic development organizations statewide are partnering to conduct the second Dream Big Grow Here contest. The first and second years attracted more than 100,000 visitors and tens of thousands of online votes and comments supporting Iowa small business owners. The number of regionally sponsored contests represents two-thirds of all Iowa counties, and hundreds of small business contestants are expected to compete for up to \$15,000 in winnings.



Tallgrass Prairie Center Partners with Cedar Falls Utilities in Testing Feasibility of Burning Prairie Plants for Electrical Generation

- As a part of a project to determine maximum productivity of prairie biomass for burning for electrical generation, the Tallgrass Prairie Center teamed with Cedar Falls Utilities to gain experience in preparing prairie vegetation for burning and determining energy yield from burning. The prairie biomass was harvested by baling material from the TPC test plots, partially ground onsite by Vermeer Corporation of Pella and trucked to Pellet Technology of Gretna, Nebraska for further grinding and pelletizing. A test burn was conducted at Cedar Falls Utilities on February 27 and 28. For comparative purposes corn stover was burned the first day and 40.13 tons of prairie biomass was burned the second day. The test burn was conducted under the direction of Tim Titus of Comprehensive Emission Services, Inc. and Cedar Falls Utilities. This was a very useful project for examining various steps in the field to furnace process and in providing an indication of the energy potential of prairie biomass.

***Center for Energy and Environmental Education (CEEE) ***

- CEEE is working with ISU Extension in Black Hawk and surrounding counties to strengthen commerce around local foods and as well as creating a network of community-run gardens to increase access to fresh fruits and vegetables.
- CEEE collaborated with University of Iowa Flood center in raising awareness of factors leading to the floods of 2008, and the importance of better planning to significantly reduce damage due to floods of the future.

Section 6. Suggestions for New or Expanded Programs to Enhance UNI's Impact in Iowa

UNI proposes a combination of new and expanded services to better meet the needs of Iowa's entrepreneurs and small businesses. Services will be provided to entrepreneurs in all regions of Iowa and will also expand the culture of entrepreneurship on the UNI campus by serving students and faculty.

Business Concierge (BC) - Small business owners are provided free access to business intelligence and personal referrals to an Iowa service provider partner or source of capital by the BC team. The BC supports entrepreneurs statewide, many of whom seek assistance via IA SourceLink. As the BC team is expanded, more entrepreneurs will be served. We also propose adding a Small Business Ombudsperson to the BC services. Regulatory issues, access problems and poor communication skills are some of the immediate needs we have identified for this service. The BC team will serve as an objective entity to solve issues and get Iowa's small business owners through red tape and connected to the right people at the right time.



Network Iowa – a statewide liaison to assist small businesses is needed. For example, if a business owner receives a Targeted Small Business (TSB) loan, the Network Iowa liaison will follow up to see if their needs were met and/or what is needed next. Whether it is TSB, Micro-loans, SBDC, SBA, or some other service being delivered, the BC would be the follow up voice to insure the small business is getting what they need and then insure they know where to go next.

AppsLab - The growing interest in mobile applications (Apps) is very similar to the demand for web-based technologies in the late 90s. Numerous organizations on campus see Apps as a way to contact and support their constituents. The UNI John Pappajohn Entrepreneurial Center has launched a pilot phase of an AppsLab where students and faculty from a wide range of disciplines will work together with trained staff to explore the commercial potential of this technology and expand UNI's technology transfer initiatives.

Local Foods Entrepreneurship Support – numerous student and non-student entrepreneurs are interested in pursuing food-based businesses. Local food initiatives are supported by UNI outreach programs for growing and marketing fresh foods. The next step is adding value to fresh produce, which includes small-scale, and large-scale food manufacturing, restaurants, catering, and other food businesses. Food businesses also need an expert who can help them turn a personal recipe into a commercial or larger-scale producible recipe. Finally, the demand is high for a commercial kitchen which can be used for food preparation or packaging.

UNI MarketPlace – UNI has several inventions, learning tools and products that have been developed, with many focused on K-12 education and learning. In order to provide easy access to these resources, UNI will develop a MarketPlace website to market the products throughout Iowa and beyond. Funding also will support additional development of faculty and staff tools and resources.

