A GOVERNOR’S GUIDE ON STATE RESEARCH AND DEVELOPMENT FUNDS

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Illinois
Indiana
Michigan
Minnesota
New Hampshire
Rhode Island
South Carolina
Vermont
Wisconsin
Wyoming
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OVERVIEW OF OVERLAPPING THEMES THROUGHOUT THE STATES

Mobilizing for change: All states on the move at some level, creating initiatives that strengthen existing assets, building on core assets – through investment in research labs and institutions as well as industry clusters.

Network Support: Many states have Centers of Excellence – some physical, some virtual – often to engage and support rural area of state in entrepreneurship, networks, expertise, commercialization and funding support for new business.

Education: State investment in Higher Education still suffering from budget constraints – shrinking investment where we need to build our knowledge base – tipping towards a generational loss of competitiveness in some instances. University tuition rise increasing disparities that diminish state access to potential knowledge and talent excluded – equity. STEM proposals in play but states are lagging.

Long term plans: No state seems to have an overarching state ED and R&D strategy.

More dynamic engagement required for this transformation

- First action step – breaking down the silos/barriers to partnership and key engagement with Private Sector/business leadership seen as critical – all states striving to do this

- Collaboration across disciplines is a more recent criteria for qualifying for federal and foundation grants to do university research and industry research - Institutional support is pressing researchers in this direction. The MN Partnership for Bioscience and Medical Genomics and the Wisconsin Institutes for Discovery were established with collaboration as cornerstone of initiative.

- Within State Agencies – efforts made to integrate departments of Workforce Development, Economic Development, Trade, Commerce, and Commercialization in a way that serves the state best. WF shifting from old model to an industry driven model – shifting away from job seeker driven ED.

- University and Industry partnership key area of change – Universities creating Offices of Corporate Relations, Offices of Academic and Corp. Relations, fostering a “Front Door” policy with CEO’s – found that Chief Executives were not aware of what Universities had to offer as resources and shared expertise

- Evaluating strengths of industry clusters and develop long range strategic plans – training Workforce professionals across the state in MN to engage WF with business more directly to understand both sides of the aisle and convene around cluster issues – a bold commitment to this transformation.

- Regional Associations like the Midwest Research University Network (MRUN) – act as catalyst between University, Business and Government

- Creating programs to attract Venture Capital investment within your state.

- Bioscience and tech transfer focus across the board in Mid West states. Dept.’s of Commerce or Economic Development are setting up tech transfer offices as are the Universities.
What Is Missing?

- Statewide strategic plans for a more innovation-based economy that are inclusive regionally, recognizing assets both urban and regional, embracing potential of young and old to contribute to the mobilization toward mission and goals through statewide engagement efforts. Balance on the continuum.

- More free resources and services for start up businesses – to know the fundamentals of what it takes to get started and funded. (In Twin Cities, University of St. Thomas, University of MN and state SBIR office) Wisconsin’s entrepreneurial strategy most dynamic – creates win/win with Governor’s Biz Plan Contest

- No Integrated strategy between Departments of Education and Economic Development at the state level for business and schools to understand the same big picture and create a holistic approach to learning and preparedness. Switch from pipeline to tributaries of knowledge development, skills development and opportunity for high wage jobs.

- Citizen engagement in statewide transition to innovation based economy – shifting the national state of mind away from fear to citizens revitalized to work together for the common good

- Training State Economic Development and Workforce Development to work with and understand business and the shift from sectors to clusters

- Restore a positive sense of the future with principles of equity – access that are regionally and educationally inclusive

- Place based Education – that reframes regional industry jobs, the skills required and the environment of these workplaces. (Printing no longer “dirty”, IT/Computer tech no longer “nerdy,” Mining taconite more tech based)

- Students need to know they are state assets – where is our Youth Development Policy? (Finland implemented one over fifty years ago).

- Public made more aware of business, industry and university assets and discoveries – build on existing state pride.

- Marketing campaign by states to educate citizens about a new state identity based on knowledge and expertise as strengths in building an economy everyone is a part of.
FIGURE 1: STATE AND LOCAL GOVERNMENT R&D EXPENDITURES AT UNIVERSITIES AND COLLEGES

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<td>45,428</td>
<td>54,494</td>
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<td>53,998</td>
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1. Thousands of dollars
FIGURE 2: STATE AND LOCAL GOVERNMENT EXPENDITURES AT UNIVERSITIES AND COLLEGES

State and Local Government Expenditures at Universities and Colleges

Thousands of dollars

Year

1999 2000 2001 2002 2003 2004

Illinois
Indiana
Michigan
Minnesota
New Hampshire
Rhode Island
South Carolina
Vermont
Wisconsin
Wyoming

FIGURE 3: THE MIDWEST REGION

The Midwest Region

Thousands of dollars

Year

1999 2000 2001 2002 2003 2004

Illinois
Indiana
Michigan
Minnesota
Wisconsin
QUOTES AND SNAPSHOTS
QUOTEs AND SNAPSHOTs FROM REPORTs

ILLINOIS
- “It was the economics of the creative economy and the scarcity of arts education investment…that mobilized Illinois Arts Alliance to create Illinois Creates.” Alene Valkanas, IAL

INDIANA
- What was recognized by the private sector in life sciences was that there were plenty of raw materials related to life sciences including the necessary infrastructure, but Indiana was not notable for its life science cluster. The initiative was a means to bring all those related to the industry together.

MICHIGAN
- “The competition based funding for the Center for Automotive Research, who recently received a grant from state for development of Connected Vehicle Proving Center which tends to capture cars in the vehicle industry for safety. The program is also in the process of implementation in efforts to create commercialization and an extensive job market.” Lisa Hart, Center for Automotive Research

MINNESOTA
- The signing of a bill for a Renewable Energy Standard in the state was being hailed the Session of Renewable Energy - this is symptomatic of the periodic nature of funding – to truly impact Renewable energy - it must be a long term plan - “short sighted planning is not consistent with continued competitiveness ” Tim Mulcahy, VP Research, University of MN

NEW HAMPSHIRE
- The Department of Resources and Economic Development funded a feasibility study in 2002 which evaluated the need for infrastructure and technological landmarks to support and maintain New Hampshire’s industries with an emphasis on biotechnology.

RHODE ISLAND
- Rhode Island is shifting its focus “to compete in the morning and collaborative in the afternoon.” (4) (In recognizing that the new economy model allows for greater mobility of the workforce via the Internet and given that the State is the southern hub of the Boston Metro)

SOUTH CAROLINA
- “The Palmetto Biotechnology Alliance plays the role of advocacy and networking for South Carolina. Palmetto is determined to keep the Life Sciences in the public mind as well as support expanded biotechnology and agricultural sciences to capture state R&D in addition to economic development.” Gale Sowle, Palmetto Alliance

VERMONT
- Instead of changing the environmental stewardship culture, Vermont has embraced it by strengthening its environmental engineering programs, increasing the number of tax incentives for individuals and businesses to make shopping environmentally-friendly more cost competitive, and enhancing the environmentally-focused culture.

WISCONSIN
- “The big mountain each state faces is the decline in federal research money – NIH and NSF peaked out, so there’s fewer federal dollars all around.” Tom Still, President, Wisconsin Tech Council

WYOMING
- We created a Phase 0 program for companies too small to write grant proposals - $130,000 of state R&D has leveraged $30 million in successful fed grant outcomes. Now we have about $30 million for innovation! Bill Gern, VP Research UW
STORIES
STORY #1 – Engagement, Education, Partnership

ILLINOIS STATE SUPPORT FOR R&D IN ARTS EDUCATION PATHWAYS TO AN ECOSYSTEM MODEL

The Illinois Arts Education Initiative, Illinois Creates, dovetails into the states investment in advancing innovation. Invited by the Arts Education Partnership (AEP) in Washington DC, along with four other states to talk about approaches and lessons learned, IAL came away from that experience ready to develop a brainchild: Illinois Creates. Illinois Arts Alliance (IAL) was the only organization using a Public Relations group to council them on ways to shape and deliver their message to government. As a consequence, they branded their initiative with an education icon, an apple in the logo, visually branding Illinois Creates and more importantly, encompassing the larger partnership it represents. This partnership of stakeholder institutions and associations in pursuit of funds for the Illinois Arts Council now brings everyone together under a whole new venture in what could be called, an ecosystem model.

Asked what motivated them to lead Illinois Creates, the Director of IAL, Alene Valkanas said “It was the economics of the creative economy and the scarcity of arts education investment (1).” IAL was motivated to be more actively involved with the Arts Education Advocacy group, a task force of the Chicago Community Trust (CCT). CCT’s focus is on education improvement in general and arts education in particular. After a year or so of participation, IAL was asked to help move the policy aspect of art education forward at the state level. All the participants realized that change could not be made in a system unless the change was made with a state mandate and Chicago would need to take the lead in responding to that need.

Operational support funded a full time staff position. Julie Adrianopoli, with experience from working with Art Education Partnership, stepped into that position. Julie knew that gathering quantitative and qualitative data was required to find out if significant change was taking place in other states and if so, what was being offered and what worked. Minnesota was one of ten or more states that early programs in place as innovative models.

From the IAL report I learned about the Perpich Center for Arts Education, established by the state legislature in 1985. “The Perpich Center is a unique state agency charged by the MN Legislature to bring arts education into all K-12 schools. Located on 30 acres in a suburb of Minneapolis, the Center houses an arts high school, a professional development and research institute, and an arts education library. The Arts High School is a tuition-free, residential, public school that accepts 310 students into grades 11 and 12 to focus on one of six arts areas: music, dance, theater, visual arts, media arts and literary arts as part of a comprehensive education. The Professional Development and Research Institute is a resource center that seeks to improve teaching and learning through the arts. It focuses on the R&D of policies and best practices that promote teacher and artist professional growth and school effectiveness…The state currently provides the Perpich Center $6.4 million annually.” (IAL report 2005)
Julie led a very essential action that contributed to the creation of Illinois Creates – baseline research with a protocol and software formulated by Creative Industries. The software gave them the ability to give an accurate snapshot to elected officials in order to make a statement. Illinois elected officials reaction to the study was powerful because it showed that the number of jobs to arts related businesses was equal to the same number of jobs from Lockheed! Showing graphically all the arts related businesses created greater awareness of the linkages and how the investment does return through an entrepreneurship pipeline. The snapshot also provided a color-coded map of arts related businesses in congressional and senate districts. A groundswell of stakeholder interest and support from parents to politicians helped them develop an internal working model - Arts at the Core.

Arts at the Core developed as IAL’s internal document that directed their planning and their branding of Illinois Creates. Alene Valkanas, “If you want a state mandate, you can’t force it on a school system, you must help them develop a readiness and willingness.” From their investigations and the response received, IAL learned that the best way to deliver was by providing school districts with planning grants – to bring their own stakeholders together and to identify first steps to introduce or expand arts education programs in their own schools. Foreign Language Arts are benefiting from Illinois Creates, developing or expanding programs when historically Fine and Performing Arts compete with Language Arts for numbers to maintain programs.

Assessment was the essential tool for a strategic goal to be achieved effectively, gaining statewide support and funding. Another investment made was the increased capacity and effectiveness of the organization by using the internet as the agent or point of contact. With an E-Advocacy system, they are communicating with stakeholders, parents and teachers in a way that wasn’t sufficient in the past. In a two to four year period, IAL’s lists have grown from 1,200 to 11,000 letters sent – electronically. They now issue a quarterly newsletter – free of charge to the universe now – with savings that are enormous, making it an inexpensive yearly investment.

Alene said the response has been heartwarming. She stated that, “One teacher so believes in what we are doing that she set up an auction to raise awareness about the opportunities offered by Illinois Creates. She raised $220,000 and that was from Greater Illinois, not from the Metropolitan area!” Lisle Soukup, formerly of Arizona and now working with IAL as Interim Policy Director, shared that while there was not a formal systematic recognition of these efforts, they do hear public officials making the connection. When businesses are looking to relocate here, employees are happy to learn that going to school in Illinois includes an arts education. “We have been pathfinders.”

Presently, IAL is requesting $7 million for FY ’07 because they have learned that implementation grants are more expensive to support than planning and they do not want to present the carrot and then take it
away with truncated funding. IAL wants to engage districts who haven’t applied as well. Go to the IAL website under arts and economic research and you can learn about how to present information in a way that will bring about change at the level of government. (http://www.artsalliance.org/education.shtml)
STORY #2 - Entrepreneurship

LESSONS LEARNED FROM SCIENTIST START-UP EXPERIENCE

1. MN is being asked to begin to take an active hand in fostering small business Activities (lobbied by Nano Advisory Committee)
2. American business climate doesn’t prepare for distance, more a slave to short term rewards.
3. Important lesson: university scientists need business savvy assistance.
4. Key asset: knowledge spillover for me and educated students that will become Employees
5. Minnesota Project Innovation was a state asset to us but their funding was cut - connected to supporting small business to win SBIR and other grant money.
   - Ready access to the use of expensive lab equipment essential
   - Availability to people/expertise outside the University is due to federal funding, not state support
   - Translational research facility instrumental
   - Cautious political climate leaves you behind

Excerpt from Interview - 2/16/07
Burke Murphy and Dr. Patrick Guire

SurModics Inc. (formerly BioMetric Systems Inc. and then BSI) Co-founded by Dr. Guire in 1979 where he worked for 26 years as VP/Chief Scientific Officer

ISurTec, Innovative Surface Technologies, LLC, founded in 2004 to continue and expand the team’s biotechnology and surface chemistry R&D programs.
- Received 5 SBIR Phase I grant awards from NSF and NIH and transferred one Phase II previously awarded to the research team at SurModics, Inc.
- Housed at University Enterprise laboratories (UEL), staff of 14.
- Developing new proprietary surface-modification reagents and use testing them for diagnostic, drug delivery and biomaterial/biotechnology markets

Burke: Would you speak about the climate for entrepreneurship and R&D in MN?
Dr. Guire attributes the climate for his research to the academic environment – the university has the equipment that small business cannot purchase for themselves.
- Ready access to the use of expensive lab equipment
- Availability to people outside of the University is due to federal funding not state support
- Currently MN legislature is being lobbied to budget funds for half the cost to small businesses to use of university equipment
- Use of Nanotechnology (He participates in an advocacy committee for MN Nano a non profit lobbying legislature for $1 million)
- Costs still an obstacle to young new businesses = a few private companies have this equipment.
- MN is being asked to begin to take an active hand in fostering small business activities
- Political climate is cautious and leaves you behind
- Wisconsin, Indiana, Ohio and PA are moving faster than MN and of course, CA and MA are way ahead
Dr. Guire in brief:
- American business climate doesn’t prepare for distance – more a slave to short term rewards
- Important lesson: university scientists need business savvy assistance.
- Key asset: knowledge spillover for me and educated students that will become employees
- Entrepreneur spirit is alive but venture capital climate requires too much control and profit. Venture capital community here is dedicated to new medical devices and information management investment IT – both take up almost all the venture capital money.

What of location advantage?
- Being near strong research university important
- Accessibility to equipment and students
- Commercialization activities – once commercialized on products we can be more mobile – working outside the metro region.

Does MN have the talent and work force? YES
- Generating good scientists and engineers
- Good home grown talent – if they can be kept here
- May have trouble keeping some and trouble bringing in experts

Is he worried about competition? No, he is breaking new ground.

He has no awareness of a paradigm shift however the work being done there is multi disciplinary because the U of M is strong in Science and Engineering. The mix is:
- Bio physics
- Chemistry
- Biology
- Cell biology
- Engineering – mechanical and chemical
- Electrical engineering for information processing
- Bio sensor technology – work with physics for magnetic science

What’s missing?
- BioChemistry immunology – devices to detect infection
- Talent needed – Micro Biologists for controlling infection on medical devices. This university doesn’t do that yet and it is a deficit.

From the small business perspective what’s missing?
- availability of financial support
- without SBIR program he wouldn’t be there
- SBIR – initiated proposals have higher success rate than University initiated proposals – success in getting grant is lower than SBIR program. Many scientists and engineers at the U win SBIR by creating a shell company.
- He won grants and contracts while SBIR was a pilot program with NSF in late 70’s – research applied to national needs – he won Department of Defense grants to small business technology.

