

Vision 2025: The West Virginia Science and Technology Strategic Plan

Annual Report on progress

August 2017

Vision: By 2025, Science, Technology, and Engineering are WV's Leading Economic Growth Drivers Attracting Investments, Creating Jobs, and Improving Our Quality of Life

Key Objective: Financial Development

Smart Goal: Obtain \$6 MM in state-based funding for HEPC Division of Science and Research and match 3-1 with external funding by July 1, 2017 and grow 5% per year thereafter

Progress: The Chancellor has met with legislative leaders regarding funding for science and technology development. Due to the state's economic troubles, no additional funds have been forthcoming. However, for FY18, the Research Challenge Fund did not suffer any further reductions.

Smart Goal: Dedicate \$10 MM in annual funding with private 1-to-1 match for a Science and Technology Future Fund starting July 1, 2017

Progress: The Chancellor has met with legislative leaders regarding funding for science and technology development. Due to the state's economic troubles, no additional funds have been forthcoming. The success of the Research Trust Fund with \$50M of state funds being matched by private gifts has helped West Virginia University regain its Carnegie Highest Research status and has helped Marshall University increase its competitiveness for federal grants. Additional funding would increase the likelihood of more research leading to economic development.

Smart Goal: Obtain \$1MM funding for start-up and venture businesses with private 1-to-1 match by July 1, 2017 and grow 10% per year

Progress: Due to economic issues facing the legislature this year, no funding was allocated for start-up and venture businesses this session. However, other groups have been providing start-up support with technical help and some funding. Below is a sampling.

INNOVA Commercialization Group manages a growing seed stage capital investment fund. The INNOVA commercialization team seeks out early-stage West Virginia based product-oriented companies in which it can place equity or near-equity investments. Such investments are used to prepare growing companies for future venture capital investments.

TEN50 is a business accelerator that supports early-stage and growth driven technology companies through the RCBI Advanced Manufacturing Technology Center and Marshall University . TEN50 provides a 3 month extensive mentor network, educational sessions with experienced leaders, access to investors, and a rich entrepreneurial work environment to launch new business startups.

ChemCeption is the nation's only incubator-accelerator focused solely on commercializing chemistry-based technologies, including traditional and green chemistry, biotechnology, advanced materials,

energy and more. An initiative of the Chemical Alliance Zone, ChemCeption provides a unique combination of uncommon large-scale commercialization facilities and rare commercialization expertise critical to bringing chemistry-based technologies to market. We also provide more traditional business and entrepreneurial assistance, and we have an affiliate program to assist entrepreneurs, start-ups and small firms located outside our region.

West Virginia Growth Investment, LLC (the "LLC"), is a new investment fund formed to pool and invest the capital resources of sophisticated and accredited investors in and around West Virginia (the "Region"). The LLC's objective is to provide both favorable investment returns to Investors, and to promote small business and economic development in the Region (primarily WV).

West Virginia Jobs Investment Trust (JIT) is a public venture capital fund created to develop, promote and expand West Virginia's economy by making investment funds available to eligible businesses, thus stimulating economic growth and providing or retaining jobs within the State. JIT invests in early stage, later stage and mature small companies who wish to expand. Opportunities to create a significant number of jobs while maintaining economic balance are favorably viewed. Economic diversification is a plus. In order to maintain its ability to assist others in the future, JIT makes investments that are expected to yield a financial return proportionate to the level of risk it assumes.

CREATE Opportunity stands for Creating Resilient Economies by Assisting Transforming Entrepreneurs. The initiative includes a network of strategic partners working together to create jobs and to help diversify our local economy. The Commercialization Station located at 1642 Bluefield Avenue in Bluefield, WV is a "dirty space" manufacturing incubator. Once renovations and upgrades are complete, there will be 5 bays for business incubation.

TechConnect West Virginia's ScaleUp West Virginia program, an initiative made possible by the U.S. Economic Development Administration and the State of West Virginia. is helping West Virginia companies develop new products and technologies and move them to market; support small manufacturers in adopting advanced tools and processes; and promote increased entrepreneurial activity in our state. The program targets 40 counties, including many that have been particularly affected by the loss of mining jobs, as well as jobs directly related to the mining industry.

The WVU Health Sciences (HS) Innovation Center's business incubator provides state-of-the-art wet lab and office space for new and developing startup companies from not only established WVU technologies, but the community at large. In addition to space, the HS Innovation team aids in connections to local economic development agencies and trade associations for these startup companies in order to facilitate growth and commercialization.

The West Virginia University Industrial Extension Service, and the Manufacturing Extension Partnership (MEP) are focused on helping West Virginia businesses improve competitiveness in the local and global markets. We accomplish this mission through delivering foundational support and innovative growth services. Foundational support services range from manufacturing process improvement and quality systems to health and safety, energy assessments, and more. The focus of these services is to maximize productivity and optimize the knowledge of the workforce.