University of Northern Iowa – as of June 30, 2013

Regents Innovation Fund

	FY 2013 RIF Appropriation - \$900,000
1. Economic Gardening and Entrepreneurship Outreach	\$300,000
2. Technology Transfer and Business Incubation	\$300,000
3. Regional Development	\$100,000
4. Competitive and Market Intelligence	\$50,000
5. National Ag-Based Lubricants (NABL) Center	150,000

University of Northern Iowa	Project	List of all FY 2013 Revenue Sources	5907 Revenue Dollars for FY 2012-2013	Amount Expended as of 12/31/2012	List of all FY 2013 Revenue Sources	5907 Revenue Dollars For FY 2013	Amount of FY 2013 Regents Appropriations Expended as of 6/30/2013
1	Economic Gardening and Entrepreneurship Outreach	FY 2013 Regents Appropriations (RIF)	\$300,000	\$85,863	FY 2013 Regents Appropriations (RIF)	\$300,000	\$300,000
		FY 2013 Federal Support		\$16,502	FY 2013 Federal Support		\$30,351
		FY 2013 Other		\$91,195	FY 2013 Other		\$270,137
Description of Project	UNI Entrepreneurship Outreach proposes to launch a statewide Economic Gardening (EG) program in Iowa to address a compelling need among smaller, locally-owned employer firms for actionable business intelligence and support. UNI will create and certify a strategic research team in accordance with the National Center for Economic Gardening to provide Stage II companies (those with 9-99 employees) with secondary market research and business intelligence.						
Anticipated End Results	The Iowa Economic Gardening Network will be formalized, participating organizations certified, and 50-75 Stage II clients identified for service delivery during calendar year 2013. At least 12 companies will receive expert research team services during the pilot phase between January and June of 2013. Three of MyEntre.Net's entrepreneur resources will be transformed into customizable technology modules increasing overall small business use from 2,000 annually to 2,500. Dream Big Grow Here will expand to ten contests and attract 250 contestants.						
Results Achieved to Date	A pilot program for Economic Gardening has been launched as an advance effort for a statewide program. A Strategic Resource Team has been certified and twelve economic development organizations from throughout Iowa have been trained in EG and have begun referring Stage II business clients for services. Twelve companies were served with EG services and networked services formalized through the pilot. Ten Dream Big Grow Here contests were hosted in the fall of 2013. An additional four regional hosts were placed on a waiting list. The ten contests served entrepreneurs in 66 counties, attracted 225 contestants and generated 100,000 online votes and comments over a four week period. Regional winners will compete in a Pitch-Off event during EntreFest in 2013 in Cedar Rapids, Iowa. Work continues on scaling three MyEntre.Net resources. The Dream Big Grow Here technologies are fully scaled and two others are underway.						
Plans	Economic gardening projects will be conducted for 12 stage II companies in collaboration with local economic developers. MyEntre.Net resources will be reconfigured into stand-alone program modules. These will include Dream Big Grow Here, Business Concierge and Webinars. The sixth annual EntreFest was held in Cedar Rapids, Iowa on March 7th and 8th, 2013.						

University of Northern Iowa	Project	List of all FY 2013 Revenue Sources	5906 Revenue Dollars for FY 2012-2013	Amount Expended as of 12/31/2012	List of all FY 2013 Revenue Sources	5906 Revenue Dollars For FY 2013	Amount of FY 2013 Regents Appropriations Expended as of 6/30/2013
2	Technology Transfer and Business Incubation	FY 2013 Regents Appropriations (RIF)	\$300,000	\$59,758	FY 2013 Regents Appropriations (RIF)	\$300,000	\$230,520
		FY 2013 Federal Support			FY 2013 Federal Support		
		FY 2013 Other		\$132,288	FY 2013 Other		\$302,902
Description of Project	UNI continues to advance intellectual property disclosures, protection and commercialization across campus. Strategies for commercialization include licensing, strategic partnerships and new business development. The Innovation Incubator has created a hub facility, coalescing the existing strength of Intellectual Property disclosures and University research with quality business services to support business incubation and growth. The incubator and support facilities offer a physical link between the Iowa business community, campus innovators and faculty researchers to enhance technology transfer. UNI will be forging a formal agreement with the ISU Research Foundation to assist and guide commercialization activities and starting discussions with the University of Iowa Research Foundation.						
Anticipated End Results	UNI expects ten disclosures, two patent applications and two license agreements. UNI's incubator will remain full and graduate 4-5 businesses into the regional economy and launch 15 student businesses in the JPEC student Business Incubator. Five late stage faculty research projects will also be assisted. Formal agreements with ISURF and UIRF will be completed.						
Results Achieved to Date	During FY 2013, 10 disclosures were received with three moving toward commercialization. Six faculty research grants were awarded for early-stage research with commercial potential. UNI has begun active collaboration with the ISU Research Foundation, receiving due diligence technical assistance on five technologies. The Innovation Incubator is full and five companies have recently graduated into the regional economy with one of the companies a former tenant in the Student Business Incubator. The Innovation Incubator conducted a regional BarCamp event, which attracted more than 100 participants to the incubator and led a joint Cedar Valley/UNI Innovation Day with the announcement of the Dream Big Grow Here winner. Another faculty spin-off was started in the past 6 months and a license agreement has been signed with an Iowa company.						
Plans	UNI will continue to focus on commercialization initiatives, including license negotiations and business startups. At least ten intellectual property disclosures will be received with two licensing agreements executed under patent or trade-secret provisions and UNI will conduct a faculty research grant competition. In addition, the Student Business Incubator and Innovation Incubator will remain full, generating spin-off companies for the Iowa economy. UNI will also expand its corporate research and development program to assist existing businesses in Iowa.						

