

UNIVERSITY OF WYOMING
OFFICE OF RESEARCH AND ECONOMIC DEVELOPMENT
2009-2014 PLAN

A true University is not a collection of colleges. It is not a cluster of professional schools. It is the association of scholars. It is the institution from which in every direction blazes the light of original research.

David Starr Jordan, First President of Stanford University

Relevant background

As the only four-year research university in Wyoming, the University of Wyoming has a responsibility to foster research and development not just on the campus but on behalf of the entire state.

The traditional core mission of the Office of Research and Economic Development is to serve UW researchers by providing assistance in submitting proposals for external funding and providing support in accounting and compliance with award requirements. In addition the office is increasingly involved in the state's economic development. Changes in the global economy have led to a fundamental shift in the strategies needed for economic success. Wyoming will succeed in the new economy by increasing the educational attainments of its people, and helping them in developing new products, services and business models, through research, and by transforming existing businesses to make them more productive. UW assists in all these endeavors through the research office's Economic Development Outreach Program in partnership with the Wyoming Business Council.

The Office of Research and Economic Development is composed of a number of units that enable it to fulfill both its research and economic development missions. This document presents a comprehensive plan for the Office of Research and Economic Development (including the Office of Sponsored Programs), followed by unit-level plans for:

- Office of Water Programs,
- Wyoming Natural Diversity Database
- UW-National Park Service Research Station
- Wyoming EPSCoR/IDeA Programs,
- Research Products Center,
- Wyoming Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Initiative,
- WyomingEntrepreneur.Biz Network (including the Small Business Development Center, Gro-Biz, and Market Research Center),
- Wyoming Technology Business Center, and
- Manufacturing Works.

RESEARCH AND ECONOMIC DEVELOPMENT PLAN

I. Mission and values:

The core mission of the Office of Research and Economic Development is to:

- enhance a culture of research and development at the University of Wyoming;
- provide support and regulatory services for externally-funded research, including educational opportunities and grants administration;
- provide support for faculty research through start-up funding, core facilities, seed funding and major equipment matching programs;
- foster and celebrate the research accomplishments of undergraduates, graduates and faculty, including sponsorship of the President's Speaker Series and Undergraduate Research Day; and
- provide service and education to Wyoming small businesses so they can increase employment and build wealth.

II. Previous accomplishments:

- UW faculty obtained a new record amount of external funding for UW research. The total, which has increased every year for 23 years, topped \$78 million in 2007-08.
- Negotiations defining a joint development agreement for a UW-GE High Plains Gasification Advanced Technology Center have been completed with significant participation of the Office of Research and Economic Development
- The groundwork for the initial planning stages of the NCAR supercomputing facility near Cheyenne has been laid with significant participation of the Office of Research and Economic Development
- Large, institution-building renewal proposals have been submitted to NIH IDeA and NSF-EPSCoR
- The Wyoming Technology Business Center was constructed and is operating at capacity.

III. Action Items

Place UW on the Forefront of Ethical Practices of Major Research Institutions

Action Item 1. Develop a UW Code of Ethics with input from faculty and administrators and present for adoption by the Board of Trustees.

Action Item 2. Add an element on ethical conduct of research to the Research Office website.

Action Item 3. Develop and deliver workshops and seminars on ethical conduct of research to faculty, graduate students and undergraduates in coordination with the Graduate School and other relevant units.

Provide Support Services for Externally-funded Research

Action Item 4. Establish an electronic research administration system that provides improved mechanisms for management of research proposals and funds.

Action Item 5. Expand educational opportunities for UW researchers, including workshops in grant writing to include humanities and social sciences; seminars in research practices with respect to technical compliance, and workshops on mentoring faculty, post-doc, and students, in cooperation with the Graduate School as appropriate.

Action Item 6. Redesign the Research Office website to better serve university and external constituencies.

Enhance Research

Action Item 7. Foster success of university core research facilities, including Microscopy, Nuclei Acid Exploration Facility, Stable Isotope Facility, and Macromolecular Core Facility by instituting a common operating model and developing cost centers.

Action Item 8. Foster interdisciplinary institution-building research initiatives and other major projects (such as EPSCoR, NIH IDeA, IGERT, UW-GE High Plains Gasification – Advanced Technology Center, NCAR Supercomputing Center, UW-DOE-industry Moxa Arch Carbon Sequestration Demonstration).

Action Item 9. Develop new initiatives for acquisition of major equipment.