Is there shared discovery and collaboration? YES
- We collaborate with university professors and other companies
- Mostly with product development
Governor’s Councils, as advisors driving innovation, have played a significant role in state assessment and evaluation reports in between 2000 and 2005. Some reports were done in targeted areas (MN) such as Bio Science or to undertake strategic repositioning in economic development and research statewide (WISC).

There appeared to be a competitive edge when a state has undertaken an assessment of the state’s 3 E’s – economic development, education and employment. Assets that are fundamental investments for strategic and sustained competitiveness are identified and defined in a comprehensive way. Assessing state conditions and capacity in relation to historic industry cluster growth, core strengths in clusters and business, research, infrastructure and talent, to determine state’s capacity and potential for new research and development can be a pathway to transformation.

A comprehensive ongoing assessment and evaluation needs to be done for a state to develop a strategic plan that is competitive in securing investments in R&D and building an open innovation model.

Here’s a glance at some of our states’ Advisory Councils:

**I. The Indiana Economic Development Council**

- Members are from the private, government, and educational communities
- Established in 1985
- Governor is the chairman and the Lieutenant Governor is the CEO
  - Underwent a cluster analysis in collaboration with Purdue and discovered the key clusters were advanced manufacturing and life sciences and that IT was considered a transforming cluster
  - Drivers of the new economic model were identified as:
    1. Globalization
    2. Regional Thinking
    3. Smart Government (government that is able to facilitate economic development rather than hinder it)
    4. Business and Innovation (the key characteristic of a successful new economy business is its ability to continuously innovation as well as have the critical mass of advanced business services to bring the products to the market)
    5. Infrastructure (including broadband telecommunications, water, sewer, power, and transportation)
    6. Workforce Development and Education

Quality of Life (citing people will have higher expectations about the quality of life in their communicates which will play a great role in business location decisions)

**II. The Minnesota Governor’s Council & U of M Strategic Plan**

Targeted Assessment of Biobusiness Industry, 2006

- Bio Business Alliance: Governor Pawlenty created the Bio Science Council in 2003 to advise and administer ideas that would position the state’s bioscience industry as leaders.
i. Bio Science Council leads to the Bio Business Alliance, Board of Directors assembled in February of 2005, an 18 member board representing experienced people from industry, academia and state and local government.

ii. The Board agreed on three strategies as most critical to retaining and growing biobusiness jobs in MN:

   1. A Statewide Assessment needed to be done.
   2. Destination 2025 – they would develop a short, medium and long-term plan for growth in the biobusiness industry
   3. BioBusiness Resource Network – to create a support mechanism to help start-up companies, entrepreneurs and existing companies to expand in or move to MN.


Minnesota Strengths identified:
- Dominant player in medical devices, renewable fuels, materials science and delivery systems (with converging clusters

Minnesota Weakness/concerns identified:
- Catalyzing start-up activity, not a strong competitor in commercialization of R&D,
  Need to increase private sector R&D in life sciences.

“To accomplish this goal, we would need approximately 5,000 high-tech employees involved in commercial life sciences R&D compared to the 2,200 we have today.” (p. v - Report 2006)

   b. Driven to Discover - The University of Minnesota’s Office of the President led a Strategic Positioning, an internal initiative with multiple Task Forces leading to the U of M’s Driven to Discover Campaign.

      i. Leading change and engaging the university community, and the state populous, in an ambitious transformation process with a bold and public commitment to being one of the top three research universities in the world.

         1. U of M’s Strategic Repositioning Assessment and evaluation 2004 led by task forces in all departments, inclusive of every level of university

         2. Driven to Discover Campaign is launched from this internal study.

   c. Positively Minnesota - State agency transformation begun in 2002/03, integrating departments and creating “Positively Minnesota” – reimagining for public and business

      i. DEED Workforce Development and Economic Development Executive Training in Industry Clusters - Fifteen Cluster studies produced 2006

d. Strategic collaboration with state, university and business creates the Minnesota Partnership for Biotechnology and Medical Genomics

III. The Rhode Island Economic Policy Council

   a. The Policy Council is a nonprofit corporation equally funded by the private sector and the State of Rhode Island established by Executive Order 95-10 on March 6, 1995 and reestablished by Executive Order 98-2 on March 4, 1998
b. Composed of representatives from business, labor, higher education and government, including Governor Carcieri and leaders of the Rhode Island General Assembly
   i. When established, there were 20 members, both public and private

c. Provides analysis of the challenges facing the state’s economy

d. Develops new initiatives to seize key economic opportunities, and helps to mobilize the public and private resources to assure that the initiatives succeed

e. Recommendations (from 2001 report):
   i. For Places:
      1. Play on the varied strengths of the state’s five major commercial centers and focus on the workers instead of simply firms
      2. Encourage the cultural development of the area to mold a state that people are going to want to be located in
   ii. For People:
      1. Connect adult literacy programs with the Community College of Rhode Island
      2. Create a Technology Partnership among Rhode Island’s technology businesses and institutions of higher education in order to dramatically increase the number and diversity of college graduates with technology skills
   iii. For Clusters:
      1. Work through a comprehensive five-part cluster strategy encompassing workforce development, technology commercialization, tax competitiveness improvement, specialized infrastructure development, and targeted recruitment and retention
      2. Leverage the R&D capacity of the State’s universities and research centers through the Slater Centers
      3. Identify strategic investments that will foster productivity on a sustainable basis for Bay-associated enterprises.
   iv. For Connections:
      1. Make the movement of both goods and people better through improvements to transportation and other mobility tools.

f. Vision 2010:
   i. Website created in December 2004 for the members of the Council to present their economic vision for Rhode Island in the year 2010 by examining current economic and social indicators
   ii. Goals:
      1. Increase median income to parity with MA
      2. Maintain a similar job growth rate to tri-state metro
      3. Achieve at least 87 jobs in RI for every 100 residents in the labor force
      4. Increase RI's share of the metro's high-wage jobs to its share of the labor force
      5. Increase mean earnings per jobs to parity with Massachusetts by 2010.
      6. Raise the number of people in Rhode Island above the poverty line to more than 90 percent by 2010

g. Keep annual scorecards of the following areas:
   i. Science and Technology
   ii. Community Development
   iii. Education and Workforce
   iv. Economic Performance
   v. Quality of Place
IV. The South Carolina Palmetto Biotechnology Council  
   a. Palmetto Biotechnology Alliance is a member organization exists to support and advance South Carolina’s life science industry through  
      i. Advocacy  
      ii. Networking  
      iii. Education.  
   b. This mission furthers our goal of ensuring that South Carolina’s companies, research institutions, and citizens reap the economic and societal benefits of a world-class life sciences cluster.  
   c. We foster South Carolina’s business environment for start-up and existing life science companies  
   d. Advocating for public policy enhancements and infrastructure expansions that support the growth of the industry.  
   e. Drives links between scientists and investors  
   f. Advances the commercialization of research  
   g. Facilitates relationships among life science companies and other ally groups  
      i. Includes  
         1. Government agencies  
         2. Service industries  
         3. Ensure that the industry has the support  
            a. Workforce  
            b. Legal  
            c. Communications  
   h. Promote the life sciences industry in South Carolina by educating the public about the industry’s positive economic impact in the form of  
      i. High-skilled, high-paying jobs  
      ii. Development of a knowledge cluster that  
         1. Attracts  
            1. Best companies  
            2. Brightest minds  

V. The Vermont Economic Progress Council (VEPC)  
   a. Established in 1994 by the Vermont Legislature in an effort to build upon Governor Dean’s 1993 Executive Order to form a long-term economic planning group for the state  
   b. Members consist of independent council of 9 citizens appointed by the Governor plus two regional representatives who are considered non-voting members  
   c. The council serves as an approval and authorization body to certain state economic and community development incentive programs  
   d. Most recent program: The Vermont Employment Growth Incentive Program  
      i. Started in 1-1-07 as a cash incentive to businesses that will add new, qualifying jobs, payroll and capital investments in Vermont  
      ii. Established with Act 184, S.165  
Many reports, including long-term economic plans  

VI. The Wisconsin Tech Council State Report published 2002  
Wisconsin is the most directly engaged in a long term strategy with “Vision 2020.” Targeted areas are Bio Sciences, Stem Cell, Information Technology and Renewable Energy. Mobilization towards a tech-based economy and all the language evolving around how to develop an innovation based economy – began in 2001-02
a. **Vision 2020**, a State Report led by the Wisconsin Technology Council in 2002 mobilized the state to build on their knowledge based economy and signaled action that fostered habitats for innovation in Wisconsin.
   i. 2006 WTC Academic R&D Report

b. **Grow Wisconsin** is Governor Doyle’s state campaign - say more
   i. Strategic support for Entrepreneurship

c. Strategic collaboration with state, university and business creates **Wisconsin’s Institutes for Discovery**
STORY #4 – Regional Partnerships

MRUN (MIDWEST RESEARCH UNIVERSITY NETWORK)

In an interview with Dick Sommerstad, U of M, Office of Academic and Corporate Relations (OACR) I learned that this network had a catalytic role in building collaborative partnership among Midwest universities - breaking down barriers between research institutions and engaging business. To belong to the Network, a university must bring in $100 million or more in R&D annually.

MRUN has an Angel Capital Association, funded and operational. ACA focuses on Midwest investment.

IN an interview with Allen Dines, Office of Corporate Relations at UW-M and presiding President of MRUN, he shared some of what the Network is about.

- We mainly focus on internal networking effort with members – fostering commercialization of R&D for start ups:
  - Dealing with common problems
  - Funding investors
  - Management needs for start ups
  - Partnerships potential

- MRUN members have a common connection/affinity.
  - It is totally self supporting
  - It was incorporated last year – collecting dues to give them the ability to take in and spend dollars
  - New web site soon – in process with new structure
  - No grants from states – soliciting foundations in state for support is an being considered as an objective
  - It was an informal organization in 2002 and as of 2006, it is a formal non profit.

➢ MRUN is dedicated to a Midwest Brain Gain.
STORY #5 - A Model for Civic Engagement

MINNESOTA WORKS TOGETHER

In every state there appears to be a gap, a disconnect, not only between the inertia of institutional change and the forces mobilizing for a new model of economic development, but also between the real changes required in education and the workplace and the public citizenry that populate the workforce needed to be competitive in a high wage, knowledge based economy.

This initiative, sponsored by the Center for Democracy and Citizenship, received pilot funding in 2006 to implement strategic plans for statewide engagement. MWT has the potential to lay the ground work for a national strategy on civic engagement.

When citizens claim responsibility – “we are the ones we’ve been waiting for,” in the words of the civil rights song – and learn the skills of public action through rich civic learning opportunities in schools and community settings, democracy becomes a way of life. Minnesota Works Together is a broad based initiative to improve the health of civic life in Minnesota in the face of destructive cultural trends, making it a model for the nation.

PROJECT DESCRIPTION
Minnesota Works Together will strengthen Minnesota’s civic life by bringing to light Minnesota’s civic values and rich civic traditions; by spreading knowledge, stories, and skills of civic action; and by advancing the central role of citizens in democracy.

The primary activities of Minnesota Works Together include:

- Bringing to light Minnesota’s civic values, traditions and current examples of civic renewal and civic learning through a series of conversations and roundtables across the state;
- Spreading stories of civic renewal and civic learning through media partnerships, educational materials for young audiences, internet strategies, cultural expressions and other means;
- Teaching skills and concepts of deliberation and public work to young people and adults so they can work across lines of difference on common civic projects;
- Catalyzing new, long term civic renewal and civic learning initiatives in youth development, health, education, and other arenas through a network of leaders and partner institutions committed to broad civic change;
- Advancing the central role of citizens and new immigrants in a democracy by tapping their energies and talents in building local civic life through a network of civic life organizers

The Humphrey Institute’s Center for Democracy and Citizenship will provide organizing resources and leadership.
STATE REPORTS

ILLINOIS
INDIANA
MICHIGAN
MINNESOTA
NEW HAMPSHIRE
RHODE ISLAND
SOUTH CAROLINA
VERMONT
WISCONSIN
WYOMING
ILLINOIS

Executive Summary

Governor Blagojevich took office in 2003 with a state budget deficit of $5 billion and a platform that promised no new taxes. Striving for a maximum impact with limited resources, the Governor launched his “Opportunity Returns” economic development program building on “ten regions, ten plans.” Initiated in the 2004/05 budget, OR has been described as an aggressive strategy because it shifted state ED away from a central, singular state plan and established ten regional plans. Stimulating economic growth that promotes state assets on a regional basis, Operation Returns uses innovative partnerships to leverage more funding at federal, state, local and private level. (1) The state has been successful in leveraging increased federal dollars for R&D in Illinois. Financing an entrepreneurial culture is the central economic development focus.

The Governor announced a comprehensive Energy Independence Plan in the summer of 2006 with a goal of meeting 50% of Illinois fuel needs with homegrown sources by 2017. As a leading producer of ethanol and bio diesel, bio fuel is a significant part of the ED strategy for Illinois. In 2003, the governor signed legislation making Illinois the first and only state to completely eliminate the state sales tax on E-85 and bio diesel blends of 11 percent and higher (B11), dramatically increasing E-85 sales and bio diesel sales. (1)

Illinois is home to more than 440 corporate R&D facilities and more than 200 academic, government and nonprofit research institutions. (3) The state is focused on entrepreneurship in Bio Tech and Bio Science.
and is funding initiatives and centers that support technology transfer, seed funding and commercialization. R&D Expenditures for FY 2004 for State and Local Government were $72,030 million. The state is basing its economic development policy on a new strategic regional approach to building industry clusters for job creation and growth. Illinois is a diverse state with a diverse portfolio of grants, programs and investments that build on historical strengths in industry and business.

**State R&D and ED:** Intersect with four major focus areas

1) Technology infrastructure – Advanced Manufacturing  
2) Small business support  
3) Workforce development  
4) Targeted initiatives

Factors driving new policy are core institutional assets: research labs and institutions as well as core businesses that drive the clustering of industries with strength in Advanced Manufacturing, Bio Tech, Transportation and Logistics, Telecommunications and Electronics, IT and Financial Services. Each cluster is identified with a Fortune 500 business leader (2).

Prior to 2003, Illinois resources were disparate in supporting entrepreneurship and now DCEO believes there is more coordination, sharing and networking with new centers. In 2001 there were two Entrepreneurship Centers, then they expanded to eight. In an interview with Department of Commerce and Economic Development representative Jason Tyszko, he said “We realize these centers are assets and want to maximize limited state dollars for this effort”(2). The Centers of Innovation or ITEC centers are based on a regional model and are dedicated to transferring technology and connecting small business with financing. A number of programs the state provides are direct to company grants, funding over $5 1/2 million through DCEO.

The Innovate Now Initiative is a new a pilot program in manufacturing with broad partnerships dedicated to the region known as Chicagoland, a seven country tri-state area. (7) The Chicagoland Chamber of Commerce, in partnership with the Council on Competitiveness, sponsored a Regional Innovation Summit, launching the Innovate Now Initiative in October, 2006. The Initiative is focused on building regional competitiveness through leadership and collaboration, using a test-market comprehensive approach to the manufacturing sector with the goal of creating a template for innovation to be used in other sectors to foster widespread adoption of innovative practices and create new economic growth (8). DCEO chose companies that were the leaders in manufacturing in state and connected them to mentor like businesses. The program is now looking to expand to out state and target areas like health care and high tech industries. (2)

The state economic development plans are based on expanding existing business and attracting new business development for job creation by promoting and supporting entrepreneurship, development grants
and tax incentives. The Innovation Challenge Program is an important pilot program that began in November 2006. Prompted by the realization that Illinois was submitting significantly fewer grant applications than other states, the program is designed to give direct assistance to get new business in the pipeline. This program has received widespread enthusiasm and support from the University communities (2). Within the scope of Technology R&D there is another new program, Employer Training Investment Program (ETIP) to upgrade skills of new and existing workforce. Over the past four years, $90 million was designated for this program. Tech support is awarded if new equipment is purchased, the state would pay for half of the training dollars. Another dimension of R&D with ETIP is Bio TIP, that supports training for part time and student workers in the area of Bio Tech and Life Sciences, where the tech parks or incubators are involved in significant time and energy training. Beginning in December of 2006, $500,000 was set-aside for this year for Bio TIP. (2)

The Opportunity Returns model appears to be based on existing resources within a regional cluster. Recommended key investments for FY 2007 are in Renewable Fuels Development Programs ($20 million), A Prime Sites Program ($25 million), the River Edge Grant Program for brownfield site development ($15 million), Coal Demonstration Program ($5 million) and Innovation Challenge Grant Program ($1 million) to assist in federal high technology grant applications. (1)

Qualitative Summary

I. Umbrella of Entrepreneurship Network, 2003
   a. Thirteen regionally based management and assistance centers to support the entrepreneurial culture in the state.
      i. Most of the centers are part of universities but services are not restricted to university spin-off companies.

