



MINNESOTA **SCIENCE & TECHNOLOGY** AUTHORITY

MINNESOTA SCIENCE AND TECHNOLOGY EXECUTIVE SUMMARY

Turning Ideas into Jobs



Bringing together industry, government and academia.

A Pathway to Prosperity

The Minnesota Science and Technology Strategic Plan Executive Summary

State government leaders will be confronted by two significant challenges in the coming months and years: the dual imperatives to resolve our state's budget deficit, and to invest in strategies to grow our economy. The stakes could not be higher.

Minnesota's competition is no longer North Dakota, Wisconsin or even California—it is India, Brazil and China. To compete, industries from agriculture and mining to biosciences, manufacturing, electronics and energy must rely on innovation and advances in science and technology (S&T). Yet, our status as a state of innovation is slipping, and our entrepreneurial activity and new business formation is almost at a standstill (ranking 42nd among all states). In 2009, while the nation grew high-tech jobs, Minnesota lost jobs. And during this period, states like Ohio, North Carolina, Kansas, Pennsylvania and others have invested in their science and technology economies, and are already seeing enormous dividends for their work. Such trends spurred the 2010 state legislature to establish the Minnesota Science and Technology Authority as an entity that would craft strategies for innovation-based economic development, and act as a trusted agent to help ensure active collaboration among industry, academia and government.

Minnesota's ability to create jobs and recover from this recession will require well-crafted strategies. The statewide Science and Technology Strategic Plan has three key objectives with immediate and long-term impacts on our economy:

- Accelerating our ability to turn ideas into commercial products and services;
- Fostering the start-up and success of new high growth companies; and
- Enhancing the ability for existing companies to remain competitive and be leaders in their market.

While Minnesota has built an array of nationally recognized science and technology assets, critical gaps remain that are preventing the formation of new businesses and jobs:

- Promising technologies lack adequate start-up funding,
- Entrepreneurs need investors, advisors and connections to new markets,
- Companies and universities could be getting more federal funding, and
- Science and technology students are not well connected to employers within the state.

By filling these gaps and providing ongoing support for existing S&T investments, the Authority's 18-member Advisory Commission believes this plan can help industry create at least 30,000-45,000 direct S&T jobs and 100,000 indirect jobs over the next 10 years. With a typical S&T job paying \$73,313 (almost double the state's average wage) every job created also helps to more rapidly fill the state budget gap. Moreover, the strategy will help attract new investment, and enhance economic assets throughout the state from the Iron Range to Rochester, from Bemidji to Worthington, from Mankato to Willmar.

To quickly grow jobs, the Advisory Commission will ask for \$20 million for the 2012-13 budget cycle. This includes funding for a technology commercialization fund, an entrepreneurial accelerator program, enhanced efforts to secure federal grants and Small Business Innovation Research Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) awards, and internships for science and technology students. This initial request is part of a long-term strategy that will ramp up funding over time and put Minnesota on a competitive playing field with other states. In addition to the jobs created, the results from the state's existing S&T investments and that of other states indicate that for every state dollar invested up to \$20 of federal and private investment can be leveraged (e.g. BioBusiness Alliance of Minnesota currently leverages approximately 20:1).

To date, Minnesota is one of the few states in the nation without a comprehensive strategy in place to create these science and technology jobs of the future. The plan provides both short-term strategies to turn ideas into jobs, and proposes a framework that over time will solidly position Minnesota as a leader in the global, knowledge-based economy. In much the same way that early leaders of Minnesota saw the importance of preserving our lakes and other natural resources, the goal of this plan is to build on Minnesota's heritage as a center of science and technology innovation by creating the most fertile

environment possible for existing and emerging science and technology firms to grow and spread economic prosperity to the state's citizens.

Minnesota's Science & Technology Plan

Overarching Goal: To create a robust, strategic, coordinated and long-term approach to driving future job growth through innovation.