Action Item 10. Work with long-range campus planning to ensure adequate research laboratory space is incorporated into construction plans to accommodate continued increases in UW sponsored research activity.

Action Item 11. Assess programs for new faculty start-up and seed money for exploring new research areas and revise as needed.

Action Item 12. Re-evaluate dissemination of information about research opportunities and modify to maximize effectiveness.

Action Item 13. Provide opportunities for UW faculty to address water-related research through the Water Research Program and other funding opportunities; interface with interdisciplinary academic programs in water-related areas.

Promote and Celebrate Faculty and Student Research Accomplishments

Action Item 14. Foster research opportunities for undergraduates in collaboration with the UW Colleges and Graduate School.

Action Item 15. Include in a redesigned website a page linked to university research accomplishments, including brief news items and in depth profiles of featured UW researchers.

Action Item 16. Redesign the annual report to be more visually attractive and include information on UW research accomplishments in addition to financial summaries.

Economic Development Initiatives

Action Item 17. Enhance knowledge of UW IP policies and technology transfer practices and increase faculty and student involvement in the university's economic and community development activities.

Action Item 18. Work to identify new UW technology to place into spinouts and startup.

Action Item 19. Initiate a statewide small business sustainability program.

Action Item 20. Position UW's WyomingEntrepreneur.biz as the destination for business assistance in Wyoming. This outreach effort is collaborative with the Wyoming Business Council.

Action Item 21. Initiate a robust program of incubation for technology-based business.

Action Item 22. Evaluate the potential success of a research park in southeast Wyoming.

Assessment

Action Item 23. The Office of Research and Economic Development will assess its activities annually in order to determine their effectiveness.

OFFICE OF WATER PROGRAMS

I. Mission and aspirations:

The Office of Water Programs/Water Research Program coordinates and supports research relative to important water resources problems of the State and Region, encourages and supports the training of scientists in relevant water resource fields, and promotes the dissemination and application of the results of water-related research.

II. Previous accomplishments:

Since inception of the program in 2000, it has funded twenty-five water related research projects at UW with \$3.6 million from US Geological Survey and the Wyoming Water Development Commission, supported projects for UW faculty in twelve academic

departments and supported student participation in funded projects of on average 15 students/year.

III. Action items:

Action Item 1. Identify, in consultation with state agency personnel, water-related research in the State of Wyoming (*annual*).

Action Item 2. Provide opportunities for UW faculty to address water-related research identified under the Water Research Program (*annual*).

Action Item 3. Provide support for and encourage the training of individuals in water-related areas (*annual*).

WYOMING NATURAL DIVERSITY DATABASE

I. Mission and aspirations:

The Wyoming Natural Diversity Database (WYNDD) maintains a comprehensive database on the distribution and ecology of rare plants, rare animals, and important plant communities in Wyoming. WYNDD distributes this information to all requesters under the philosophy that the best decisions regarding natural resources will be made only when everyone has access to complete and current scientific data. We aspire to be the state's primary clearinghouse of information and expertise on the rarest elements of Wyoming's biota.

II. Previous accomplishments:

On average WYNDD fulfills 110 formal and 312 informal requests for information on Wyoming biota per year, with all requests coming from organizations outside of the University of Wyoming. WYNDD staff members additionally acquire over \$600,000 in external research funding, complete and deliver 34 project reports, and participate in 12 professional meetings/ workshops per year. WYNDD research and information syntheses regularly inform the management of several species and habitats throughout the state, and have been instrumental in rectifying and averting problematic management issues.

III. Action items:

Action Item 1. Establish a program of Invertebrate Zoology to parallel the mission and accomplishments of existing WYNDD programs in Vertebrate Zoology, Botany, and Vegetation Ecology. *Timeline = in progress.*

Action Item 2. Integrate WYNDD infrastructure and activities into the Robert and Carol Berry Center for Natural History and Conservation (under planning now), including associated efforts such as the improvement of research collections and the establishment of a University of Wyoming Biological Field Station. *Timeline = in progress.*

Action Item 3. Integrate WYNDD activities and staff more closely into the University of Wyoming Program in Ecology. *Timeline = in progress.*

Action Item 4. Create and launch a web-based information dissemination tool that allows users to explore information in, and download information from, the WYNDD central database. *Timeline = spring 2009.*

Action Item 5. Contribute to the fundamental intent, format, and content of the Wyoming Game and Fish Department's Comprehensive Wildlife Conservation Strategy. *Timeline = 2009 - 2011.*