II. ITEC – Illinois Technology Enterprise Centers, $3 million in state funding
   a. The centers are the new regional model to connect research and commercialization. They are presented as centers of innovation to assist researchers at universities small businesses in Bio Sciences and Technology Transfer.
      i. Several of the centers have the capability to make pre-seed investments of $20-$25,000.
      ii. Matching funds with federal awards helped establish such centers as the Advanced Photon Center and the Center for Nano scale materials

III. Renewable Energy - Bio Fuel
      i. An innovative partnership with BP (British Petroleum), University of California, Berkeley, CA at the Lawrence Berkeley National Laboratory and the University of Illinois Urbana-Champaign.
   b. BP will be investing $500 million over ten years to establish the facility
i. Goal is to expand the energy supply and reduce the impact of energy use on the environment
ii. Partnership secured on the basis of track record for delivering “Big Science”
iii. Primary role of Univ. Ill Urbana-Champaign will be to lead the development of the new crops, systems and machinery needed to provide the biomass for the generation of renewable liquid fuels and the application of genomic technologies to the development of these new crops (4)

IV. Energy Independence Plan (1)
   a. The state committed $3.2 million to design a state-of-the-art Bioprocessing Research Laboratory in collaboration with university, industry and scientific and engineering expertise in bio fuel technologies to assure rapid commercialization (3).
   c. $25 million is proposed to build five new bio diesel plants to boost production by 2005
d. $100 mio is proposed over the next 5 years to build up to 20 new ethanol plants – over ten years to build four plants downstate using new technology from cellulosic ethanol.
e. The State will invest in BioScience R&D in partnership with the University of Illinois
   i. To lead basic research necessary for next generation in advanced science-based biofuels technology.

V. Institute for Genomic Biology
   a. A new interdisciplinary research facility located at the University of Illinois at Urbana-Champaign.
   b. The state’s VentureTECH capital program of 2000
      i. $3.2 million is dedicated in research support
      ii. $75 million for the Institute and expected to open in spring 2007 & house 300 researchers (4)

VI. Stem Cell
   a. In 2005, Department of Public Health committed $10 million in a re-grant program for stem cell research, including embryonic. (6)
   b. In 2007, Department of Healthcare and Family Services budget line funded an additional $5 million to continue funding stem cell research in Illinois in fiscal year 2007. (9)

VII. Homeland Security Market Development
   a. Received $5 1/2 million state R&D from DOCED for innovative product grants
      i. Infrastructure grants that are direct to company grant

VIII. Angel Investment Fund
   a. State committed $3.2 million in a “fund to fund approach”
      i. Specifically targeted for early state and seed stage support

IX. State Treasurer Tech Development Fund
   a. One percent of the states portfolio is authorized to be invested in Illinois Tech
      i. Companies must have track record of Illinois focused business.
X. Illinois EDGE Program (Economic Development for a Growing Economy)
   a. This is a competitiveness strategy with Midwestern states to locate business or large projects in Illinois
   b. Tax Credit Program sponsored by the DCEO for job creation in the state
      i. A Business Investment Committee of the Illinois Economic Development Board (IEDB) recommends the types of project that may seek this tax credit
         1. Project must add to the export potential of Illinois.
         2. Must be an expansion of an existing operation or a new location.
         3. Each project must commit to make a capital investment in state of $5 million or more and must create 25+ new jobs
         4. Another state must be being considered for the project.
      ii. Credits up to a total of 10 years for each project

XI. Innovate Now Initiative
   a. $1 million of state R&D for this pilot program with advanced manufacturing cluster
   b. Company leaders in manufacturing mentor like business
      i. Success with this model will then target other areas
      ii. Health care and high tech industry

XII. Innovation Challenge Program
   a. An alternative strategy begun in November 2006, an important pilot program
   b. Focuses on increasing the number of Ill businesses that apply for Federal R&D grants – SBIR and STTRs – developed program over past few months with two foci:
      i. Providing phase zero assistance for proposal and prep process
      ii. Second stage is a match of SBIR phase one award up to 50%
      iii. Total available for program $1.3 million

XIII. Education
   a. Illinois Creates
      i. The Illinois Arts Education Initiative was awarded $2 million in FY ’06 and received $4 million in FY ’07.
      ii. Sponsored by the Illinois Arts Alliance and appropriated to the Board of Education for the Arts and Foreign Languages
      iii. This supports two phases: planning and implementation of Arts and Foreign Language grant program
      iv. Formation of a new Office of Fine Arts for the Chicago Public Schools (resulting from a partnership with CPS and Chicago Community Trust).
   b. The Illinois Arts Alliance is urging the Illinois General Assembly to increase the appropriation to $7 million in FY 2008 (10)
   c. Statewide Arts Education Research
      i. “In the spring of 2005, Illinois creates commissioned the first statewide survey of principals and superintendents to assess the status of arts education in Illinois to understand the challenges in delivering arts education instruction in Illinois public schools (11).”
      ii. Research conducted with the support of Illinois Arts Council, The Field Foundation of Illinois, The Joyce Foundation and the Polk Bros. Foundation.
iii. This study formed the basis of the statewide policy initiative as well as creating a baseline for tracking and measuring progress in the state.

**Resources**


(2) Interview with Jason Tyszko and John Barr, Illinois DCEO on February 16, 2007.


(5) Batelle report entitled “Illinois Bioscience Initiatives.”

(6) There is no precise definition for the term "Chicagoland": a common usage includes the city of Chicago, Cook County and the nine surrounding counties in the state of Illinois, five in Indiana, and one in Wisconsin. (from source: http://en.wikipedia.org/wiki/Chicagoland).


(9) Interview with Alene Valkanas and Lisle Soukup from Illinois Arts Alliance.


Batelle on Illinois *Growing the Nation’s Bioscience Sector: State Bioscience Initiatives 2006

(13) Interview with John Barr, Department of Commerce, Bureau of Technology and Industrial Competitiveness.

(14) Interview with Jason Tyszko, Department of Commerce and Economic Opportunity.

(15) Interview with David Miller, President and CEO, Illinois Biotechnology Industry Organization.

(16) Interview with Alene Valkanas, Executive Director, Illinois Arts Alliance.

(17) Interview with David Roche, Director, Office of Fine Arts, Illinois Department of Education.
Indiana’s State and Local Government R&D Expenditures at Universities and Colleges show a steady increase from 1999 with an investment of almost $28 million to a peak in 2002 of about $55.4 million. The decline in 2003 to over $51 million indicates the budget constraints.

Executive Summary

Being centrally located and having an industrial strength historically in manufacturing has given Indiana some strategic advantages if the State acts to develop them. The Indiana Economic Development Council in a report published 2005 entitled “A New Path to Progress” identified the key clusters, key drivers, and main strengths and weaknesses that Indiana must address. The key cluster identified was advanced manufacturing (primarily in the automotive sector), which is predictable given the State’s manufacturing history. The main drivers of the shift in the economy are globalization, regional thinking, smart government (government that is conducive to facilitating economic development), business and innovation, infrastructure, workforce development and education, and quality of life. The pattern in the State’s weaknesses dealt primarily with its unawareness of the changing climate, the lack of a diverse economic base and primary focus given to continue to encourage that base, lack of an innovative culture, inadequate infrastructure, and brain drain. (1)

The major initiative currently is the 21st Century Research and Technology Fund, a state-backed multipurpose fund with the capability to make grants, loans, or investments in promising technology partnerships across multiple fields. The fund now receives $75 million for the current biennium (began at $50 million) and considers awards of up to $2 million. It emphasizes proposals that lever major federal grants or open up new sources of long-term support, encourages university/industry partnerships, and especially emphasizes the formation of start-up businesses as vehicles for commercialization of funded
research. The focus on entrepreneurial companies is to encourage the creation of jobs short-term as opposed to funding university research that focuses on long-term job growth. (2) The Fund now focusing on its Cellulosic Fuel Challenge which aims to support job creation as well as diversify the economy and encourage collaboration. (3)

Since the Fund’s creation, the focus has shifted from investing in university research which typically creates industry and jobs in the long-term, to a focus on fostering small businesses that will create jobs in the short-term. This switch in philosophy occurred after Governor Daniels assumed office. (4)

Given the presence of the Lilly Foundation, a major focus in the private sector has been on life sciences. One initiative called BioCrossroads, a collaboration of private sector stakeholders including universities, has been created to address the needs of the life science cluster and is complementing State initiatives in the sector. This collaboration was formed by the Central Indiana Corporate Partnership, an alliance of Indiana business and research university leaders coming together to foster long-term prosperity in the region. What was recognized by the private sector in life sciences was that there was plenty of raw materials related to life sciences including the necessary infrastructure, but Indiana was not notable for its life science cluster. The initiative was a means to bring all those related to the industry together. (4) With a good relationship with the government, BioCrossroads has served to influence both the Indiana Legislature as well as lobbyists in Washington D.C. which has resulted in the State’s commitment to life sciences. (5)

BioCrossroads is working towards building capacity in the advanced manufacturing sector by (1) conducting marketing campaign to correct the negative image of manufacturing as being a low-skill, monotonous job to encourage college students to consider careers in the field; (2) provide a robust strategy for workforce development through a feedback loop including industry and higher educational institutions; (3) create a network for all of the advanced manufacturing industry to support communication and knowledge sharing among the various companies involved in the field; and (4) link to public policy initiatives. (6)

The established initiatives of BioCrossroads includes major funds that promote business creation and development. The Indiana Future Fund is a $73 million fund-of-funds formed in 2003 that invests through venture capital funds and the Indiana Seed Fund is a $6 million return-driven fund launched in 2005 that provides working capital.

**Strengths**

1. Resources available for collaboration, namely the research collaborations with the private sector as well as with the government
2. Central location within the nation
3. Strong collaborations being made within the Life Sciences cluster
   a. In addition to the collaborations instate, the Life Sciences cluster is in close proximity to the Life Sciences industry and medical communities in Chicago
4. Strong advanced manufacturing sector
5. Increased utilization of the life sciences cluster

**Challenges**

1. To keep the 21st Century Fund from being politicized
2. Informing people of what the 21st Century Fund is and what it is not
3. Lack of funding for initial investments to stimulate growth of early stage companies
4. Brain drain and low concentration of an educated workforce

**Qualitative Summary**

**I. Marquee Initiative: The 21st Century Research and Technology Fund**

a. Goal: To create high-tech, high-wage jobs
b. Funding: $75 million biannually
   i. Source of funding: General Fund
c. Emphasis on long-term support, encourages university-industry partnerships and start-up businesses as vehicles for commercialization of funded research
   i. Reason for focusing on entrepreneurial companies is to create jobs in the short-term under the mandate by the Republican Governor
   ii. Old mission of the 21st Century Fund, under the Democrat Governor was to fund university research which would create industry and jobs in the long-term
   4. Little known economic impact in the short-term
d. The grants and loans are awarded to support proposals for economic development in one or more areas:
   i. To increase capacity of Indiana institutions of higher education, businesses and nonprofit corporations and organizations to compete successfully for federal or private R&D funding
   ii. To stimulate technology transfer
   iii. To assist with diversifying Indiana’s economy by focusing investment in biomedical research, biotechnology, IT, and other high-tech industry clusters requiring high skills and high wage employees
   iv. To encourage an environment of innovation and cooperation between universities and businesses
      1. Awards of $50,000 up to $2 million are considered
      2. Matches SBIR awards ($75,000 for Phase I and $25,000 for Phase II)
         a. The Fund intends to set aside approximately 10% of its appropriation for matching SBIR/STTR Phase I awards
e. Three largest categories of awardees: Medical/Biomedical; Advanced Manufacturing; and Aerospace & Related
f. The Fund was created by the Indiana Economic Development Corporation (IEDC), which replaced the Indiana Department of Commerce in 2005 in order to support businesses
   i. IEDC is also proposing an earlier stage R&D fund be established
g. Created the Indiana Center for Applied Protein Sciences
   i. A Protein Center of Excellence
   ii. Received a $2 million grant from the 21st Century Fund
h. Accountability
   i. Out-of-state peer review process
ii. The Fund is broadly based and does not focus on one particular sector

iii. Applications for awards
   1. Pre-award
      a. First the application is peer reviewed out-of-state
      b. Second reviewed by businesses
      c. Third reviewed by the 21st Century Fund Board
   2. Post-award
      a. Companies have to submit quarterly reports
      b. Companies have to submit semi-annual financial reports to show where the money is being spent
      c. An independent CPA must engage a financial review

i. Created in response to Governor Daniels mandate when he came into office
j. Push for the Fund came from a collaboration of the Lieutenant Governor, businesses, and universities (2)
k. The funding is currently up for review by the Indiana General Assembly

II. Indiana Economic Development Council
   a. Members are from the private, government, and educational communities
   b. Established in 1985
   c. Governor is the chairman and the Lieutenant Governor is the CEO
      i. Underwent a cluster analysis in collaboration with Purdue and discovered the key clusters were advanced manufacturing and life sciences and that IT was considered a transforming cluster
   ii. Drivers of the new economic model were identified as:
      1. Globalization
      2. Regional Thinking
      3. Smart Government (government that is able to facilitate economic development rather than hinder it)
      4. Business and Innovation (the key characteristic of a successful new economy business is its ability to continuously innovation as well as have the critical mass of advanced business services to bring the products to the market)
      5. Infrastructure (including broadband telecommunications, water, sewer, power, and transportation)
      6. Workforce Development and Education
      7. Quality of Life (citing people will have higher expectations about the quality of life in their communicates which will play a great role in business location decisions

III. Niches
   a. Low-end manufacturing
      i. It’s the state’s main industry
      ii. The state wants to shift its manufacturing from low-end to high-end in order to create high-tech, high-wage jobs
   b. Life sciences
      i. Lilly Foundation is funding the bulk of research money
      ii. Huge emphasis to support R&D to the medical industry
iii. Although being a very broad topic, it includes orthopedics and diagnostics
   1. Warsaw, Indiana is a leader in the production of orthopedic and prosthetic devices
c. IT (Communications)
   i. Pre-cluster

IV. Bioscience
   a. BioCrossroads
      i. Created by the Central Indiana Corporate Partnership (CICP), an alliance of Indiana business and research university leaders coming together to foster long-term prosperity in the region
         1. CICP is not an economic development mechanism and instead advocates policy directions and collaborations
      ii. Privately-funded from stakeholders
         1. Developed in order to address the needs of the life science cluster
         2. Lilly is a key stakeholder
      iii. Complements the state’s programs
      iv. Directly advocates policies to the Indiana Legislature and lobbyists in Washington, D.C.
         1. Has developed good relationships with government
         2. The government has since made life sciences a key issue
      v. Cluster development initiative
         1. CICP commissioned Battelle Insitute to undertake a cluster study regarding the critical clusters in Central Indiana
            a. Findings: key clusters are (1) advanced manufacturing; (2) life sciences; (3) information technology; and (4) distribution, transportation and logistics
   vi. Indiana Future Fund
      1. $73 million fund formed in 2003
      2. Managed by Credit Suisse
      3. Investments are made in venture capital funds
   vii. Indiana Seed Fund
      1. $6 million return-driven fund launched in 2005
      2. Managed by BioCrossroads
      3. Provides working capital
   viii. K-12 STEM Network
      1. Will provide students, educators, schools, communities, and other state leaders through the Internet
      2. The “virtual” organization will coordinate and provide access to Indiana’s existing STEM education resources
   b. Biomedical Entrepreneurship Program
      i. Funded by Guidant Foundation $525,000 in 2005
      ii. Aims at helping biomedical engineering graduate students, MBA students and medical fellows to develop and commercialize technology in the medical device industry
   c. IU-INGEN (Indiana Genomics Initiative)
   d. Bioscience education program
V. Biofuels
   a. The 21st Century Fund’s Cellulosic Fuel Challenge
      i. Purpose: to create jobs as well as diversify the economy and encourage collaboration
         as well as encourage collaboration of the academic and private business communities
to address the alternative fuels issue
      ii. Since Indiana has agricultural assets, it serves to encourage this sector

