VISION2015

THE WEST VIRGINIA SCIENCE AND TECHNOLOGY STRATEGIC PLAN

West Virginia Higher Education Policy Commission - Division of Science and Research

Revised in 2012

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FOREWORD

VISION 2015 is a strategic framework of actions and initiatives that position West Virginia to achieve measurable growth in technology-based economic development. The Vision: *By 2015, research and innovation will be the number one driver of West Virginia's new, diverse and prosperous economy;* is the essential driver of this plan. To achieve this goal and to develop cutting-edge research that will spawn new business growth, the state will invest $250 million in both human and physical infrastructure. West Virginia embraces this plan as the state continues to diversify and transform its traditional extractive industrial base to a more high-tech, knowledge-based economy. Doing so may create 33,000 jobs and an economic impact greater than $3.3 billion over the next decade.

West Virginia will grow the research enterprise by hiring nationally prominent and otherwise promising faculty, increasing the production of scientists and engineers, and building research facilities and parks. The Southern Growth Policies Board has recognized this effective strategy in *Innovation U. – New University Roles in a Knowledge Economy*. In its *Rising Above the Gathering Storm* and *Rising Above the Storm*, *Revisited,* the National Academy of Sciences, as well as the American Academy for the Advancement of Science, the National Association of Manufacturers and members of the U.S. Congress have presented alarming data on declining numbers of domestic engineering and science college graduates at a time when the nation is experiencing technological expansion and greater demand for such skills.

West Virginia is not alone in engaging this strategy, but joins the national effort, recognizing that surrounding states (Ohio, Virginia, Kentucky and Pennsylvania) have initiated similar strategic plans—and aggressive state funding—for capitalizing on research growth. West Virginia's universities can no longer be viewed as merely post secondary academic institutions, but rather as the nucleus of economic strength, entrepreneurship and innovation.

While building the state's economy, the results of VISION 2015 will create critical mass in the state scientific community, enhance diversity of the research faculty and suppress the allure of well-financed research initiatives outside the state's borders.

Key components of VISION 2015 are captured on the next page. This approach allows a holistic view of the specific but interrelated actions to be undertaken. Details of each activity are subsequently presented in one page "Goal-Plans" that outline specific steps and measures to be taken. Fourteen goals in five categories will be coordinated by the West Virginia Higher Education Policy Commission, the Science and Research Council and the West Virginia Development Office, in conjunction with the business community and higher education institutions.

West Virginia University (WVU) and Marshall University (MU) are major participants in VISION 2015 and have shared extensively in its development. Milestones in the achievement of these goals will be reported on an annual basis.

Vision 2015 was initially published in 2005. This version was revised in 2012 to reflect achievements and challenges to date.

Visit www.wvresearch.org for the most current version of **VISION** 2015.

West Virginia Science and Technology
STRATEGIC PLAN

By 2015, research and innovation will be the number one driver of West Virginia's new, diverse and prosperous economy.

HUMAN AND PHYSICAL INFRASTRUCTURE

#1 Increase the number of critical science, technology, engineering and mathematics (STEM) researchers at WVU and MU by 15% by 2015

#2 Increase the space allocated to externally funded STEM researchers to achieve levels comparable to similar institutions on a per researcher basis by 2015

#3 Continue to invest in and nurture four nationally competitive research clusters (Advanced Energy, Chemicals and Advanced Materials, Biometrics, and Biotechnology) and identify other emerging clusters for support

#4 Establish statewide or regional infrastructure to provide 21st-century library resources to all institutions

#5 Implement a Cyberinfrastructure Strategic Plan, recognizing its strategic importance to Science and Technology

RESEARCH AND INNOVATION

#6 Develop innovation ecosystems to enable the start-up of new technology-based businesses

#7 Increase competitive external funding to reach at least $240 million by 2015 and grow annual public and private R&D expenditures

POLICY

#8 WVU and MU to create an environment to encourage innovation, commercialization, economic development and entrepreneurism among faculty and students

#9 Double state-based, long-term, dedicated funding for research and innovation throughout West Virginia

EDUCATION AND OUTREACH

#10 Strengthen current regional alliances and create new active regional or global alliances among research universities, the private sector and government agencies by 2015

#11 Increase the graduation of STEM students by 3% per year with an emphasis on broadening participation. Maintain minority participation at least in ratio to growth

#12 Increase the number of Ph.D.'s awarded in science and engineering fields by 20% in five years, with additional focus on U.S. nationals and diversity

ECONOMIC DEVELOPMENT

#13 Create a statewide P-20 STEM education and workforce development plan

#14 Create early-stage funding mechanisms to assist in the commercialization of technologies for entrepreneurs, start-ups and small technology firms

goal one

GOAL ONE

INCREASE THE NUMBER OF CRITICAL STEM RESEARCHERS AT MU AND WVU BY 15% BY 2015.