Action Item 6. Acquire recognition under Section 6 of the U.S. Endangered Species Act for the lead role in developing information on rare plants in the state of Wyoming. *Timeline = 2009.*

UNIVERSITY OF WYOMING/NATIONAL PARK SERVICE RESEARCH STATION

I. Mission and aspirations:

The mission of the UW-NPS Research Station is to act as an academic link between universities, colleges, state and federal agencies to address issues in the biological, physical and social sciences of concern to the two National Parks and National Forests that make up the Greater Yellowstone Area (GYA). To accomplish this, we provide housing and equipment for 60 researchers throughout the summer season at the AMK ranch as well as terrestrial and aquatic laboratories, library, competitive grants program, scholarships, interns, weekly public seminar series, a newsletter with listed National Park priority research needs and Annual Report of manuscripts distributed to over 300 parks, agencies and university libraries.

II. Previous accomplishments:

The UW-NPS Research Station has produced over 1000 research papers and provided over 2 million dollars in research funds to address issues within the GYA. Our grants program has grown to approximately 10 annual awards with additional support for two interns and undergraduate/graduate scholarships. The library has about 3000 books and journals and an on-line internet connection. The Annual Report with approximately 25 manuscripts in scientific journal format is distributed to National Parks, Monuments, state and federal agencies as well as university and college libraries throughout the country. The weekly dinner and seminar series has an attendance of over 100 people. The station also provides educational outreach by hosting university classes in ecology, geology and field biology, workshops, small conferences and meetings. We have negotiated a long term Cooperative Agreement between the University of Wyoming and National Park Service to secure our continued presence and partnership within the Greater Yellowstone Area. We also maintain 14 buildings that are on the National Historic Register.

III. Action items:

Action Item 1. Continue our partnership within the National Parks and National Forests in the GYA by having open dialogue to identify and prioritize research needs.

Action Item 2. Seek increased funding for research grants, scholarships and interns. This effort will support more University of Wyoming faculty and graduate student projects and will strengthen our bond with Grand Teton and Yellowstone National Parks as partners in the GYA.

Action Item 3. Refurbish the septic systems of all buildings on the AMK ranch. This would involve the removal or bypass of existing leach fields and connecting all buildings to a lift station located on high ground away from Jackson Lake..

Action Item 4. Stabilize the shoreline and refurbish the boat dock on Jackson Lake.

WYOMING EPSCoR/IDeA PROGRAM

I. Mission and aspirations:

The mission of the Wyoming EPSCoR/IDeA Program is to strengthen research and education in science and engineering in Wyoming. Wyoming EPSCoR/IDeA aspires to improve research infrastructure, including equipment and personnel, with the goal of enhancing competitiveness for Federal research funding. Oftentimes this support strengthens departmental and multidisciplinary research groups, as identified by the University's planning process. Another goal is helping develop the next generation of scientists, engineers, and biomedical professionals by broadening participation in student research opportunities. The EPSCoR/IDeA Program is supported by the Wyoming EPSCoR/IDeA office, which reports to the Office of Research.

II. Previous accomplishments:

NSF EPSCoR and NIH IDeA (COBRE and INBRE) funding has provided start-up funding for new faculty in ecology, neuroscience and other described biomedical areas. NSF EPSCoR and NIH COBRE funds helped to establish the Nucleic Acid Exploration Facility (NAEF) and the Microscopy Core Facility and support the Stable Isotope Facility (SIF) and Wyoming Geographic Information Science Center (WyGISC). The EPSCoR Office provides significant support to the operation of EPSCoR programs running at the University of Wyoming for the benefit of the State of Wyoming. In addition Wyoming Undergraduate Research Day, the EPSCoR Undergraduate Research Fellowship program, the Wyoming Science Teacher Education Program, Community College Awards, and Summer Research Apprentice Program are annual projects conducted by Wyoming EPSCoR/IDeA. INBRE funding provides for enhanced partnerships between UW and community colleges, and creates opportunities for undergraduate students and graduate students to participate in biomedical research early in their academic careers.

In 2008 renewal proposals for both NSF EPSCoR and INBRE were submitted.

III. Action items:

Action Item 1. Continue to use the EPSCoR and INBRE programs to build faculty expertise and research infrastructure in critical areas of biomedical science and ecology and climate change.