University of Northern Iowa	Project	List of all FY 2013 Revenue Sources	5908 Revenue Dollars for FY 2012-2013	Amount Expended as of 12/31/2012	List of all FY 2013 Revenue Sources	5906 Revenue Dollars For FY 2013	Amount of FY 2013 Regents Appropriations Expended as of 6/30/2013
3	Regional Development	FY 2013 Regents Appropriations (RIF)	\$100,000	\$57,912	FY 2013 Regents Appropriations (RIF)	\$100,000	\$100,000
		FY 2013 Federal Support		\$3,402	FY 2013 Federal Support		\$6,237
		FY 2013 Other		\$45,158	FY 2013 Other		\$101,166
Description of Project	IDM will lead an effort to assess and structure Iowa's regions for economic growth. This will include asset mapping to determine regional strengths and linkages and thereby outline the most appropriate regional boundaries. In partnership with the Iowa Economic Development Authority (IEDA), Regent universities, community colleges, utilities, Professional Developers of Iowa (PDI) and the Iowa Department of Education, IDM will enhance the Business Expansion & Strategic Trends (BEST) of Iowa program.						
Anticipated End Results	Make recommendations for reorganizing Iowa's Regions, focusing on mapping regional strengths and linkages, propose new regional boundaries and suggest best practices for overall structure and leadership. Outline key benefits of regional development and assist Professional Developers of Iowa with communications and implementation.						
Results Achieved to Date	IDM has helped organize Regionalism 2.0 and conducted multiple planning meetings with PDI and steering committee members. IDM worked with IWD to complete regional asset maps for four regions. In addition, IDM worked with a Geography Department professor to outline new regional boundary options for Iowa, ranging from 6 to 16 regions. IDM partnered with utility companies and economic development service providers to update the Synchronist existing industry survey and helped local development organizations conduct more effective existing industry programs. Entrepreneurial community projects were launched in two regions to integrate entrepreneurship into the regional economy.						
Plans	IDM will lead the process for developing a new set of economic boundaries to help restructure and reenergize regions across the state and engage the economic development profession in the process. IDM will continue supporting regional targeting, marketing, organizational management and planning efforts as requested. IDM will participate in the Business Expansion and Strategic Trends (BEST) of Iowa program and expand the Entrepreneurial Communities Project to enhance and increase entrepreneurship initiatives in regional economic development. Working with the BEST of Iowa Partnership, IDM will enhance the data collection and analysis process.						