ACCOUNTABILITY

Deans with science and engineering programs

RATIONALE OR BRIEF BACKGROUND

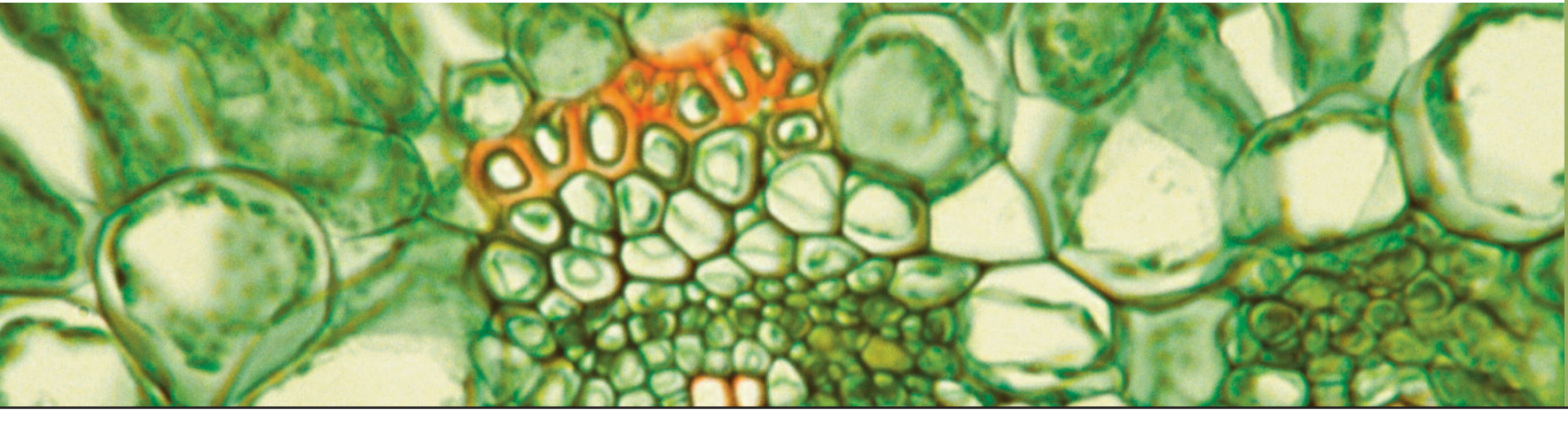
Today's economy is fundamentally different from the previous decade. It is more global, more knowledge-driven, more entrepreneurial and more dynamic. Increasing the number of STEM researchers provides additional in-state research and development and boosts the production of STEM graduates to build the advanced workforce.

MEASUREMENT

- Number of doctoral STEM researchers at WVU.
  - BASIS: 468 STEM instructional faculty and doctoral researchers in 2010
  - GOAL: 538 STEM instructional faculty and doctoral researchers in 2015
- Number of doctoral STEM researchers at MU.
  - BASIS: 155 STEM instructional faculty and doctoral researchers in 2010
  - GOAL: 175 STEM instructional faculty and doctoral researchers in 2015

IMPLEMENTATION PLANS

- Add 50 new STEM tenure-track faculty positions in areas of STEM success at WVU by 2015. Add 20 new STEM research active faculty and replace retiring STEM faculty with 10 more research active faculty at MU by 2015.
- Encourage the hiring of externally funded research faculty and postdoctoral scholars in concert with growth in research funding.
- Explore models for research faculty who are funded jointly by institutional and external sources.



GOAL TWO

INCREASE THE SPACE ALLOCATED TO EXTERNALLY FUNDED STEM RESEARCHERS TO ACHIEVE LEVELS COMPARABLE TO SIMILAR INSTITUTIONS ON A PER RESEARCHER BASIS BY 2015.