Action Item 2. Use these programs to foster interdisciplinary research and graduate programs at UW and to build connections between UW and community colleges that promote interest in science and technology at the undergraduate level.

Action Item 3. Consider more complete integration of NIH IDeA programs into the support structure of the Wyoming EPSCoR/IDeA office.

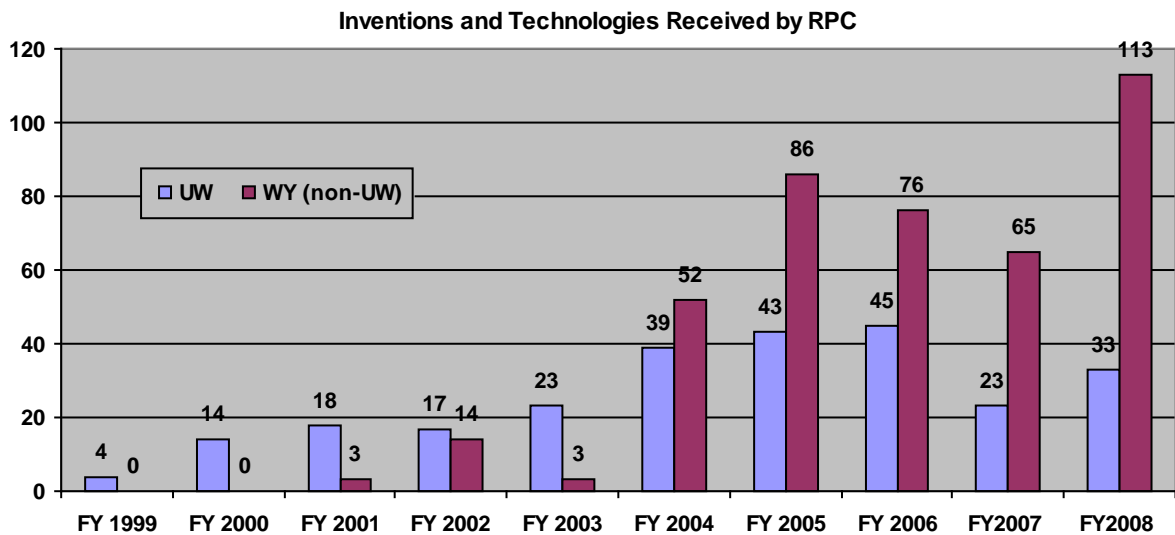
RESEARCH PRODUCTS CENTER

I. Mission and aspirations:

The Wyoming Research Products Center (RPC) has two important missions:

1. Identify, protect, and license discoveries made at the University of Wyoming for the purpose of local economic development, increasing corporate research funding, generating licensing revenue for further education and research, and encouraging innovation for the public good.
2. Diversify Wyoming's economy by providing outreach services to entrepreneurs and businesses supporting the creation of technology-based companies and university spin-outs, attracting business and creating new industries for Wyoming innovations, and assisting inventors in protecting and marketing their intellectual property.

II. Previous accomplishments:



III. Action items:

Action Item 1. Enhance knowledge of UW intellectual property policies and technology transfer practices on campus by holding informational sessions, presenting seminars at every department, and developing online training materials (such as interactive tutorials, podcasts, or web downloads) to increase the number of new UW technology disclosures received by 2011. Developing new UW innovations into patented inventions contributes to the generation of corporate research funding and licensing revenue for further education and research and to the attraction and retention of talented faculty.

Action Item 2. Work to identify potential entrepreneurs with new technologies and to support start-ups so the number of technology-based companies located in Wyoming increases each year. Identifying, protecting, and licensing intellectual property ultimately leads to new business, the creation of jobs, continued innovation, and the overall economic development of the State.

WYOMING SMALL BUSINESS INNOVATION RESEARCH/SMALL BUSINESS TECHNOLOGY TRANSFER (SBIR/STTR) INITIATIVE

I. Mission and aspirations:

The mission of the Wyoming SBIR/STTR Initiative (WSSI) is to assist all qualified Wyoming small businesses and individuals to access the funding opportunities provided by the federal Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) Programs. Execution of the WSSI Mission diversifies and strengthens Wyoming's economy by stimulating the growth of the state's technology-based business sector, generating new jobs and creating wealth.

II. Previous accomplishments:

WSSI has awarded 266 Phase 0 Contracts totaling \$1,330,000 over the past 20 years. These funds have enabled 135 Wyoming individuals and small businesses to compete in the federal SBIR and STTR Programs, resulting in 46 Wyoming individuals and small businesses being awarded more than \$38 million in SBIR and STTR grants and contracts. An estimated 200 professional level jobs have been created in Wyoming as a result of this investment.