VI. Funds
   a. Industrial Development Grant Fund (IDGF)
      i. Provides financial support for infrastructure improvements in conjunction with project
         creating jobs and generating capital investment in Indiana
   b. SBIR/STTR matching Program
      i. Provides matching grants (up to $100,000) to recipients of Phase I awards from SBIR
         and STTR programs

VII. Entrepreneurial Initiatives
   a. International Trade Show Assistance Program
      i. Provides financial assistance to small Indiana businesses participating in international
         trade shows
   b. Purdue’s Entrepreneurship Initiative
      i. Launched in 2001, the initiative is designed to get students to learn about
         entrepreneurship, helping them discover the process of idea to product
      ii. Partnership with EPICS program and Discovery Park

VIII. Economic Development Tools
   a. Tax Credits
      i. Clean Energy (1999)
         1. To support the advanced agricultural industry and provide an incentive for
            development of renewable energy
      ii. Venture Capital Tax Credit
         2. Program that assists Indiana companies in raising capital by offering a tax
            incentive to individual and corporate investors.
      iii. Economic Development for Growing Economy (EDGE)
         3. Program that rewards companies that create new jobs and contribute to the
            growth of Hoosier income.
      iv. Hoosier Business Investment Tax Credit (HBITC)
         4. Program that provides a credit against a company’s Indiana tax liability based
            on their qualified capital investment

IX. Incentives Programs
   a. The MidPoint Food and Agriculture Fund
      i. Funding: Loan of $500,00 for start-up costs
      ii. The State agreed to fund an additional $3 million after the managers raised $27
         million (incentive tool)
      iii. Purpose: venture capital
iv. Advertised as the State supporting a $30 million fund

X. **Research Universities**
   a. Purdue
      i. Since Purdue is a land grant university, it has strong ties to IEDC
      ii. Discovery Park
         1. A grant of $26 million for projects and facilities including an additional $100 million from alumni to be matched with federal funds
            a. Bulk of the funding came from the Lilly Foundation
         2. Purpose: to foster multidisciplinary research
      iii. Purdue Center for Regional Development
      iv. Collaboration with IU
   b. Indiana University (IU)

XI. **Research Parks**
   a. Certified Technology Park
      i. Program designed to support the attraction and growth of high-technology businesses in Indiana and promote technology transfer opportunities

XII. **Clusters**
   a. Communication
      i. Primarily militarily-related
   b. Regional Center undergoing cluster studies
   c. Group pushing for Center of Excellence surrounding diesel engines

**Resources**


(2) 21st Century Fund website www.21fund.org


(4) Phone Interview with John Schneider, Assistant Vice President for Industry Research at Purdue University on February 20, 2007.

(5) Phone Interview with Anne Shane, Vice President at BioCrossroads on February 28, 2007.


(7) Phone Interview with Cynthia Helphingstine, Director of Translational Research Affairs at BioCrossroads on February 27, 2007.
FIGURE 6: MICHIGAN GOVERNMENT R&D EXPENDITURES AT UNIVERSITIES AND COLLEGES

Michigan's State and Local Government R&D Expenditures at Universities and Colleges show a steady increase from 1999 with an investment of $59 million to a peak in 2003 of almost $92 million. The decline in 2004 to $83 million indicates the budget constraints the state has been facing.

Executive Summary

The state of Michigan’s leading strategic research and development plan is the 21st Century Development Fund initiated in 2005. It includes an investment of nearly $2 billion in state research and development funds. The state’s objective has been to qualify four major economic development areas to raise competition between areas for funding. Funds for the initiative were attained by the states’ tobacco settlement and are to be allocated to successful competitors within the four research and development areas. The funds are distributed by the Strategic Economic Investment and Commercialization Board (SEIC). Michigan is the number one state of automotive research and development therefore tends to focus on this objective in economic development coinciding with the following research areas:

1. Life Sciences,
2. Alternative Energy

In the category of life sciences, goals include a 40% basic research from four institutions on competitive basis, while allowing 50% for collaborative research and development fund. An emphasis on developing emerging discoveries in partnership with biotech firms is also vital along with a 10% commercialization development fund to invest in start up biotechnology companies in Michigan.

In 2006 and 2007 $394 billion funds were allocated among competitors in the following method:

1. $100 million Job Funds competition
2. $1.4 million Life Sciences pipeline
3. $114 million for Investment Fund
4. $108 million for other activities

Michigan’s main economic-development initiative focuses on investing in basic university research, non-profit research institutions, applied research, and lastly technology transfer. In an effort to collaborate, Michigan intends to combine areas of Life Sciences with four major research institutions; University of Michigan, Michigan State, Wayne State, and Van Andel, all of which are among the nation’s favorable biotechnology institutions. Part of the initiative is to double the state’s percentage of population holding academic degrees to nearly 45% within the next decade. Michigan's state and local government R&D expenditures at Universities and Colleges show a slight decrease from 2003 to 2004, however remains at one of the highest in the region of nearly $83 million on expenditures.

The Michigan Strategic Fund Board contracts with the American Association for the Advancement of Science (AAAS) to recruit appropriate reviewers and interviewers to match the particular proposals (the Letter of Intents will assist AAAS to identify the type of reviewers and/or interviewers needed). The reviewers and interviewers include scientific experts, commercialization specialists, such as venture capitalists, business entrepreneurs, and technology transfer experts. The credentials of the reviewers will be reviewed by Michigan Economic Development Council (MEDC) and the Strategic Economic Investment and Commercialization Board (SEIC) to validate that the reviewers have the appropriate experience to review proposals in the respective technology sector. In general, grants have ranged from $200,000 to $3.6 million, with the average award being $1.3 million (3). The only requirement for the technology sectors is that $90 million of the $400 million of future tobacco settlement revenue being securitized for 2006 and 2007 must go to Life Sciences.

The competition based funding for the Center for Automotive Research, who recently received a grant from state for development of Connected Vehicle Proving Center which tends to capture cars in the vehicle industry for safety. The program is also being implemented in effort to create commercialization and an extensive job market. The money for the grant is coming from tobacco settlement in the state of Michigan.

State gives grant while the Center for Automotive Research matches more than 100 percent with an in-kind contribution. Currently the Center for Automotive Research received a grant of $3 million, which will be allocated based on milestones achieved by organization, followed by a match of funds with $3+ million by the organization itself (1).

With its newest initiative in mind, it seems Michigan is on a progressive economic development track. The state is utilizing its resources from the tobacco settlement, touching on four major areas of
strength of the state while determining the validity of each Research and Development proposal with an objective panel, the Michigan Economic Development Corporation and Michigan Strategic Fund. Members of the board determine the extensive contribution each investment proposal can make to the state’s overall goal to encourage economic development investment and commercialization of competitive edge technology.

**Strengths**
6. Strong collaborations being made within the Life Sciences cluster
7. Strong advanced automobile sector
8. Increased utilization of the commercial and capitalization activities

**Qualitative Summary**

**I. 21st Century Job Funds Initiatives (2005)**

a. $2 Billion Umbrella
b. Funds Allocated by Strategic Economic Investment and Commercialization Board (SEIC)
   i. 2006/2007 $394 allocated for Fund
      1. $100 million Job Funds competition
      2. $1.4 million Life Sciences pipeline
      3. $114 million for Investment Fund
      4. $108 million for other activities
   ii. Funding through competition
      1. Each organization applies for funding
      2. Applicants include:
         a. Michigan institutions of higher education
         b. Michigan non-profit research institutions
         c. Michigan non-profit corporations
         d. Anyone that has proposal and meets eligibility requirements may apply (for type of entity and technology eligibility)
   3. Selection Process
      a. Michigan Strategic Fund Board (MSF) contracts with the American Association for the Advancement of Science (AAAS) to recruit appropriate reviewers and interviewers to match particular proposals
      b. Letters of Intent allow AAAS to identify type of reviewers and interviewers needed.
   4. Types of Reviewers/Interviewers
      a. Scientific Experts
      b. Commercialization Experts
         i. Venture Capitalists
         ii. Entrepreneurs
      c. Technology Transfer Specialists
   5. Who views credentials
      a. Reviewed by MEDC and the Strategic Economic Investment and Commercialization Board to ensure that reviewers have the appropriate experience to review proposals in the respective technology sector.
      iii. There is up to $100 million in funding available for 2006.
1. Of this amount, up to $10 million is available for Basic Research Activities.
2. Up to $20 million for Commercialization Support Services and
3. $70 million for Commercialization and Applied Research Activities.
4. The only requirement for the technology sectors is that $90 million of the $400 million of future tobacco settlement revenue being securitized for 2006 and 2007 must go to Life Sciences.
5. Average Funding level
   a. While the 21st Century Jobs Fund is a new program, under the former Michigan Life Sciences Corridor/Technology Tri-Corridor programs, awards have ranged from $200,000 to $3.6 million, with the average award being $1.3 million.

iv. Focusing Research in three areas
   1. Encourage development and commercialization of competitive edge technology

v. Clusters
   1. Life Science
      a. MI intends to invest $1 billion over 20 yrs in life sciences research. Funding comes from tobacco settlement. Effort to take 4 research institutions- University of MI, Michigan State, Wayne State, Van Andel, among nation’s more important biotechnology applications.
         i. Would like to double state’s percentage of people holding degrees to 45% over next ten years.
            1. 40% basic research from 4 institutions on competitive basis
            2. 50% collaborative research and development fund, emphasis on developing emerging discoveries in partnership with biotech firms
            3. 10% commercialization development fund to invest in start up biotech companies in MI. MEDC.

b. Alternative Energy

c. Advanced Automotive

d. Homeland security and defense

vi. Increase Capital Investment Activity

vii. Increase Commercial Lending Activity

Resources

(1) Interview with Lisa Hart, Vice President of Operations, Center for Automotive Research on February 21, 2007.


Minnesota’s State and Local Government R&D Expenditures at University’s and Colleges show a steady increase from 1999 with an investment of $49 million to a peak in 2002 of almost $61 million. The decline in 2003 to $53.5 million indicates the budget constraints the state has been facing.

**Executive Summary**

At the turn of the twenty-first century, Minnesota knew its strength was a stable industrial base of diversified Fortune 500 companies, many begun before the 1930’s. The economy is built on an educated and highly participatory workforce, with the sixth largest income per capita in the country. This is a strength that also rests firmly on basic scientific research with premier facilities and expertise at the U of M and the Mayo Clinic; as well as work force development and applied research in the MN State College and University system with three targeted Centers of Excellence. Minnesota has a good agricultural base, one that survived the recession of the late eighties and early nineties and is presently revitalized with a new emphasis on Renewable Energy. MN continues to grow its strong leading position in the Medical Device Industry, while increasing strength in the areas of Financial Services, Information Technology, Food Process and Distribution and the Healthcare Industry of Providers and Insurers. Minnesota does not have a boom and bust economy, however, necessary change was required to be competitive in a fast changing global economy for the state to be a leader nationally and internationally in a technology-based, innovation based economy.
Context for strategy

MN is a populist state – an important influence for Economic Development strategy because the vast majority of ED is done at the local level, with the locals doing the work and the state guiding and assisting. In MN, seventy-five percent of money spent on business is done at the City government level, twenty-five percent at the State level, and five percent at the County level (1). There is tremendous leadership in the state but populist leadership is hard to integrate and collaborate effectively. Leadership here is dedicated to doing right by their region but may suffer from not being able to see beyond their borders. The University is a leader in terms of research however there has been an insular environment to see beyond as well. The transfer piece is engaging the private sector. An increase of collaboration between all three parties, government, the university and the private sector, is the key element for competitive success in MN. The State and the University of Minnesota are working together to build excellence for Minnesota’s future.

Minnesota’s competitive advantage is its skilled and educated workforce, even with disparities, it is ahead of many states. Those that are getting educated have high skills, although not enough to have an edge with International competitors. The state government’s effort is to build a broad base of supply (workers) and to meet the demands (lower costs) of doing business in Minnesota. Over the last sixteen years, the focus has been on lowering the costs of doing business and maintaining investment in education. MN recognized that the cost of doing business in Minnesota was too high versus its competitors. Dramatic efforts were made to reduce costs and part of the way costs were reduced, was by reducing spending with the double edged sword of making budget cuts in education. Most jobs are created with businesses already here and the government helps those existing businesses to expand. R&D requires high level skills for business to come here and flourish. The state provides the complexity for a highly competitive research and development environment.

Since 2003, Minnesota’s leadership has been mobilizing towards the change required for a more integrated, innovation-based economic development economy (emphasis on integrated). This mobilization is reflected in the transitions initiated within state and local government, the University and MNSCU system, and the non-profit and private sector. In entrepreneurship, Minnesota has a high rate of start up survival but a low rate of start-ups (2). In an interview with Bob Issacson, DEED Research Analyst, he shared that a high percentage of recent start-ups are doing spin-offs, and may not reflect true innovation. He also noted that MN is a net exporter of seed and venture capital, another reason start-up business is low (1). Why not investing here? Perhaps the entrepreneurial culture is lacking.

Minnesota has not had a long term, cohesive economic development plan and the variation of investment by different administrations has taken a toll. Not growing initial state investment in innovation based economic development initiatives begun in the 1980’s have been characterized by some as taking three
steps forward and two back, when consistent R&D funding would have given the state a competitive advantage.

At the outset of Governor Pawlenty’s administration in January of 2003, Minnesota was facing some challenges. In the nineties MN was a net gainer of population, growing faster than neighboring states with a population that is now only about the size of Wisconsin. Michigan is three times the size and Illinois is larger still. Therefore, with one public research university, MN is being competitive with resources of states much larger. In order to surmount some of the challenges, a more intentional and dynamic collaboration between the state, the university and the private and non-profit sectors was required - sharing expertise and leadership as well as investment in the fields of Technology-based Economic Development (TED), in Nano Technology, in Information and Transportation Technology, and in the BioSciences, including Renewable Energy and Stem Cell Research.

**Transformation**

The University of MN

Launched in the fall of 2004, UMN initiated a system wide recommitment to excellence with President Bruininks Strategic Positioning Task Forces. With the goal of becoming one of the top three research universities in the world, a dynamic process of engagement and branding began with all of the University communities – with the Driven to Discover campaign. As the state’s only research university, a strategic response had to be made to the declining state funding and the dynamic demands of changing demographics statewide. Key to this repositioning was a strategic assessment and evaluation led by Task Forces throughout the campuses.

Two years later the University reports an innovative and effective reconfiguration of new colleges; a highly competitive and diverse class of 2010; four new research institutes and a scholarship drive that raised $150 million (3). In a meeting with the Vice President of Research, Tim Mulcahy, we discussed how the University’s strategic approach and commitment to maintaining excellence is based on expanding capability relevant to the state economy - building the state’s economic development. Expertise clustered around Health Sciences, Renewable Energy, Nano Technology, and Agriculture. Translational Research has been a focus, mostly in the Life Sciences, supporting opportunities to move from the laboratory to application. The translational piece is linking the Life and Health Sciences as well as Engineering and Technology fields, where they overlap has strong translational potential. In the biennial budget process this year, maintaining infrastructure explicitly focused on four components:

1. Competitive Market Compensation (holding onto and securing talent)
2. Health – Workforce and Clinical Sciences
New funding strategy (related to R&D and ED)

The challenge of the two year funding cycle has led the U of M to propose a unique strategy: The Minnesota Biomedical Sciences Research Facilities Bonding Authority (HF 132) (4). “This bill establishes a process to expend $279 million of state general obligation bond funds to pay 90 percent of the costs of constructing and furnishing biomedical research facilities to be owned and operated by the U of M and the U will provide a match of 10 percent of the costs (4).” The legislation is designed to permit one building per year with a ten year scope – authorized a head of time to support a seamless and strategic opportunity for growth. HF 132 did not pass last year but is presently in Committee, authored by Rep. Tim Mahoney, Chair of the Biosciences and Emerging Technology Committee. The challenge for Legislator’s with this bill is delegating too much money to an undelegated authority, too risky for some. But such a long term commitment supports the Universities ability to recruit talent and the motive is to increase the number of top biomedical researchers here.