Short-term Goal: To make targeted public investments for initiatives to jumpstart and grow Minnesota's science and technology industries that will have a dynamic and positive effect on the state's economy

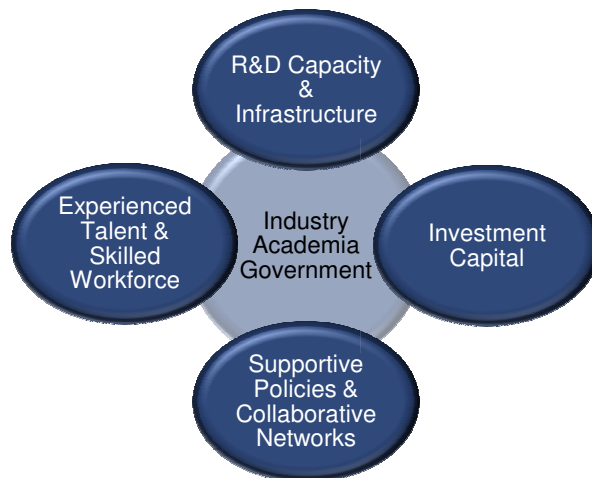
The Minnesota Science and Technology Authority was established by state legislature in 2010 and charged with the development of a strategic plan to advance the growth and competitiveness of the state's high-value industries.

Innovation-based companies are key to the state's economy. Each year 160,000 jobs in Minnesota's core industry sectors of science and technology have a payroll of over \$12 billion and spend over \$6.3 billion on research. The University of Minnesota brought in more than \$721 million in research expenditures in 2009 and the Mayo Clinic \$437 million. Finally, economists estimate that science and technology industry sectors have among the highest economic multipliers—supporting three to four additional jobs in the local economy for every new S&T job. Given the potential for growth and the significant economic impact, investments in innovation initiatives can be a prudent and effective economic strategy.

Over the years, the state has made significant investments to support the foundation of research and innovation in our universities, medical facilities and industries. Where we have made these ongoing investments, Minnesota ranks among the top states, indicating that targeted investments can have significant results. With this foundation in place, we must now maximize the economic potential—the ability to turn ideas into jobs and companies.

We believe that public investment in the next several years is critical. The Minnesota Science and Technology Strategic Plan is designed to build a robust innovation ecosystem. The plan recommends support of a set of coordinated initiatives in four investment areas that offer immediate and long-term economic benefits:

- **Accelerating our ability to commercialize ideas:** Build Minnesota's R&D capacity and infrastructure to generate ideas and commercialize new products.
- **Attracting investment for new and existing businesses:** Leverage investments that drive speed and scale of new company formation and existing company growth.
- **Enhancing Our Science & Technology Talent & Workforce:** Continue to grow the talent and workforce to support the jobs that will drive recovery and grow our economy.
- **Creating Supportive Policies and Collaborative Networks:** Foster a competitive business climate and dynamic network that helps entrepreneurs build strong businesses and seize global opportunities.



Summary of Minnesota Science & Technology Strategies

| Investment Area | Primary Objective | Key Programs |
|--|---|---|
| Attracting investment for new and existing businesses | <ul style="list-style-type: none"> To fill the funding gap between basic research and commercial products so that technologies and start-up companies are attractive to early stage and angel investors. To increase our ability to obtain and leverage federal funding for research and product development. To attract venture and growth capital that accelerates the expansion of existing Minnesota companies. | Technology Commercialization Fund Federal Liaison Program & SBIR/STTR support Continued support of Angel Tax Credit |
| Enhancing Science & Technology Talent & Workforce | <ul style="list-style-type: none"> To retain science and engineering graduates and increase opportunities for students to find job opportunities with Minnesota companies. To attract world-class researchers that bring with them the ability to attract research funding and other top talent. To develop strong entrepreneurial talent that will start successful new companies and grow existing companies to new levels. | STEM Internship Programs STEM Innovation Program Eminent Scholar and Senior Research Programs |
| Accelerating our ability to commercialize ideas | <ul style="list-style-type: none"> To build renowned centers of excellence by which Minnesota is a leader in new high-value product development. To increase the number of new products and services developed in Minnesota, and enhance the ability for industry, especially small and medium size firms, to access expertise and facilities of our research institutions. To attract new R&D facilities and federal research programs that build on our competitive strengths. | Centers of Excellence Advanced Commercialization Program for Industry Industry-University R&D Partnership Program R&D Attraction Program |
| Creating Supportive Policies and Collaborative Networks | <ul style="list-style-type: none"> To strengthen the ability for new companies to be successful by connecting them to professional advisors, investors, markets and research expertise. To help existing companies and research centers find and access private investment and federal grants and contracts. To enhance means by which industry and universities can work collaboratively on research and new product development. | Business & Entrepreneur Acceleration Program Image and Development & Marketing of Innovation Assets State & Regional Coordination |

In addition to these programs the Authority would oversee, there are existing S&T programs for which we highly recommend immediate and continued support. These include the Angel Investment and R&D tax credits, the BioBusiness Alliance of Minnesota, the University of Minnesota and Mayo Genomics Partnership and the Agricultural Utilization Research Institute (AURI).