III. Action items:

Action Item 1. WSSI will develop and execute statewide promotional programs designed to heighten the awareness of Wyoming's tech-based innovators of the benefits of participation in the SBIR and STTR Programs.

Action Item 2. WSSI will continue to conduct regional SBIR and STTR seminars and workshops to identify and stimulate potential program participants.

Action Item 3. WSSI will continue to conduct periodic training workshops for the Phase 0 reviewers and Phase I & II mentors.

WYOMING ENTREPRENEUR.BIZ NETWORK
(SBDC, GRO-BIZ, MARKET RESEARCH CENTER)

I. Mission and aspirations:

The Wyoming Entrepreneur.Biz Network envisions itself as Wyoming’s premier provider of business services that empower entrepreneurs to build profitable and sustainable businesses. The WyomingEntrepreneur.Biz network is dedicated to strengthening Wyoming businesses and creating sustainable economic growth by building strategic alliances and by providing excellent management assistance, educational programs and helpful resources for Wyoming small businesses and entrepreneurs. Its values include service, quality, integrity and the wellbeing of our team.

II. Previous accomplishments:

SBDC Impact							
FY1995 - FY2008							
*FY	Clients	Counseling Hours	Workshops	Clients Trained	Total Clients	Capital Impact	Jobs Created
1995	589	2,473.25	38	611	1,200.00	\$2,123,887	
1996	817	3,216.00	63	794	1,611.00	\$6,771,050	399
1997	917	3,420.50	57	1,000	1,917.00	\$8,213,500	453
1998	1,037	4,761.25	86	1,155	2,192.00	\$8,539,286	571
1999	1,039	4,635.00	120	1,234	2,273.00	\$12,961,628	825
2000	1,051	4,901.00	124	1,653	2,704.00	\$11,322,980	725
2001	1,168	5,302.00	142	1,378	2,546.00	\$17,710,760	657
2002	1,220	6,301.00	146	1,469	2,689.00	\$13,782,518	639
2003	1,375	6,530.75	144	1,577	2,952.00	\$14,408,308	795
2004	1,561	7,525.65	188	2,008	3,569.00	\$15,511,228	639
2005	1,506	8,083.75	178	2,163	3,669.00	\$15,738,816	522
2006	1,367	7,075.00	149	1,530	2,897.00	\$9,116,666	517
2007	1,029	4,746.61	117	1,232	2,261.00	\$13,087,376	215
*2008	845	3,852.17	38	380	1,225.00	\$10,441,688	113
TOTAL	15,521	72,823.93	1,590	18,184	33,705.00	\$159,729,691	7,070

*FY

*2008

Numbers are derived from a partial year, 3 quarters, 10/1/07-6/30/08.

GRO-Biz

FY2000 - FY2007

FY	Act. Clnts	Cnsling Hrs	Wrkshps	Trained	Total Clients	Capital Impact	Jobs*
1999-2000	24	47	11	88	112	4,071,885.00	81
2000-2001	92	258	44	804	896	1,049,973.00	26
2001-2002	244	1309	50	1022	1266	11,968,931.00	299
2002-2003	295	1263	23	1027	1322	28,087,987.00	433
2003-2004	219	1522	22	434	653	17,589,502.00	413

2004-2005	343	2260	16	363	706	17,923,407.00	423
2005-2006	199	881	19	510	709	20,272,919.00	386
2006-2007	260	445	37	1085	1345	8,459,767.00	169
2007-2008	357	846	21	943	1300	4,751,780.00	95
Grand Total	2033	8831	243	6276	8309	114,176,151.00	2325

***These figures are based on the DLA current sustainable wage rate = one job created or retained per every \$50,000.00**

III. Action items:

Action Item 1. Using an aggressive Web 2.0 marketing strategy, WyomingEntrepreneur.Biz seeks to become recognized statewide as the go-to address for business assistance.

Action Item 2. Initiate a new Sustainable Business Program to help Wyoming businesses take advantage of the worldwide trend in green and sustainability.

Action Item 3. Penetration rate—increase the percentage of businesses receiving assistance from WyEn.biz to total businesses. The Governor has asked the Wyoming Business Council to track penetration rates as part of the statewide strategic planning process. WyEn.Biz will support these efforts by aggressively marketing the network and the new menu of specialty services offered.