Being able to commit to a long term view will allow the University to recruit talent that will strengthen state competitiveness in multiple ways. Longer term plans could help the state plan effectively and be less vulnerable to political regionalism. Another aspect of funding politization, it would side step the periodic nature of the biennial funding cycle and could help regional economies build in the direction of the state vision over the long term. Expressing his sentiments that the Bonding Authority will pass, VP of Research said that “short sighted planning is not consistent with continued competitiveness (5).” The passing of the Renewable Energy Standard (RES) bill today is indicative of the problems with trends versus long term planning. The signing today was being hailed the Session of Renewable Energy, that is symptomatic of the periodic nature of funding – to truly impact Renewable energy - it must be a long term plan.

The State

The Governor launched a Bio Science Initiative in 2003. (22) Two initiatives represent the state’s mobilization of resources to raise the state profile and competitive advantage in the biotech field. Through state and business partnership, the Governor, MN Legislature, the University of MN and Mayo Clinic dedicated state investment of R&D funds to create two marquis programs: The MN Partnership for Biotechnology and Medical Genomics and the Initiative for Renewable Energy and the Environment (IREE).
In August of 2003, Governor Pawlenty created the Minnesota Biosciences Council, a fifteen member body that represented the diverse strengths of existing biotech businesses in the state. The Council mandate was to advise the Governor and state legislature on policy that would attract and support biotech business creation as well as recommend strategies that would position the state’s bioscience industry as leaders nationally and internationally. The creation of two tax incentive based programs: the BioScience Zone Program and the JOBZ Program, were the initial economic development tools recommended to attract and concentrate BioScience businesses in Minneapolis, St. Paul and Rochester.

The BioScience Council recognized a need to revitalize the states image for the offices of Economic Development and Workforce Development with its citizenry and other states as a biotech based economy. A state and private sector collaborative investment of $250,000 for a marketing initiative called “Positively Minnesota” branding Minnesota as a user friendly state for the public at large and bio tech specifically. Simultaneously, a department merger of Workforce Development and Economic Development created the Department of Employment and Economic Development (DEED) as a strident example of the states shift to a more industry driven approach dedicated to attracting high wage firms to the state. With a goal of global competitiveness, DEED invested in an Executive Development training program on the microeconomics of industry clusters in state in order to increase capacity of workforce development professionals to work with business and industry better.

As a think tank and visioning body, the BioScience Council was intended to get initiatives beyond the administration of ideas. Having achieved its mandate, in 05/06, the BioScience Council became MN Bio Business Alliance. They produced the “Biobusiness: Minnesota’s Present Position and Future Prospects” a Report of the Statewide Biobusiness Assessment Project, August 2006. (6)

- The BBA contracted a third party to undertake a statewide assessment of Minnesota’s bioscience industry to evaluate its strengths as a necessary foundation for a long range strategic plan to be developed. The estimated cost of the study was $250,000, with DEED funding $40,000 and the U of M, the Mayo Clinic and the private sector sharing the difference. It is a very effective study however some consternation arose over the fact that the authors mostly compared Minnesota to the East and West Coast states, not being particularly relevant to regional competitiveness. Regardless, it is a very thorough investigation into the strengths and capacity of the states clusters in relation to BioScience, taking a critical look at weaknesses, recommending needed change to be competitive.

**Strengths**

1. Building on strength of existing clusters in Medical Devices, Information Technology, Financial Services, Health Care Management, Agriculture and the diversity of Food Production and Renewable Energy.
2. Knowledge spillovers from early Computer Technology cluster
3. Strong home grown science and engineering graduates
4. A state supported strategy for building capacity and collaboration in the Bio Sciences long term
**Challenges**

(1) Not having a long term, cohesive economic development plan  
(2) Variation of investment by different administrations  
(3) Breaking down the silos between state, university and business  
(4) Entrepreneurship support has been missing – bridge funding  
(5) Cautious approach to investment

- The challenge from a policy standpoint is that necessary investments have payback twenty years out – and that’s not politically expedient. Bob Isaacson, DEED  
- Entrepreneurship is missing – flexible and deep pocketed investment commitment to fund this new area. This is the gap. Gene Goddard, DEED

**Recommendations**

(1) Comprehensive, ongoing statewide assessment done of  
   a. clusters driving economy, employment and education  
   b. (there is no one with that responsibility)  
(2) Invest state R&D in innovation - funding for basic research  
(3) Not to disinvest in Education – build knowledge based economy  
(4) Engaging Business/Private Sector at a significant level  
(5) Maintaining high level of support for the University and MNSCU critical to research and innovation  
(6) Increase public visibility of successes at the University with R&D and Commercialization  
(7) Support Civic Engagement efforts that reinforce the habitats for innovation model based on inclusion, through integrated, multidisciplinary, collaboration – building strength in state diversity

- States must look at 15 – 20 – 30 year cycles and long term consequences of investment or no investment. Phil Pardey, Applied Economics, U of M

- Higher education conundrum of state support for any kind of education has declined over the last two decades causing a negative cycle.  
  - Resources dwindle  
  - Tuition goes up  
  - Families petition Legislature  
  - State Financial Aid increased  
  - Less left for Research  

State financial aid takes up a growing part of the shrinking pie. 50% to 60% of state financial aid flows to 30% of students attending private colleges because state financial aid is based on the tuition families pay for. The budget cycle is problematic and constrictions effecting research.  

(Dick Hemminson, Director of IREE, 2/22/07

**Qualitative Summary**

I. **Marquee Initiative: Minnesota Partnership for Biotechnology and Medical Genomics**  
   a. U of M and Mayo Clinic announce partnership on Human Genomics Project in April of 2003  
      i. May 2003 – The Governor and MN Legislature approved $2 million in start up funding with a goal of $70 million over 5 years. The state is providing matching funds for collaborative research with the University of MN and the Mayo clinic
ii. FY '06, the state provided $15 million in bonding for new facilities and funding basic research projects, equipment, software and other infrastructure needs.

iii. H.F. 194 appropriates $15 million each year in fiscal years 2008 and 2009 to the DEED. Funds are to be used for the expenses of the collaborative research partnership between the U of M and the Mayo foundation for research in biotechnology and medical genomics. The bill requires an annual report of the expenditure of these funds. (1)

II. **Initiative for Renewable Energy and the Environment**

a. February 22, 2007, Governor Pawlenty signed a new renewable energy law at the Cargil Building, St. Paul Campus, U of M. This law requiring most utilities to produce 25% of their power from renewable sources by 2025. (2)

   i. IREE is a renewable fund administered from public utility dollars. The mechanism for setting up this fund is unique.

   ii. The chief driver of this funding for IREE was former State Senator Steve Kelley.

   iii. In the early 1990’s, NSP (now Excel Energy) was granted permission to store spent fuel cells in above ground storage tanks with fees of $500,000 per year that would be deposited into a renewable energy fund. The state’s role was in mandating funding of $20 million to this initiative.

b. **Initiative on Renewable Energy and the Environment (IREE)**

   i. U of M establishes this initiative to increase strength and expertise

   ii. State R&D support initially $10 million in FY 03/04 and committing an additional $2 million per year over the next 5 years

      1. In 2005, Public Utility/Excel Energy and rate payers funded an award of $8.5 million for renewable energy research

      2. Program focus is on biohydrogen and other renewable energy sources

      3. No other Emerging Technology funded

c. **Historical background**

   i. In 2003, the Legislature funded this by directing $10 million to IREE – mandating use of these funds from the Prairie Island Bill

   ii. The second $10 million comes from Utility rate payers with a 2% a year rate fee that goes into the Sales for Conservation Investment Program (SCIP)

d. **Excel Energy has a 5% obligation to the SCIP to the Renewable Energy fund, however that does not exclusively fund IREE**

   i. In FY ’07, a request has gone to the Legislature’s Higher Education Committee to fund core operations at IREE

   ii. The Governor’s budget this ’07 sets up an account in the Dept. of Commerce for Renewable Energy Research. Funding will be distributed to:

      1. Agriculture Utilization Research Institute (AURI)

      2. Minnesota State College and University System (MNSCU)

      3. IREE at U of M

         a. Providing cutting edge integrative research, infrastructure, scientific and business expertise, IREE exemplifies the state’s investment in their competitive advantages in the field of renewable energy.

         b. Other Renewable programs: Community Based Energy Development (CBED) support Wind and incentive payments in Ethanol development

e. **JOBZ is an incentive program related to support in this area**
f. Since 2003, IREE has 115 different research projects funded with $19 million at U of M, with the majority being seed grants; leveraged $14 million in matching funds from state and federal government, business and industry and the non-profit sector (IREE Accomplishments and Impact Report 2003-2006)
   i. Much of the work IREE does is in the Bio Energy Product area.

   a. Governor creates MN Bioscience Council to advise on policy and state strategies to advance the states bioscience capacity and competitiveness.
      i. Fifteen leaders from industry, academic and investment community as well as four members of the legislature
      ii. Deed Industry Specialist position created
      iii. Privatization of Council in 2004 - Bio Business Alliance formed
      iv. MN House of Representatives creates a Bioscience and Emerging Technology Committee for the 2005-2006 Legislature
      v. Bioscience Industry Specialist position created at MNSCU 2004
      vi. Life Science Alley & MNBI0 – membership organizations merge in 2005 (Medical Alley founded in 1984 and MNBI0 in 1991)
   b. BioScience Zone – part of tax incentive strategy
      i. Creating a concentration/synergy of businesses within cities of Minneapolis, St. Paul and Rochester. 1,500 acres designated
      ii. *Firms get cash back versus applied tax credit – working to bring R&D to the state
      iii. Funded $1 million for 2 years
      iv. Status: In 2004 – funding was too small and in 2005, no additional funds allotted. 2006 is a bonding year so no presented and in 2007 it is now in Committee.
   c. JOBZ
      i. Designated 5,000 acre Biotechnology and Health Science tax free zone
      ii. Tax incentives for business expansion from 2003 through 2015
      iii. Companies receive:
         1. R&D tax credit
         2. Job creation tax credit
         3. Pay no more Corporate Income taxes, Sales taxes, Property taxes
         4. Investors pay no Capital Gains tax
      iv. December 2003 – 350 JOBZ tax free zones created in Greater MN
         1. Companies can receive up to 12 years tax relief

IV. Translational Research Facility
   a. MN Legislature approves funding for facility to facilitate development and commercialization of research from the U of M Academic Health Center
      i. $50 million facility

VII. University Enterprise Laboratories – UEL a premier Incubator opened in October 2004
   a. In 2007, the House Biosciences and Emerging Technology Committee approved HF-290 one time grant appropriation of $5 million as a subsidized lab space

VIII. Nano Technology – Center for Nanostructure Application (7)
   a. In the fall of 2006, the University allocated $1 million/year and committed to at least four years of funding. In addition, the University is seeking about $1 million /yr in State support.
i. funded through the Provost’s Office and Office of the VP of Research
ii. Driver for the creation of CNA - Dean Crouch, Institute of Technology
iii. Goal: Keep the University a leader in nano research by encouraging interdisciplinary teams pursuing new active nanostructures

b. Investment in the Nano Ctr is fairly modest and only recent.
c. Faculty have been very successful attracting nano funding
   i. They received 14 applications for research projects in 2006
   ii. Prior to the state of CAN, the University supported a Nano Coordinated Office at a level of $75K/yr – this did not fund research.
d. The creation of the Ctr for Nano Application is due to the shift in federal funding from nanostructures to applications of nanotechnology that NSF defined as Active Nanostructures.

VIII. Transportation Technology (8)
a. Intelligent Transportation Systems Institute and the Center for Transportation Studies receive approximately $4 million dollars from the state for R&D funding.
b. Access to Destinations
   i. A new initiative that is receiving approximately $900,000 of state funding for R&D research and development
   ii. A new approach to understanding how people use the transportation system, the innovation is focusing on accessibility versus congestion.
   iii. An interdisciplinary research and outreach effort including MNDOT, Hennepin County, The Met Council and the McKnight Foundation.
      1. Exploring new approaches to understanding how people use the transportation system
      2. Project represents 10 faculty/researchers, interdisciplinary leaders and outreach staff from four departments: Civil Engineering, Public Affairs, UMD Electrical and Computer Engineering and Center for Transportation Studies.

VIII. Stem Cell
a. The Stem Cell Institute at U of M was established in 1999. From their web site lists it as “the world's first interdisciplinary institute dedicated to stem cell research.”
b. The Stem Cell Institute facts and figures:
   i. Includes 17 University schools and centers participating in stem cell research
   ii. Has received more than $39 million in NIH funding and more than $43 million overall
   iii. Has received 28 NIH research grants and 55 total grants
   iv. Targets seven primary diseases: cancer, neurology, cardiology, liver, diabetes, vessel, genetic
   v. Has one large-scale cell processing facility
   vi. Has seven endowed chairs
   vii. Has more than 15 U.S. patents (pending and issued) on stem cell technology
   viii. Includes more than 25 investigators
   ix. Has more than 500 people involved in all areas of stem cell research
   x. Includes researchers with more than 15 years of experience researching stem cells
   xi. Has held 29 stem cell forums since 2000
Resources


(2) Interview with Jacques Koppel, Research Fellow, Hubert H. Humphrey School of Public Affairs on December 21, 2006 and February 22, 2007.

(3) UMN News. “Two years into an aggressive campaign to become a top-three public research university, the U of M is already on the rise” at www1.umn.edu/umnnews/Feature_Stories/Ascending_U.html.


(5) Interview with Tim Mulcahy, Vice President of Research on February 23, 2007.


(7) University of Minnesota Institute of Technology news. “Institute of Technology launches new nanotechnology initiative” at www.it.umn.edu/news/archives/06_10nanoinitiative.html; and an information exchange with Steve Campbell, Director of the Nanofabrication Center and CNA of the University of Minnesota

(8) University of Minnesota Access to Destinations at www.cts.umn.edu/access-study/.

(9) Interview with Gene Goddard, BioScience Industry Specialist, DEED.

(10) Interview with Bob Isaacson, Director, Research & Analysis, DEED.

(11) Interview with Steve Kelley, Former State Senator and currently Senior Fellow at the Center for Science, Technology and Public Policy at the Humphrey Institute.

(12) Interview with Jacques Koppel, Research Fellow at the Center for Technology and Public Policy at the Humphrey Institute and former Director of MTI.

(13) Interview with Jennifer Kuzma, Director of the Center for Science, Technology and Public Policy at the Humphrey Institute.

(14) Interview with Jeremy Lenz, BioBusiness Alliance.

(15) Interview with Kevin McKinnon, BioScience Industry Specialist, DEED.

(16) Interview with Tim Mulcahy, Vice President for Research at the University of Minnesota.

(17) Interview with Jeff Nelson, Financial Services, DEED.
(18) Interview with Gail O’Kane, BioScience Industry Specialist, MNSCU and BioBusiness Alliance Board member.

(19) Interview with Dick Sommerstad, Director, Office of Academic & Corporate Affairs at the University of Minnesota.

(20) Interview with Teresa Spaeth, Director of the Agriculture Utilization Research Institute (AURI).

(21) University of Minnesota Stem Cell Institute at www.stemcell.umn.edu/stemcell/about/facts/home.html.

New Hampshire’s State and Local Government R&D Expenditures at Universities and Colleges show a steady increase from 1999 with an investment of $9 million to a peak in 2001 of almost $12 million. The decline in 2002-2004 to nearly $8 million indicates the budget constraints the state has been facing.

Executive Summary

The state of New Hampshire offers a podium with no income or sales tax on earned income. It seems the state’s best option is to maintain a small state government, considering if the state increased its spending its funds would dry up quickly. Despite differences in more common trends of its neighboring states, and on the lower end for R&D funding at a value of $7 million in 2004, New Hampshire has attempted an emphasis on R&D as well as initiated an economic development entrepreneurship program.