Short-term Priorities

As a part of a 10-year strategy, the Advisory Commission recommends an initial investment in support of *programs that will create new businesses and jobs, bring more outside investment into the state and add increased economic value to existing state investments*. The following table highlights priority programs with short term goals.

| | |
|---|--|
| Goal: Increase the state's capacity for rapidly turning research into new products | |
| Program: Establish a Technology Commercialization Fund that will help translate research with commercial potential into products that are marketable and attractive to private investment. | \$2 million/year; Supports 15-20 technologies; anticipated leverage of \$6:1 |
| Goal: Help entrepreneurs and small businesses successfully launch and grow new businesses | |
| Program: Establish a Business & Entrepreneurial Acceleration Program that mentors entrepreneurs through advanced advisory services, connection to capital, and links to state, national and global networks. | \$2-3 million per year; Serves at least 100 entrepreneurs; anticipated leverage \$8:1 |
| Program: Create a Federal Liaison Program that helps research institutions and industry secure an array of federal contracts and awards, including expanded Small Business Innovation Research (SBIR) /Small Business Technology Transfer (STTR) assistance . | \$3-4 million per year; Serves at least 100 companies; anticipated federal leverage of \$6:1 |
| Goal: Retain our science and engineering graduates to grow a highly skilled and competitive workforce | |
| Program: Establish a STEM Internship Program supported by matching industry funds. | \$750,000 per year; Supports approximately 200 internships |
| Goal: Consolidate and coordinate the array of innovation economy efforts supported by the state | |
| Program: Provide operating support for the Minnesota Science & Technology Authority to manage innovation programs, market the state's innovation assets and facilitate the coordination of state and regional programs. | \$1.25 million per year for base support of the Authority. |

Setting Targets and Measuring Progress

When all is said and done, we must be able to demonstrate that the initiative has “moved the needle” on the issues that will sustain a vital economy. Ultimately the success of the S&T initiative will be judged on Minnesota's ability to create new products, to educate skilled workers, to turn products and entrepreneurs into successful businesses, and turn businesses into jobs. Tracking the progress of the state's ranking among its peers in areas such as those in the following table can provide insights into where the state is gaining or losing ground. It will be important that we continue to monitor the following types of metrics:

| | Current state ranking | Our long-term goal |
|---|--|---|
| Idea Generation and New Product Development | <ul style="list-style-type: none"> 7th in the area of industry investment in R&D 8th in patents per capita 8th in spinout companies from research institutions 15th in total R&D performance | Maintain top 10 ranking in idea generation metrics |
| Talent & Workforce | <ul style="list-style-type: none"> 8th in workforce education 8th in scientists and engineers | Maintain top 10 ranking in S&T workforce |
| New Businesses and Entrepreneurial Activity | <ul style="list-style-type: none"> 21st in fastest-growing firms 42nd in entrepreneurial activity | Increase entrepreneurial rankings to top 20 |
| Business Growth and Competitiveness | <ul style="list-style-type: none"> 1st in number of Fortune 500 companies per capita 24th in the export focus of manufacturing and services 1.2% decline in job growth of S&T sector compared to a 1.9% increase for the US | Maintain top three ranking in Fortune 500 companies Increase global exports to top 20 rank Grow S&T technology jobs at a rate at least 10% higher than the US |

Measuring the Impact of Public Investment

With limited resources, it is essential that state investment in S&T initiatives leverage significant private and federal investment and act as a catalyst to enhance and attract other resources. Each year, the Authority will measure the impact of S&T funding on the state's economy by:

- The number of federal and private dollars leveraged for every state dollar invested;
- The number of new jobs and firms created in S&T sectors;
- The payroll contribution of S&T jobs to the state; and
- The increase in state tax revenue generated by growth in S&T sectors.

Join Us

At a time of great need, there is a unique opportunity for the State of Minnesota to invest in an economic strategy that will not only produce short-term benefits for business and citizens, but insure a prosperous legacy for years to come. As representatives from business, universities, research institutions and government, we hope the Minnesota legislature, the Governor and others will invest in growing the state's economy by enacting the elements of the Minnesota Science and Technology Strategic Plan as recommended in this report.

2010 Minnesota Science & Technology Authority

Commissioners

Ward Einess, Revenue
Tom Hanson, Management and Budget
Gene Hugoson, Agriculture
Dan McElroy, Department of Employment & Economic Development
Glenn Wilson, Commerce

2010 Minnesota Science & Technology Authority Advisory Commission

| | | |
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