WYOMING TECHNOLOGY BUSINESS CENTER

I. Mission and aspirations:

The WTBC is a business development program that focuses on developing early stage, technology-based companies throughout the State of Wyoming, with a secondary emphasis on high-growth firms. We accomplish this by stimulating new, high-potential start-ups, and quickening the growth rate of existing client businesses.

II. Previous accomplishments:

The WTBC has nine clients currently located in the WTBC facility, and seven companies participating in the WTBC Outreach Program. Additionally, the WTBC is working with five pre-venture companies that have the potential to become the next generation of successful program graduates. A second company is in the process of graduating from the WTBC facility into the Wyoming business community.

III. Action items:

Action Item 1. The WTBC will form a networking organization to assist in the development of an entrepreneurial community in Wyoming. e2e will focus on providing networking opportunities, educational events, and access to business service providers to entrepreneurs and anyone interested in entrepreneurship.

Action Item 2. The WTBC is operating a pilot program that provides technical assistance for high-growth potential companies across Wyoming. During this year, the program will focus on increasing the number of clients, and documenting the process used to make these companies successful.

MANUFACTURING-WORKS

I. Mission and aspirations:

Manufacturing-Works serves as an expert advisor, value-added service provider and the principle catalyst for instilling positive change, insight and development for major manufacturing and technology business growth. Manufacturing-Works is a key connector of manufacturers, technologies, federal and state governments, private sector resources, and the University of Wyoming through a cadre of professional field staff primarily consisting of registered professional engineers and business consultants.

II. Previous accomplishments:

Manufacturing-Works

Economic Activity/Independent Client Survey Metric Results

	FY2005	FY2006	FY2007	FY2008
Impacts	Actual	Actual	Actual	Actual
Client Sales	\$3,487,100	\$4,955,200	\$29,159,500	\$13,577,500
Client Cost Improve	\$1,211,542	\$9,000,377	\$27,104,700	\$6,691,450
Client Jobs/Add/Save	166	188	123	143
<u>Market Penetration</u>				
Primary Clients	194	190	188	139
Targeted Clients	120	110	100	90
<u>Center Financials</u>				
Retained Income	\$0	\$0	\$142,512	\$174,403
Project/Service Fees	\$120,149	\$163,990	\$195,387	\$221,506

Center Performance Measurements for 2nd Quarter 2008 (latest available)

(Compared to the 58 other MEP centers across the USA)

Performance Indicator	MW	Min	Median	75th%
Bottom-Line Impact Ratio	64.71	8.20	29.46	47.67
Investment Leverage Ratio	58.96	6.40	23.25	29.90
Clients Served/Fed \$M	320	220	314	423
Impacted Clients/Fed \$M	99	44	64	93
Percent Quantified Impact	80%	60%	79%	84%

Manufacturing-Works is above the 75th percentile in three of the five categories on the national level, placing it in the top ten center rankings for effectiveness to the client base of manufacturers and technology companies as compiled by an independent non-governmental survey compilation and research group.

III. Action items:

Action Item 1. We will remain in the top 10 of all 59 MEP Centers in the United States in terms of bottom-line client impact, investment leverage and above the 75th percentile in clients served per federal dollar.

Action Item 2. Manufacturing-Works will achieve recurring productivity gains for our customers that exceed the competition through an enterprise wide commitment to continuous improvement.

Action Item 3. Manufacturing-Works will gain competitive advantage for our clients through best practices in talent recruitment, development and retention.

Action Item 4. Manufacturing-Works will secure business advantages through people, partnerships and systems capable of engaging global markets, talent and resources. These include exclusive city/state partnerships with the Export/Import Bank of the United States for strategic export policies and financial support for Wyoming manufacturing with a desire and/or ability to export. Annual reports by the Ex/Im Bank show us increasing in value by four state positions in their latest release in April 2008. We expect to achieve similar gains in the next 6 years.

Action Item 5. Manufacturing-Works will leverage a flexible network of suppliers and partners to provide competitive advantages of speed, cost and quality for clients resulting in supply chain partners to have leverage in nationwide markets such as the aerospace, medical device and transportation industries as well as new technology agricultural machinery.

Action Item 6. Manufacturing-Works will integrate environmental best practices into company operations and product development to maximize competitive advantage. We will strive to exhibit at least three self-sustaining manufacturers to the state by 2010.