The Department of Resources and Economic Development funded a feasibility study in 2002 which evaluated the need for infrastructure and technological landmarks to support and maintain New Hampshire’s industries with an emphasis on biotechnology (2). The following four technology clusters are recommended for the state:

1) Nanotech
2) IT/Medical Technologies
3) Optics/Environmental Technologies
4) Computational Tools/Geospatial Analysis

The state of New Hampshire is currently bridging its economic development of growth of entrepreneurship rather than a greater focus on R&D investments. The basic trends are towards job growth in the state, overreaching with a focus currently on two major grant programs.
The CROP (Community Reinvestment Opportunity Program) Zone bases its goals on creating a greater job market known as the community opportunity program. Its goal is to promote economic re-development for New Hampshire, increase commercial industrial base, and create employment, and finally increase tax revenues within the state by encouraging economic revitalization in specific areas (3). Tax incentives are created from the number of jobs created if a member qualifies in a CROP zone project. Qualified members or employers meet the following criteria:

1. Creates new facility.
2. Expenditures which add buildings, machinery, or equipment that should equal at least 50% of the overall market value.
3. Expenditures that alter or repair facility to gain or equal at least 50% of market value.
4. Expenditures to alter or repair a facility equal of a minimum of 20% of its market value (3).

Nearly $825,000 of tax credits is available while projects eligible for incentives can range from development of new structures to rehabilitation of existing structures. Criteria of a CROP zone are as follows:

1. Industrial or commercial land the remains unused due to environmental contamination reasons
2. Or of the following characteristics
   a. An area of population over the past 20 years
   b. A minimum of 51% households in the region hold incomes less than 80%
   c. At least 20% of household are at median income level below the poverty line

The Zone may also contain industrial parks and areas that are not utilized or vacant areas of lands that would issue a reduction in rate of the state tax delinquency zone. Grants are also being developed to reach out-of-state business owners giving out-of-state entrepreneurs 50% of their business assets to bring their business to New Hampshire (1). Basic partnerships are held with banks in the state and funds are allocated to businesses until the funds have been exhausted.

The Job Grants Program was developed in order to allow qualifying business owners to be eligible for $20,000 for each new job created. The program was initiated as a grant plan to award efforts to create new and lasting jobs in community (3). The allocation of job grants is determined by the wage and quality of each new position of employment. The wage must be greater than the 2003 minimum wage level and likewise be in existence for at least a period of 5 years. Recipients of the tax credit incentive are able to petition those credits to property tax relief through the program as well.

Both the CROP Zone and Job Grants program place greater emphasis on the economic development of state with a focus on developing newer and better forms of business entrepreneurship. In 2005 an assessment of its economic development plan occurred with the following responses:

1. 24 companies relocated to or were retained in New Hampshire.
2. New Hampshire businesses secured over $142 million in contracts thanks to assistance from
3. PTAP, which doubled its client base from 2004 to 2005.
4. The Citizens Job Bank loan program, a program that helps businesses relocate to or expand in New Hampshire approved over $18 million in loans which will result in 462 jobs.
5. Companies received seven comprehensive energy assessments with $1,103,843 in total recommended savings (3).

In light of this new expansion, New Hampshire seems to be collaboratively increase its economic development focus, however remains lacking in areas of Research and Development and University based collaboration.

**Challenges**

1. Lack of funding for initial investments to stimulate growth of early stage companies
2. Brain drain and low concentration of new entrepreneurships

**Qualitative Summary**

**I. High Priority Technology Clusters**

a. Nanotech/material/precision engineering/robotics
b. IT/bioinformatics/medical technologies
c. Optics/censors/environmental technologies
d. Computational Tools/Geospatial Analysis

**II. CROP Zone Program**

a. Tax incentives with development and improvement of infrastructures
b. Qualified Employers
   i. Must expand commercial and/or industrial base by creating new jobs and meet the following guidelines
      1. Creates new facility
      2. Expenditures which add buildings, machinery, or equipment that should equal at least 50% of the overall market value
      3. Expenditures that alter or repair facility to gain or equal at least 50% of market value
      4. Expenditures to alter or repair a facility equal of a minimum of 20% of its market value

   c. Definition of CROP Zone
      i. “Brownfield” zone
         1. An industrial or commercial land the remains unused due to environmental contamination reasons (3).
      ii. Or one of the following characteristics
         1. An area of population decrease over past 20 years
         2. A minimum of 51% of households in the region hold incomes less than 80%
         3. At least 20% of the households are at the median income level below the poverty line
         4. Zone containing
            a. Industrial parks that are not utilized
b. Vacant land, or area the would reflect a reduction in rate of vacant of removed structures or the state tax delinquency zone (3)
d. $825,000 of tax credits is available
   i. Incentives for credits
   ii. Development of new structures
   iii. Rehabilitation of existing structures

III. Job Grants Program
   a. Qualifying business owners eligible for $20,000 for each new job created
   b. Effort to create new and lasting jobs in community
   c. Reward system for expanding job market

Resources

(1) Interview with Gale Sowle, Chief of Administrative Support, Division of Economic Development, New Hampshire Department of Resources and Economic Development on February 20, 2006.


(4) University of New Hampshire at www.unh.edu/osr/data/data_main.html.

Rhode Island's State and Local Government R&D Expenditures at Universities and Colleges show a steady increase from 1999 with an investment of $4.5 million to a peak in 2004 of over $7 million.

**Executive Summary**

The overall strategy of the State of Rhode Island in relation to economic development is developing regionally. Given this regional focus, the Rhode Island Economic Policy Council conducted a “Technology Pipeline” survey in late 2001 and determined that the four key themes necessary for shaping the economy would be: (1) Places, making people want to relocate to Rhode Island; (2) People, focusing on educating Rhode Island’s population to move its workers from low-skill jobs to high-skill, high-wage jobs; (3) Clusters, focusing on what main industry clusters occur in Rhode Island; and (4) Connections, strengthening the state’s connection to other economies, primarily the tri-state Boston Metro, through transportation, logistics, and digital resources. (1)

Given these recommendations, the Rhode Island Economic Development Corporation (RIEDC), a nonprofit economic development affiliate of the state, is using the recommendations to create an economic development plan for the State. In recognizing that the new economy model allows for greater mobility of the workforce via the Internet and given that the State is the southern hub of the Boston Metro, Rhode Island is shifting focus “to compete in the morning and collaborative in the afternoon.” (1) Its small physical and economic size has caused Rhode Island to better appreciate the need for collaboration. The competitive side of Rhode Island has focused on the development of its science and technology sectors and modeling its workforce to suit those needs.
Governor Carcieri, a former math teacher with a math and science academic background, understands the need for a STEM education in order to develop a workforce that will be effective in the new innovative economy. The Governor created the Blue Ribbon Initiative for STEM education.

One of the State’s main drivers, guided by the Governor, was to determine how to make innovation a cornerstone of the state’s leadership agenda and therefore convened a coalition of business, academic and government leaders in the Council of Competitiveness to conduct an evaluation of Rhode Island’s innovation landscape. (2) Based on the baseline survey in 2005, the Council provided recommendations to satisfy innovative measures across the board including recommendations concerning the creation of a Collaborative Research Alliance to create a statewide research platform that will maximize research investments as well as get more funding into the state, how to strengthen the research capacity of the University of Rhode Island, creating an Entrepreneur Tax Credit, and making Rhode Island the first border-to-border wireless state for digital media, and creating a new vision for workforce development.

On January 17, 2007, STAC announced $1.5 million in collaborative research awards. A total of 32 scientists and 15 institutions received funding for collaborative projects. Awardees included academic and industry scientists pursuing projects in medicine, engineering, chemistry, biology, oceanography and environmental science. STAC recommends continued direct investment by renewing the Alliance’s $1.5 million in funding for FY08.

There is very strong support in the Legislature for all of the science and technology initiatives occurring throughout the state as the government believes that by focusing on science and technology innovations, the state will enjoy the development of its workforce into high-skill, high-wage jobs. This belief has been pushed by not only the Governor but also both the House and Senate Chairmans of the Finance Committees. The two most targeted sectors for development are the life sciences and communications-focused information technology. (3)

This development focus complements the earlier creation of the Slater Technology Fund, which uses $3 million to support technology commercialization in the state. Although the amounts of support for these initiatives is not extremely large by other state standards ($1.5 million and $3 million respectively), Rhode Island is helping to foster a culture of collaboration and provides strong support for finding additional research funding.

The Rhode Island Research Alliance is in the process of creating an online database for researchers to find additional sources of funding as well as share proposals and findings of research. This support is greatly needed since the maximum award that STAC provides is $200,000 per awardee.
Qualitative Summary

I. Marquee Initiative: The Science and Technology Advisory Committee
   a. Goal: To advise the Governor on how to make innovation a cornerstone of the state’s leadership agenda through a collation of business, academic and government leaders
   b. Funding: $1.5 million annually; to be matched with $6.75 million EPSCoR award
      i. Source of funding:
      i. Recommendations
         1. Create the Collaborative Research Alliance to create a statewide research platform
         2. Appoint a Blue Ribbon Commission to propose specific actions to strengthen URI’s ability to win additional research dollars (S2988 and H7979)
         3. Create an Entrepreneur Tax Credit as an incentive to attract and retain serial entrepreneurs and in-state investors engaged in approved start-up ventures
            a. The General Assembly passed legislation offering a tax incentive that amounts to 50 percent of the investment in a qualified company for a total of credit of up to $100,000 (S2995, H8000)
            b. It currently has a life of 10 years
         4. Support the pilot phase of RIWINs, a project by the non-profit Business Innovation Factory to make Rhode Island the first border-to-border wireless state for digital media
         5. Make STAC a permanent body capable of implementing these recommendations
            a. The General Assembly provided the council with $100,000 to support its activities
            b. Passed legislation (2006) that reaffirmed the council’s mission and purpose (S2997, H8001)
   d. The Council on Competitiveness (2007)
      i. Recommendations:
         1. Continue support for the RI Research Alliance and its direct investment in collaborative research
            a. STAC recommends that RI supports STAC’s Research Alliance and its direct investment in collaborative research by renewing the program’s $1.5 million in funding
         2. Support the statewide build out of the RI-WINs border-to-border broadband wireless network
            a. Request for a state credit enhancement for $28 million of private sector debt to finance statewide rollout
         3. Launch the RI IT and Digital Media Center as an incubator for new company creation and growth
            a. Recommends support an annual $600,000 budget request to launch and operate the RI IT and Digital Media Center
            b. It would enable the opening of offices in the American Locomotive Works development and enable the EDC to exercise an option on a 30,000-square-foot center to house five to ten growth companies at any point in time and offer entrepreneurial support programs and activities to innovators across the state (would cover operating and program costs by program and space fees)
4. Create a new vision for the workforce development requirements of a 21st Century RI innovation economy
   a. In 2007, STAC will partner with RI’s workforce development advocates and program providers to put forth a set of recommendations and strategies for creating workforce development programs and opportunities to help all Rhode Islanders succeed

5. Continue support for STAC
   a. Recommends that the state renew its $100,000 investment in STAC to support council operations in FY08

   e. January 17, 2007: STAC announced $1.5 million in collaborative research awards
      ii. A total of 32 scientists and 15 institutions received funding for collaborative projects
      iii. Awardees include academic and industry scientists pursuing projects in medicine, engineering, chemistry, biology, oceanography, and environmental science
   f. STAC recommends continuing its direct investment by renewing the Alliance’s $1.5 million in funding for FY08.

II. Slater Technology Fund
   a. Goal: To invested in technology commercialization and start-up companies in four fields including biomedical technologies
   b. Funding: $3 million annually
   c. The key to the Fund is the collaboration that is required to be awarded the funds

III. The Rhode Island Economic Policy Council
   a. The Policy Council is a nonprofit corporation equally funded by the private sector and the State of Rhode Island established by Executive Order 95-10 on March 6, 1995 and reestablished by Executive Order 98-2 on March 4, 1998
   b. Composed of representatives from business, labor, higher education and government, including Governor Carcieri and leaders of the Rhode Island General Assembly
      i. When established, there were 20 members, both public and private
   c. Provides analysis of the challenges facing the state’s economy
   d. Develops new initiatives to seize key economic opportunities, and helps to mobilize the public and private resources to assure that the initiatives succeed
   e. Recommendations (from 2001 report):
      i. For Places:
         1. Play on the varied strengths of the state’s five major commercial centers and focus on the workers instead of simply firms
         2. Encourage the cultural development of the area to mold a state that people are going to want to be located in
      ii. For People:
         1. Connect adult literacy programs with the Community College of Rhode Island
         2. Create a Technology Partnership among Rhode Island’s technology businesses and institutions of higher education in order to dramatically increase the number and diversity of college graduates with technology skills
      iii. For Clusters:
         1. Work thorough a comprehensive five-part cluster strategy encompassing workforce development, technology commercialization, tax competitiveness
improvement, specialized infrastructure development, and targeted recruitment and retention

2. Leverage the R&D capacity of the State’s universities and research centers through the Slater Centers

3. Identify strategic investments that will foster productivity on a sustainable basis for Bay-associated enterprises.

iv. For Connections:
   1. Make the movement of both goods and people better through improvements to transportation and other mobility tools.

f. Vision 2010:
   i. Website created in December 2004 for the members of the Council to present their economic vision for Rhode Island in the year 2010 by examining current economic and social indicators
   ii. Goals:
      1. Increase median income to parity with MA
      2. Maintain a similar job growth rate to tri-state metro
      3. Achieve at least 87 jobs in RI for every 100 residents in the labor force
      4. Increase RI's share of the metro's high-wage jobs to its share of the labor force
      5. Increase mean earnings per jobs to parity with Massachusetts by 2010.
      6. Raise the number of people in Rhode Island above the poverty line to more than 90 percent by 2010

g. Keep annual scorecards of the following areas:
   i. Science and Technology
   ii. Community Development
   iii. Education and Workforce
   iv. Economic Performance
   v. Quality of Place

IV. Niches
   a. Life Sciences
      i. The state provided $300,000 toward conceptual planning for a full-scale facility at the University of Rhode Island for biotechnology training
      ii. RIEDC financed two large biomanufacturing facilities
         1. One is operated by Dow and the other by Immunex/Amgen
   b. Information Technology (IT)
      i. Tech Collective: the state’s technology council
      ii. Rhode Island was the first state to have border-to-border wireless connection and is now investing to include border-to-border wireless digital media
         1. Provided $200,000 in funding to expand the RI-WINs pilot into the rural town of Foster
   c. Growing Niche: Oceanography
      i. Primarily funded by the Navy

V. Bioscience
   a. The Rhode Island Research Alliance (possibly known as the Collaborative Research Alliance)
      i. Initiative to develop an online funding database that will help link researchers with funding sources given that the STAC can only provide grants of $200,000 or less.
b. Member of the Northeast Biomanufacturing Collaborative
   ii. The Community College of Rhode Island is the main member and has a biotechnology
education initiative
   iii. Funded through the National Science Foundation

VI. Entrepreneurial Initiatives
a. The Innovation Tax Credit
   i. Resulting from the Council on Competitiveness’s recommendation
   ii. Amounts to 50 percent of the investment in a qualified company for a total of credit of
      up to $100,000 (S2995, H8000)
   iii. Currently has a life of 10 years
b. The legislature approved a $5.39 million in credit enhancements for private development

VII. Economic Development Tools
a. Tax Credits
   i. Investment Tax Credits for Manufacturing
      1. 4% tax credit against the business corporation tax and the personal income tax
         on new facilities and equipment used in the production process
      2. Expanded Credit for “High Performance” manufacturers: a 10% tax credit
   ii. Adult Education Tax Credit
      1. For vocational training or basic education of 50% with a maximum of $300 per
         employee and $5,000 per employer per year
   iii. Research and Development Expense Credit
      1. 22.5% tax credit for increase in qualified research expenses

VIII. Education
a. Blue Ribbon Commission
   i. Goal: To strengthen the University of Rhode Island’s research capacity
b. STEM
c. FIRST program in all public high schools (connected with STAC and Business Innovation
   Factory)
d. The University of Rhode Island had Question 13 which provided a $50 million bond approved
   to support new bioscience facilities
   i. There is support from the legislature for an additional $140 million bond financing at
      the University of Rhode Island for buildings housing pharmacy, nursing, and
      chemistry
e. Governor Carcieri’s Making the Grade
   i. A K-12 outreach program to make improvements in K-12 math and science education
Resources


(3) Phone Interview with Christine Smith, Innovation Program Manager at the Rhode Island Economic Development Corporation, February 23, 2007.
South Carolina’s State and Local Government R&D Expenditures at Universities and Colleges show an increase from 1999 with an investment of $26 million to a peak in 2000 of almost $32 million. The decline in 2004 to nearly $20 million indicates the budget constraints the state has been facing.