University of Northern Iowa	Project	List of all FY 2013 Revenue Sources	5908 Revenue Dollars for FY 2012-2013	Amount Expended as of 12/31/2012	List of all FY 2013 Revenue Sources	5906 Revenue Dollars For FY 2013	Amount of FY 2013 Regents Appropriations Expended as of 6/30/2013
4	Competitive and Market Intelligence	FY 2013 Regents Appropriations (RIF) FY 2013 Federal Support FY 2013 Other	\$50,000 	\$25,339 \$25,410	FY 2013 Regents Appropriations (RIF) FY 2013 Federal Support FY 2013 Other	\$50,000 	\$50,000 \$51,101
Description of Project	<p>Strategic Marketing Services (SMS) will develop and manage a competitive and market intelligence program for mid-sized Iowa companies. The purpose of devoting RIF investments to competitive and market intelligence projects is to expand economic growth across Iowa by stimulating business expansion opportunities. Accurate information is needed to make sound market entry or expansion decisions. Gathering and using data to make decisions is what SMS provides. Established businesses will be required to pay at least one-half of their project cost. SMS expects to assist at least five Iowa companies with advanced competitive and market intelligence projects. Priority will be given to businesses in the state's target industry clusters.</p>						
Anticipated End Results	<p>SMS will complete five competitive intelligence projects to expand market share, increase profitability and expand the workforce and market research projects for smaller Iowa companies and new startups and conduct five market feasibility assessments for technology transfer.</p>						
Results Achieved to Date	<p>SMS has used RIF dollars to provide market research services for the following Iowa companies: Iowa Mold Tooling in Garner; Clean Water Technologies in Cedar Falls; i-Tracking in Cedar Falls; United Equipment Accessories in Waverly; Casey's General Stores in Ankeny; Mid States Steel in Boone; and Plaid Swan in Dubuque. Market research and due diligence was provided to UNI's technology transfer program for five early-stage technologies.</p>						
Plans	<p>SMS will continue to consult with Iowa businesses, entrepreneurs, statewide associations and local governments to conduct competitive intelligence and develop market research plans. In some cases, the client may wish to undertake some or all of the research activities on their own, utilizing the market research plan as a guide. The final piece of competitive and market intelligence assistance will be devoted to phase one market research feasibility assessments for the technology transfer process.</p>						

University of Northern Iowa	Project	List of all FY 2013 Revenue Sources	5908 Revenue Dollars for FY 2012-2013	Amount Expended as of 12/31/2012	List of all FY 2013 Revenue Sources	5906 Revenue Dollars For FY 2013	Amount of FY 2013 Regents Appropriations Expended as of 6/30/2013
5	National Ag-Based Lubricants (NABL) Center	FY 2013 Regents Appropriations (RIF)	\$150,000	\$0	FY 2013 Regents Appropriations (RIF)	\$150,000	\$150,000
		FY 2013 Federal Support		\$15,000	FY 2013 Federal Support		\$150,000
		FY 2013 Other			FY 2013 Other		
Description of Project	NABL will evaluate and enhance microwave lubricant production technology by partnering with Cedar Rapids-based companies (Marion Mixers and AMTek) to investigate the effectiveness and economics at pilot-scale production levels of a new microwave-based lubricant production technology. NABL will conduct fundamental research activities including ongoing development of a Continuous Oil Recirculation System (CORS) incorporating biobased oils and derivatives into the diesel engine crankcase. NABL will support Iowa's biobased products Industry through active participation with industry organizations and provide appropriate standardized testing methods and industry compliance to help prevent sub-par products from entering the marketplace, thus protecting consumers, end-users and producers.						
Anticipated End Results	NABL will refine the microwave lubricant production technology, provide fee-based testing services to at least five biolubricant and/or biofuels industry clients and develop or enhance at least three vegetable oil based products.						
Results Achieved to Date	To date, NABL has provided oil testing services to three industry clients, leading to two ongoing product development research relationships with major biofuels and agriculture industry partners. NABL's patent pending microwave-based grease processing technology has been licensed to Marion Mixers in Marion, Iowa and the technology has been refined. Progress is being made in the CORS diesel engine test cell set up and configuration with key support from a major agriculture equipment manufacturer. NABL led working groups at national and international-level lubricants industry association conferences to advocate for biobased lubricant product standards and industry acceptance.						
Plans	The NABL Center will continue to collaborate with industry partners on development of full-scale microwave-based biolubricant manufacturing processes and equipment, measure and evaluate final product quality differences and identify major cost drivers in vegetable lubricant processes for comparison of microwave vs. traditional methods. New research work investigating the isolation of specific fatty acids such as lubricant feedstocks, coupled with new derivatives of soybean and other oilseeds, will continue and shows potential for expanded value-added activities in Iowa's biobased products manufacturing industry. NABL will participate with industry organizations to provide appropriate standardized testing methods and compliance.						