Key Objective: Physical Development

Smart Goal: Determine statewide needs for science and technology facilities to enable research and business growth goals at Universities and technology parks by July 1, 2016

At present, universities are not planning on expanding S&T facilities.

Smart Goal: Upgrade and increase science and technology facilities to enable research and business acceleration needs for Vision 2025 at Universities and technology parks by July 1, 2024

The most recent research and development facilities at Marshall University and West Virginia University are the Weisberg Engineering Complex at Marshall and the Blanchette Rockefeller Neurosciences Institute (BRNIS) at WVU. The engineering building at Marshall University is the home of the Marshall Institute for Interdisciplinary Research. Researchers at MIIR are now focusing on research that will lead to biomedical advances that can be patented and licensed. At BRNI in Morgantown, research develops drugs that have potential for treating and reducing the effects of major neurological disorders including Alzheimer's disease and stroke.

Smart Goal: Ensure continual upgrades and expansions of broadband infrastructure to meet prevailing FCC and E-rate standards and follow the recommendations of the WV Strategic Broadband Plan for statewide administration, promotion, and development, starting July 1, 2017.

The WV Broadband Enhancement Council (BEC) established by SB488 in 2015 (WV §31-15C-3) to replace the Broadband Deployment Council (which was sunset in December 2014) finally convened for the first time in the Fall of 2016 and now meets monthly. The BEC is chaired by Robert Hinton (Director of the Upshur County Development Authority) and comprises several representatives as stipulated in SB488, including Matt Turner, the Executive Vice Chancellor for the Higher Education Policy Commission and Council for Community and Technical College Education, representing Higher Education (and academic research). The BEC was further expanded and empowered by the passage of House Bill 3093 ("WV Broadband Bill") during the 2017 legislative session, which became effective July 1. Several subcommittees have since been established to facilitate and expand the work of the BEC, including an Education Subcommittee, co-chaired by Matt Turner and Brenda Morris (WV Department of Education), comprising representatives from around the state and all facets of education: K12, research universities, 4-year colleges, community and technical colleges, WVNET (the regional Research and Education Network for WV), and the FCC USAC E-rate program (for K12 and libraries). The BEC is administered by and reports to the Development Office of the Department of Commerce under Secretary "Woody" Thrasher, with staff to support its daily operations and outreach. It has recently acquired legal representation to assist in the Council's new authorities (of determining eligibility and technical advisement) with regard to loan guarantees through the WV Economic Development Authority and the formation of non-profit Cooperative Associations to build out local broadband infrastructure in underserved areas. The BEC has also contracted support (via MOU) from the WV Geological and Economic Services (WVGES) to develop statewide maps of broadband availability, usage, and performance. More can be found about the BEC and their activities at their new website (<https://broadband.wv.gov>) developed and maintained by the WV Office of Technology.

Key Objective: People Development

Smart Goal: STEM faculty at all WV colleges and universities have opportunities to be rewarded for entrepreneurial activities and innovation in promotion and tenure considerations by 1 January 2017

WVU has developed alternative requirements for promotion and tenure that includes entrepreneurial activities. MU has yet to alter their promotion and tenure requirements.

Key Objective: Cultural Development

Smart Goal: Increase West Virginia public's understanding of the value of STEM and research by 5% annually starting January 1, 2016

A survey is to those who have attended the Chancellor's STEM Speaker series events has been administered. Results show that the Speaker series has increased the value they place on STEM and research by 6.3%. A general call via social media will occur in Spring 2018..

Smart Goal: Increase external understanding and awareness of West Virginia's STEM strengths and attract new STEM-based businesses by increasing external communication, public relations, and marketing activities starting January 1, 2016

The Division of Science and Research is continuing to host nationally-recognized STEM speakers via the Chancellor's STEM Speaker series. We also highlight West Virginia scientists and their research in brief documentary-style videos hosted on YouTube and promoted through *The Neuron*, Facebook and Twitter.

Key Objective: Innovation Economy Development

Smart Goal: Grow number of technology based businesses by 2% annually starting July 2016

Current information available from the Science and Engineering Indicators report show that the percent of science, engineering and technology employment in WV increased from 5.6% of all business establishments in the state in 2003 to 6.4% in 2012. No data beyond 2012 are currently available.

Smart Goal: Increase research and development public and private expenditures in WV by 6% annually starting January 1, 2016

State R&D expenditures in 2015 were \$11.5M and ranked 32nd nationally. Data for 2016 are not yet available.

West Virginia University was among the top 201 patenting universities from 1996-2014. At the time of the 2016 Science and Engineering Indicators 2016 report, WVU ranked 131 with a total of 84 patents over this time period. The highest year was in 2014 when WVU faculty were awarded 13 patents.

In 2015, statewide, WV was issued 127 patents and ranked 46th of all the states.