Executive Summary

South Carolina economic development trends have been leaning to a better coordination of resources. In 2004 South Carolina established $19 million in state expenditures on Universities and Colleges. The Life Sciences and Venture Capital Investment Act, initiated in 2004, helped in the coordination of partnership with hospitals and of three major universities:

1) University of South Carolina  
2) Medical University School  
3) Clemson University

Funds for the state come from the State endowment from Duke, a private fund of $20 million which was given to the state program on the basis of health initiatives. The fund is distributed to the development chair and $2 million given per institution over the last 5-7 years. The cap on state borrowing was increase to allow for up to $220 million obligatory funds for university-based developments. One basis of the fund is an education lottery fund, which occurred when the state voted for implementation of the Powerball as long as the lottery funds were earmarked for the consortium of states (1). The main research focus areas included:

1. Life Sciences  
2. Fuel Cells  
3. Automotive  
4. Nanoscience
Universities were also partnered with hospitals, based on the health initiative of the Duke Fund. Other areas of focus for development included infrastructure growth on various campuses. The University of South Carolina is seeking $58 million for two buildings of bioscience, one commercial and one academic. Clemson University is seeking $5 million for a graduate education center based on genetics collaborative. The Medical of South Carolina’s main focus on research is in the life sciences, including stem cell research.

The Palmetto Biotechnology Alliance plays the role of advocacy and networking for South Carolina. Palmetto is determined to keep the Life Sciences in the public mind as well as support expanded biotechnology and agricultural sciences to capture state R&D in addition to economic development.

Economic development strives for awareness of biotechnology support and the life sciences. Considering a previous lack of commitment towards higher education and sciences, South Carolina’s newfound current coordination brings a focus on higher education has been accentuated with a combined collaboration bureaucratic entity (1).

**Strengths**

1) Partnership with Universities and Hospitals
2) Focus on Research and Development Life Sciences

**Qualitative Summary**

I. **Life Science and Venture Capital Investment Act of 2004**
   a. Funds
      i. $20 million fund from Duke
      ii. Loosened cap on state borrowing to accommodate $220 million in obligation funds for university projects
   b. $2 billion allocated per institution

II. **Critical education lottery fund to establish endowed chairs on research focus**
   a. Life Sciences
   b. Fuel Cells
   c. Automotive
   d. Nanoscience

III. **Institutions matched with state funding**

IV. **Partnerships**
   a. Hospitals

V. **Research University Infrastructure Act**
   a. Three major education institutions
      i. University of South Carolina
         1. Seeking $58 million towards three buildings
2. Two buildings for bioscience
   3. One academic and one commercial building
b. Medical University of South Carolina
   i. Includes Stem Cell research
c. Clemson University
   i. Seeking $5 million for graduate education center
   ii. Genetics Collaborative

VI. Palmetto Biotechnology Alliance
   a. Role
      i. Advocacy and networking
      ii. Keep life sciences in public mind
      iii. Support expanded biotech
         1. Includes agricultural sciences

Resources

(1) Interview with Rebecca Bullard-Dillard, Claflin University, Palmetto Alliance Board Member, Chair & Director of Research Development, Department of Biology Claflin University on February 22 and 26, 2007.
Vermont’s State and Local Government R&D Expenditures at Universities and Colleges show a steady increase from 1999 with an investment of $2.7 million to a peak in 2002 of about $4.4 million. The decline in 2003 to $3.4 million indicates the budget constraints the state has been facing, but the state increased investments to exceed the 2002 peak to invest $5 million in 2004.

**Executive Summary**

Governor Jim Douglas understands the importance of the sciences in every youth’s education to achieve the broader vision of workforce development. The Governor’s proposal has been to create the Stafford Centers for STEM that would link secondary schools with Vermont’s colleges and universities thereby encouraging early college-age youth to move towards careers in those fields within the state. (1) Although no money has been tied to the proposal at this time, this proposal is only one among many. Regardless, the Vermont Legislature has provided complete support for these initiatives and will likely continue that trend.

Recognizing the potential problems associated with having a low-skill workforce in an increasingly high-skill economic environment, the Governor began the Next Generation Initiative. The initiative itself was spurred by demographical issues brought to light by research conducted by the State. Being the second oldest state in the country, Vermont was experiencing the problems associated with an ever-aging population with the younger population dwindling. Given that the population of Vermont is approximately 600,000, the focus has been to keeping those who work in the state there and to bring in those who left in pursuit of jobs.

The Next Generation Initiative will work on workforce development including improvements to the school system as well as credits on student loans. The initiative began as a $2 million investment and has grown to $5 million. Currently, the Vermont Legislature is considering recommendations it received in
December 2006 from a report published by the Next Generation Commission outlining a plan to encourage Vermonters to live and work in Vermont. (2) The Commission determined that Vermont had to approach the future economy by seeing economic development, workforce development, and education policy as necessarily integrated. (3)

The aging population is of great concern to the state as they are experiencing a significant brain drain as the younger educated generation is moving to where the jobs are. Given this constraint, a main focus of the State is bringing alumni of Vermont’s institutions of higher education back as well as getting the disabled and offenders back into the workforce. (4)

Job development is a major concern overall. Vermont wants to move its workforce out of the low-skill, low-wage jobs into high-skill, high-wage jobs that show the most promise. The economic climate has dictated that skills are more valued now and are in many cases necessary. With one of its premier businesses being IBM, the state of Vermont is increasingly moving towards training its workforce in information technology, specifically through IT certification programs through its higher education institutions.

In conjunction with the Initiative, the State is also offering Vermont businesses tax incentives in order to encourage business development and widen the job market as well as support workforce training. Also, to encourage the development of high-tech companies, the Vermont Center for Emerging Technologies was created. The Center is a business incubator and provides funding for start-up companies with the potential to aid in the process of technology commercialization in collaboration with the University of Vermont research faculty.

In order to support this type of new and innovative environment, telecommunications is very important as it is the vehicle for much of the collaborations that have the potential of occurring. Therefore Governor Jim Douglas has proposed turning Vermont into an E-State (5), meaning that the state will be completely covered by wireless and broadband connections. This way, the State can foster its internal development as well as support its international connections, a need that has resulted from the latest wave of globalization.

Additionally, Vermont has strong environmental ties with the strict environmental laws existing in the state that act as a deterrent for businesses that may be looking to locate there. (6) Instead of changing the environmental stewardship culture, Vermont has embraced it by strengthening its environmental engineering programs, increasing the number of tax incentives for individuals and businesses to make shopping environmentally-friendly more cost competitive, and enhancing the environmentally-focused culture.

Environmental engineering is increasingly becoming an emerging cluster thanks to the Vermont government. Several schools now offer degrees in environmental engineering, such as the University of
Vermont and Vermont Technical College. Vermont well positioned for the strong advancement of such a cluster and has taken steps to encourage its development. (7)

One aspect of this focus has been pushing biofuels. Vermont joined the 25x ’25 Alliance under the Governor’s direction which is a coalition working to advance renewable energy solutions. In addition to this, the State supported, through a low-interest loan as well as payroll and capital investment tax credits, the construction of a biofuels production facility in Swanton that will house Bicardel Vermont Inc. Governor Douglas is also pushing for the State to increase its use of biofuels in place of traditional fuels in addition to offering tax rate decreases on biodiesel and rebates aimed at heating-fuel distributors that sell the biodiesel blends. (3)

**Strengths**
1. Based-line surveys of the current status of the in-state workforce
2. Investments in education, both grade school and higher education
3. Focus on one particular strong sector: environmental engineering

**Challenges**
1. Population constraints, the aging workforce, and brain drain have left Vermont with a shrinking tax base and making it difficult to have the resources to invest and expand.
2. The lack of skilled workers, creating a barrier to business development.
3. The international focus has primarily focused on its relationship to Canada.
4. The focus on one sector may cause the economy to become imbalanced.

**Qualitative Summary**

1. **Marquee Initiative: The Next Generation Initiative**
   a. To begin fall 2007
   b. Goal: workforce education and training
   c. Funding: $5 million annually
   d. Source of funding: General Fund
   e. Intended to address the problem of Vermont’s lack of skilled workers
   f. The Next Generation Commission
   g. To determine where Vermont should spend the money appropriated to them by the legislature
   h. Published report December 2006. Recommendations:
      i. Integration of economic development, workforce development, and the education system.
      ii. Increase state funding for postsecondary education and training by implementing financing mechanisms (includes scholarships, loan repayment, and workforce development)
      iii. Provide additional state funding for postsecondary education and training (scholarships, loan repayment, and workforce development grants)
      iv. Strengthening career awareness education beginning in elementary school; continue exposure through technical education, school-to-work initiatives, internships, dual enrollment, and other efforts.
i. Governor Douglas proposed $5,000 annual scholarships for college students who agree to remain in-state for 3 years after graduating

II. The Vermont Economic Progress Council (VEPC)
   a. Established in 1994 by the Vermont Legislature in an effort to build upon Governor Dean’s 1993 Executive Order to form a long-term economic planning group for the state
   b. Members consist of independent council of 9 citizens appointed by the Governor plus two regional representatives who are considered non-voting members
   c. The council serves as an approval and authorization body to certain state economic and community development incentive programs
   d. Most recent program: The Vermont Employment Growth Incentive Program
   e. Started in 1-1-07 as a cash incentive to businesses that will add new, qualifying jobs, payroll and capital investments in Vermont
   f. Established with Act 184, S.165
   g. Many reports, including long-term economic plans

III. Niches
   a. Environmental Engineering
   b. Focus of Environmental Engineering stems from the culture stressing environmental stewardship leading Vermont to move towards creating an engineering cluster
      i. The Agency of Commerce and Community Development will take the lead in marshalling public and private resources to build the cluster
      ii. Beneficial to Vermont given the expertise in environmental issues historically
   c. Green Valley
      i. Plan to create a business climate promoting the current environmental goods and services (EGS) sector as well as encouraging new EGS businesses and the relocation of entrepreneurial EGS companies to the state
   d. Educational degrees in environmental engineering available:
      i. University of Vermont
      ii. Norwich University
      iii. Vermont Technical College
      iv. Dartmouth College (Thayer School of Engineering)
      v. Massachusetts Institute of Technology
      vi. Rensselaer Polytechnic Institute (RPI)
   e. Renewable Energy
      i. In the '07-'08 session, Bill H.0225 “Increasing Access to Renewable Resources” is up for vote
      ii. The Governor’s Proposal was for 25 percent use of renewable energy by 2025
         1. Vermont joined the 25x’25 Alliance, a nationwide coalition working to advance renewable energy solutions
         2. Intended to strengthen Vermont’s reputation as an environmental leader
      iii. Biocardel Vermont, Inc. built a biofuels production facility in Swanton, Vermont
         3. The Vermont Economic Progress Council approved over $500,000 in payroll and capital investment tax credits with the rest of the funding coming from a low-interest loan from the Vermont Economic Development Authority
   f. Environmental Technologies Transfer
i. Governor Douglas proposed in his FY2007 budget request investing $3 million for technology transfer and for job creation in the field of sustainable environmental technologies
   1. Funds will be used to support technology transfer at UVM and workforce development programs focused on this field at Vermont’s state colleges
   2. Support would also be provided to the Vermont Student Assistance Corporation to encourage more high school students to attend college

  g. Wireless and Broadband Initiative
  h. In the ‘07-’08 session, Bill H.0248 entitled “Establish the Vermont Telecommunications Authority to Advance Broadband and Wireless Infrastructure” is a major focus.

IV. Bioscience
   a. Vermont Academy of Science and Engineering
   b. An honorary organization of the state’s top scientists and engineers that supports the bioscience industry by serving as a resource on a variety of issues
   c. Statewide workforce development committee
   d. Connects health-related fields and training for aging workers

V. Entrepreneurial Initiatives
   a. Vermont Center for Emerging Technologies (VCET)
   b. Associated with UVM to act as a business incubator for high-tech startups
   c. Only $100,000 of the $120 million came from the state; started in 2005

VI. Economic Development Tools
   a. Tax Credits
   b. Vermont Economic Progress Council (VEPC) awarded $14.1 million in tax credits in 2003 alone
   c. Export Tax Credit
   d. Proposed reduction in the diesel fuel tax rate by 2 cents on biodiesel fuel blends for transportation
   e. Proposed reduction in the purchase and use tax form 6 percent to 5 percent for Vermonters who purchase fuel-efficient vehicles or hybrid vehicles
   f. Training Programs
   g. Low-Interest Loans
   h. Tap Alumni Program (TAP-ED)
   i. Targeting alumni of Vermont’s educational institutions to bring them back to the state
   j. Rebates
   k. For heating-fuel distributors that sell biodiesel blends

VII. Education
   a. IT Certificate Programs
   b. For higher education credit
   c. The Stafford Centers for S.T.E.M. (Science, Technology, Engineering, and Math)
d. Link secondary schools with Vermont colleges with the idea that by linking the two, early college-age youth would be encouraged to move towards careers in those fields within the state.
   i. Intended to support sectors such as environmental engineering as well as encourage the best and brightest engineers with families to move to Vermont

e. No money has been tied to the initiative at this point (proposal introduced this year)

VIII. Funds
   a. Vermont Workforce Education and Training Fund (WETF)

Resources


(4) Phone Interview with Greg Voorheis, from the Department of Employment and Training on February 20, 2007.


(6) Phone Interview with James Candido, from the Vermont Department of Economic Development on February 20, 2007.

Wisconsin’s State and Local Government R&D Expenditures at Universities and Colleges shows a dip in investment from $44.4 million in 1999 to $40 million in 2001. Substantial increase of $49 and $50 million in 2002 and 2003 occurs and then slides down close to the 1999 figure at $41.3 million.

**Executive Summary**

Investments have been building research capacity long before Governor Doyle came into office in 2003. Wisconsin has been setting the stage, creating fertile ground for a landscape of change through innovation. The state has two positional assets: WARF - the Wisconsin Alumni Research Fund, begun in 1925, it is considered the oldest tech transfer office in the “world” and the second, Dr. Jamie Thompson’s celebrated stem cell discovery and the high profile benefit gained from his discovery. From 1987 to 2001, Governor Thompson held office, created BioStar in the ‘90’s, committing funds to build four research facilities. Under his watch Wisconsin built two special research centers on campus and some of the funds were “repurposed” for the Institutes for Discovery facilities. The Health Star Initiative was tied to hospital and clinic investment. Both BioStar and HealthStar were foundational programs leading to the capacity to create the Institutes for Discovery.

**Context for strategy**

Since 2003, state leadership and programs in Wisconsin are mobilized to build their knowledge economy. The Governor has designated technology based economic development as the hallmark of his “Grow Wisconsin” initiative in ’03/04- the administration’s overall economic development plan has three horizons: Protecting what you have, Grow what you can, Plant seeds for the future.
1st Horizon: Existing Industries strategy
Strength in existing industries – manufacturing, insurance, agriculture, tourism – identified as robust but
cognizant of competitive pressure. Sector strategy is to upgrade, be productive and maintain what you can.
Two years ago the state initiated the practice of lean manufacturing (often called the Toyota system). They
looked at top companies, Harley, Osh Kosh Truck, John Deere Tractors and considered how to strengthen
the supply chain with a free assessment of efficiencies for suppliers to increase capacity of the company and
to keep supply purchasing local/regional – maintaining the base and increasing efficiency.

2nd Horizon: Emerging fields strategy
This is about finding and taping growth opportunities: an example of niche cultivation is tapping value added
in the ag sector by promoting and supporting Wisconsin cheese makers in the organics market. Aimed at
engaging entrepreneurship but also instituting new technology with new ideas, there are five Institutions in
Milwaukee – The Bio Med Tech Alliance and with all five, the state is funding this collaborative to
recognize and encourage research capacity there. The state funded $500,000 with a University match – it is
a $1 million dollar pilot program. Working together to be more competitive, these funds support a grant
program for interdisciplinary research. There is $2.5 million in the state budget to fund this effort for FY
‘08/’09. The state doesn’t see that it has a lot of control over funding for basic research but UWM is the
second or third biggest receiver of federal funding for R&D. The state has a strong commitment to building
UWM’s capacity with budget for faculty and facilities.

3rd Horizon: Future opportunities
In the third horizon, nanotechnology is an area of innovation receiving investment by exploring market
opportunities connecting basic nano application in manufacturing. A knowledge base economy intersects
with all three areas. And in the FY ‘08/09 budget, $2 million has been proposed for the Medical College for
Translational Research. Wisconsin hosted Economic Development Summits from 2000 – 2003 where many
white papers were submitted with strategic policy ideas and recommendations. The “momentum” for these
summits was the bursting of the dot com bubble and the ripple effect it had. In the words of Aaron Olver,
Deputy Secretary of Commerce, the wake up call came “in the midst of the dot com bubble bursting”… “that
energy translated with opinion leaders about economic growth and on the crest of this energy, the new
legislature and Governor Doyle were elected” Out of this rejuvenation came “Grow Wisconsin (5).”
Transformation: Biotechnology is the state key target and entrepreneurship the path.

Act 255 takes the lead – created in 2004, the law passed in January of 2005. It is a comprehensive
tax credit program. The state approach was based on recognition that it is important to fund and
commercialize ideas and give incentives to investors to choose the best of the bunch. The state put in $6
million tax credit per year, $65 million over ten years - offering 12 ½ % per year or 25% over two years to
qualified new business ventures. Qualifying is critical step – new business must fit the rules then the market place determines what’s best. In ‘08/09, the Governor proposes expanding credit sums by 2 ½ million. The Act includes grant programs discussed in the break out section of this report. (see WAN, WIN, WEN programs).

Technology Commercialization Programs are being heralded for increasing entrepreneurial activity by 70% in state. (1) The Technology Assistance Grants fill in the gaps for start ups that do not exist yet in MN.

Wisconsin Technology Council (WTC), a science and technology non-profit, was created in 2001 to advise the Governor and Legislature. In a phone interview with the President of WTC, Tom Still, about the state’s R&D investment he said, “the big mountain each state faces is the decline in federal research money – NIH and NSF peaked out, so there’s fewer federal dollars all around.”

WTC published the “Vision 2020: A Model Wisconsin Economy,” identifying the states core strengths, an assessment that led to the state qualifying for Federal funding in homeland security. This was instrumental in launching the Wisconsin Security Research Consortium, a non profit created to increase the state’s capacity to attract federal dollars for research in this cluster. (2) "This is a strategic approach to utilizing the strengths of high-technology Wisconsin businesses and the capabilities of our academic institutions and research centers," Tech Council and WSRC board member Tom Hefty said. "It will better enable the federal government to determine how these capabilities and new technologies fit with its homeland security priorities." (2)

Since the terrorism attacks of Sept. 11, 2001, the government has shifted more than $2 billion in non-classified research spending into classified research. While Wisconsin performs well in attracting academic research grants across all categories, it has lagged in obtaining grants in classified or sensitive areas. For example, Wisconsin's federal research grants exceed those in neighboring Minnesota by $100 million a year, but total federal spending in Minnesota exceeds Wisconsin by $400 million per year when all military spending is added into the calculation. (2)

In 2006, WTC published their latest report, “The Economic Value of Academic Research and Development in Wisconsin.” Perhaps this was prompted by the sudden drop in R&D funding in 2003. Some highlights from that report state that “Academic R&D represents an area where Wisconsin performs well versus other states in attracting federal dollars. Wisconsin ranks 15th nationally, even without the inclusion of the Marshfield Clinic and the Veterans Hospitals.” (3)

Wisconsin provides resources and invests in small business throughout the state. The Governor’s Business Plan Contest makes engagement a win-win for all - fostering goodwill with all stakeholders. The pathways of participation are called pathways of possibilities and are seen as mechanisms to stay in Wisconsin.
Climate of entrepreneurship in Wisconsin is strong. There are many programs in place with sensitivity to needs and issues of start ups. UW-Madison’s Allen Dine from the Office of Corporate Relations spoke of their participation in the Kauffman Foundation’s Campus Entrepreneurship program. UW-M had discovered that as many startups were coming out of their students as faculty and staff. Taking a closer look, the U learned that only 17% of the graduates starting businesses had studied business but the entrepreneurs came from all across the university. The Kauffman Fdn is working with 15 Universities now and five students from UW-M will be on a panel in the upcoming Entrepreneurship Week events. (4)

The Wisconsin Alumni Research Fund (WARF) is chartered to support UWMadison. They have equity in forty start up companies – WARF patented tech companies. In 2001, WiSys was developed, a subsidiary to do tech transfer with all the campuses. The Governor included funding in that budget that allow faculty at the other campuses to support positions housed at U Extension half time in order to do interdisciplinary research. WARF put $1 million with UW match. Smaller campuses do great research and are creative about funding but their workload is greater, they are spread too thin and this will address that pressure and gap.

WARF’s role in the Institutes of Discovery is significant. The Morgridge’s gift of $50 million was contingent on WARF being the developer of the IoD. The theme of IoD is collaboration through interdisciplinary research (6) ( More complete break out below).

Qualitative Summary

I. Marquee Initiative: Wisconsin Institutes for Discovery
   a. Announced in April of 2006, the only Institute of its kind in the Midwest. These are twin institutes – one public and one private, representing a collaboration of both public & private investment. (It is modeled after the Whitehead Institute at MIT and the Clarke Institute at Stanford). Construction begins in late 2008 and will be purposely situated within reach of major disciplines on campus.
      i. Drivers of this collaborative investment: $150 million
         1. John Morgridge – founder of Cisco Systems, gifted $50 million will represent the private side – Morgridge Institute for Research (MIR). The private side will do human embryonic stem cell research.
         2. Carl Gulbrandsen – Chairman of MIR Board and Director of WARF – matching grant of $50 million – for basic research
      ii. An interdisciplinary research institute on UW Madison campus – Structurally designed and laid out to support interdisciplinary research between public and private (Stem Cell) research facilities.

II. Consortium on Biobased Industry - $5 million in state funding in product development through the consortium, Spring of 2006
   a. Act 255 – January 2005
Four components to attract Venture Capital and increase growth of tech firms in Wisconsin

1. Angel tax credits
2. Early stage seed funds
3. Technology commercialization,
4. Grants/loans, and program funds for entrepreneurship centers

b. Wisconsin Tax Credit Program – only in-state investors receive the credit.
i. Department of Commerce certifies Venture Capital Funds that invest in Qualified New Business Ventures may be eligible to claim a 25% income tax credit on that investment.

ii. A Qualified New Business Venture is an early stage company with high growth potential. Both the fund and the business must be certified by DOC.

1. Commerce may allocate $3.5 million in tax credits in each calendar year, up to the authorized limit of $35 million.
2. Businesses can receive up to $4 million in tax credit-eligible cash equity investment – which no more than $1 million in tax credit-eligible investment can be from angel investors

III. Networks

a. Wisconsin Angel Network (WAN) – connecting investors through Governor’s Biz Plan Contest

i. In 2006, 275 applicants and about 2 dozen winners
ii. $160,000 in prizes with $450,000 given over 3 years
iii. Contest judges the best plans in different categories
iv. Applicants have not received angel or venture capital

b. Wisconsin Investor Network (WIN)

i. Companies that entered the Biz Plan Contest get connected to the pipeline of companies leveraging tech transfer by using WIN
ii. WIN is boot camp for semi-finalists – approximately 60

c. Wisconsin Entrepreneur Network (WEN)

i. Provides hands on mentoring, individual counseling
ii. Networking them by posting their Executive Summaries on Angel Network site and joining WEN for feedback.

iii. Draws on expertise from resources of four institutions:

1. UW Extension Service (13 campus based small business centers)
2. WiSys Technology Foundation (subsidiary of WARF)
3. Wisconsin Technical College System
4. Agricultural Innovation Ctr – supporting ag related entrepreneurship

IV. Funding

a. Early Stage Seed Funding Technology Assistance Grants (TAG)
i. Early stage funds to offset costs of initial hiring of services needed to secure federal funding.
b. Technology Bridge Grants
c. Funds for startups that have complete Phase 1 R&D and are waiting for Phase 2 funds
d. Technology Matching Grants
e. Matching required to secure Phase 2 SBIR.
f. Tech Development Grants and Tech Development Loans

i. $1 million in grant program for agriculture business
ii. $4 million in grant program for forest industry
iii. created to leverage federal money for R&D of forestry biomass technology

V. **Stem Cell**
a. There are five Stem Cell Companies in Madison now plus the National Stem Cell is housed there. No direct state dollars into this besides tax credits and individualized grants to these companies. State support is only for the buildings where research takes place – largely private.

VI. **Research Funds**
a. WARF (Wisconsin Alumni Research Fund) in existence for 80 years (1925) investing $40 - $50 million a year in R&D basic research – all private funds that come from Intellectual Property rights.
   b. Life Sciences Research (2005) Alzheimer’s $2.5 million – UW-M Medical School (funding not approved yet in FY ’07)

VII. **Education**
a. Wisconsin Covenant (signed fall of 2006)
   i. “a promise to every high school student.”
   ii. The covenant is aimed at preparedness, access and nutrition – making education affordable for students with good grades, making third year math and science requirements mandatory for high school graduation, tripling school breakfast programs because Wisconsin ranks 50th in school breakfast participation (Governor’s state of the state address “Making Wisconsin America’s Health Care Leader and Investing in Education)

**Resources**


(4) Interview with Allen Dines, Office of Corporate Relations at the University of Wisconsin-Madison on February 18, 2007.

(5) Information exchange with Aaron Olver, Deputy Secretary of Commerce.

(6) Information exchange with Andy Cohn, Government and Public Relations Manager, Wisconsin Alumni Research Foundation (WARF).

Executive Summary

A report written by a Governor appointed Steering Committee in 1997 highlighted progressive changes taking place in the US economy due to globalization that had passed over the state. It also showed Wyoming with zero job growth and that made a big impression! Leadership in Wyoming saw the writing on the wall: grow with the changes or get left behind. The state brought in Tucker Fagan to lead and manage this change as the CEO of Wyoming Business Council, formerly the Dept. of Commerce for the state. The challenges were no workforce, no workforce housing and declining school enrollment. These circumstances had led to something called “man camps” where male workers would leave families behind, come to the state to work for a period of nine days and then return home. This back and forth cycle had no value added for the worker or the state. The state had not developed or invested in infrastructure for thirty years.

Half the state of Wyoming is owned by the Federal Government (Bureau of Land Management). The state receives money for the extraction of minerals through the Mineral Severance Tax - last year that sum totaled $800 million and this year it reached $1 billion dollars.

Context for strategy

Since the last energy boom in the mid 1980’s, Wyoming’s economy has been flat. The shake up for change started in the late nineties. In 1994 the University of Wyoming hired a VP for Research, Bill Gem. Bill knew that in order to grow a research enterprise he had to grow technology based business to have places for students to go to work. Lack of funding to support innovation in the business sector was a real problem. An SBIR outreach program was needed.
In 1996 they received $250,000 in seed grant funding for 1996 – 1998 from the EPSCoR program to figure out how to bring SBIR to a rural setting. They hired an SBIR expert from another state who worked with key entrepreneurs in the state and over a two-year period, increased grant successes - tripling the amount received. They had successfully introduced SBIR culture to the state – a culture of entrepreneurship.

In 1998/99 the Wyoming Business Council was created – with a technology based focus and innovation broadly defined. Composed of fifteen successful business people in state, this is a quasi public/private organization with Tucker Fagan as CEO. Retired from the United States Air Force, he brought skills in systems management. His action plan model for Wyoming was 67% Infrastructure development, 31% Support for existing businesses and 2% Recruitment. As he saw it, many economic development benefits existed to recruit: no corporate tax, no income tax, low sales tax, low rates of property tax and no crime rate. In return for these perks, the state wants high wages in order to partner with incoming business investment. So why wasn’t Wyoming growing? Assessment showed they lacked infrastructure for product delivery – roads, water, sewer, energy and broadband.

Fortunately, the timing was right for the state to be able to invest in infrastructure because the prices over the past eight years for natural gas and coal have created funds to grow the economy. But many companies were still too small to compete for federal funding so they initiated a Phase 0 program to help entrepreneurs win federal awards. They had seen the model work in Vermont with EPSCoR experimenting with a Phase 0 contract program to leverage more funding. The Wyoming Business Council has a rigorous Peer Review process as a critical component to qualify for Phase 0 - $2,500 - $5,000. Two to three companies a month receive these awards. $130,000 has been distributed in small contracts a year. Those selected are vetted by prior winners in a grant writing system that has leveraged $30 million in federal grants for innovation. The University of Wyoming is managing the funding from the Council. The Council is also cultivating entrepreneurs to improve grants that are not competitive. Their strategy is to support anything that comes out to build tech economy – broad in their investment and capturing anything that comes out.

The Wyoming Business Council (WBC) works with communities in economic development, identifying businesses from within – growing what they have. The Legislature supports a Business Ready Program to grow infrastructure in towns, in particular to extend broad band capacity however, it is an area that needs to improve. UW has created a Business Tech Incubator on campus. The Incubator has a mixed function with lab spaces, offices and access to greater connectivity.

The University of Wyoming has been a land grant institution since 1862. UW serves the entire state and has a large outreach program. Wyoming has a population of 500,000 people in 100,000 square miles, which averages out to about 5 people per square mile. The current student population is 13,000, 10,000 on
campus and 2 to 3,000 through out the state via protocols like internet, video systems and Community Colleges. They have a large research portfolio but no medical school and no veterinary college. They have six hundred faculty and three hundred are in STEM areas. They are pursuing top-notch faculty with the primary mission to support economic development. Faculty interest in IP policy is high because they give a faculty inventor 60% of UW net share.

Wyoming produces more BTU’s of energy than any other state in the country and it is mobilizing resources for a Brain Gain. In 2006, the Legislative Session passed the Education Endowment Fund – $550 million to attract talent and expertise in energy related biosciences. The Governor has also committed $10 million a year to establish a School for Energy Resources. They are now recruiting at all levels of Energy Science for an Endowed Chair and faculty in energy sciences and energy economics. The current timeframe/goal is to recruit 4, 4 and 4 - four faculty per year for three years to create twelve endowed chairs in energy related sciences. They are striving for a world-class school and on going state commitment to this trust fund. Matching grants will come from the legislature for facilities and must have a private gift match. They already have $12 million from a private donor and two companies. They are building on two sides with private gifts and state matching as well as direct state appropriations.

With the energy boom the state is in they have focused on rebuilding infrastructure and that includes higher education. Wyoming feels that they have good quality of life standards and they are fortifying that standard with investment in education. The state’s Hathaway Scholarship Program provides a scholarship for any student out of high school. With the Education Endowment finalized in 2006, the entering freshman class this year began with the Success Curriculum – designed to reach the highest levels for the Hathaway Scholarship. This is a part of the state strategy to build a technology-based economy with the requisite workforce and jobs to go with it. UW is also doing targeted matches with their Alumni database when looking to identify people that fill a company search profile.

Saving the biggest news for last, the state has just won its first really big statewide initiative. Brokered with multiple partnerships between state, local, University, private and business stakeholders and led by the Governor, Wyoming has just been awarded the site location for the National Center for Atmospheric Research (NCAR). It will be located in Cheyenne and will receive approximately $470 million over a twenty-year period, with a goal to be installed and running by 2011. In a very short time the Governor was able to mobilize the partners necessary to go after and secure this enormous win for Wyoming. Computational Science is an area of strength they are building and NCAR will deepen that commitment. As Bill Gern says, “Wyoming is a vibrant place, and important changes are afoot!”
The increases in prices and demand for mining, oil and gas industries afforded Wyoming the fastest growing increase in per capita income between 1999 and 2005 (The 2007 State New Economy Index) and that burst provided the catalyst for Wyoming to enter the race in regional competitiveness.

**Resources**

(1) Interview with Bill Gern, VP Research, University of Wyoming
(2) Interview with Tucker Fagan, CEO, Wyoming Business Council