ACCOUNTABILITY

Associate VP Research in conjunction with Deans and University Planning

RATIONALE OR BRIEF BACKGROUND

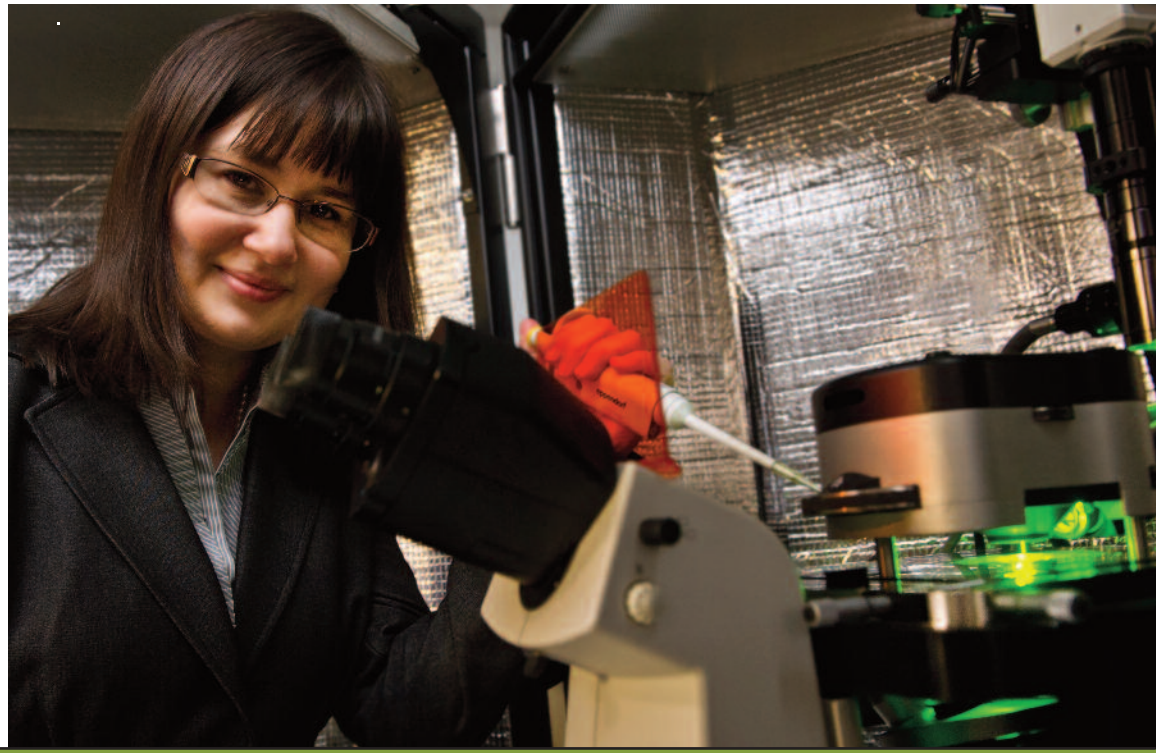
In order to be competitive for external funding, researchers must have adequate space in which to conduct their work – comparable to that of the peers against whom they are competing. To maximize the use of expensive research space, tenure-track researchers must be apportioned adequate space and tenured researchers apportioned space commensurate with their F&A-bearing external funding.

MEASUREMENT

- Average Square Feet allocated per funded researcher or
- Average Square Feet allocated per dollar of external funding

IMPLEMENTATION PLANS

- Define for WVU and set of peers the Average Square Feet allocation per funded researcher or Average Square Feet allocated per external dollars as of January 2012.
- Work with Deans on reallocation of space from unfunded to funded researchers until peer average is met.
- Marshall will continue to follow its space evaluation and allocation procedure to give priority to meeting the research space needs of externally funded programs.
- Marshall will continue with its plans to add translational research space and research space for engineering and biomedical research.



GOAL THREE

CONTINUE TO INVEST IN AND NURTURE FOUR NATIONALLY COMPETITIVE RESEARCH CLUSTERS (ADVANCED ENERGY, CHEMICALS AND ADVANCED MATERIALS, BIOMETRICS, AND BIOTECHNOLOGY) AND IDENTIFY OTHER EMERGING CLUSTERS FOR SUPPORT.

goal three

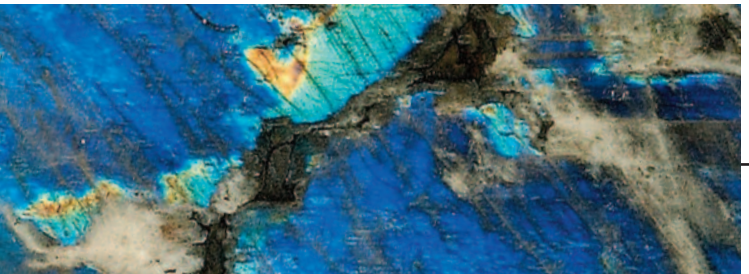
ACCOUNTABILITY

HEPC Vice Chancellor for Science and Research

RATIONALE OR BRIEF BACKGROUND

To reach our vision, West Virginia must increase investment in university-based research in science, technology, engineering and mathematics (STEM) fields. STEM research offers the best opportunities for both new business creation and competitive expansion of existing industries in the state. Many studies have demonstrated the direct link between economic development and university-based research.

Given the interdisciplinary nature of today's science, national competitiveness resides in the formation of multidisciplinary teams. To be successful in driving West Virginia's new economy, we must recruit and support competitive teams of investigators in research thrusts or clusters, where broad-based communities of basic and applied researchers and entrepreneurs work together on the same technology or project.



WVU HAS THE FOLLOWING NATIONALLY COMPETITIVE CENTERS:

- National Research Center for Coal and Energy funded by state and federal sources.
- Sensory Neuroscience Research Center funded by the Howard Hughes Medical Institute and the NIH.
- Center for Identification Technology (CITeR) funded by NSF and industry members.
- Virtual Medical Campus funded by the Department of Justice and the Department of Health and Human Services.

In addition, WVU has a number of emerging research centers supported by the WVU Research Corporation and external funding in the areas of advanced power and electricity, the environment, nanobiosciences, and systems biology.

MARSHALL HAS THE FOLLOWING EXTERNALLY FUNDED CENTERS:

- MU's Joan C. Edwards Cancer Center supported by NIH.
- The recently opened Charles H. McKown Translational Genomics Institute.
- The Center for Diagnostic Nanosystems supported by the U.S. Department of Energy.
- The Center for Environmental, Geotechnical and Applied Sciences (CEGAS) funded by state and federal sources.
- The Forensic Science Center funded by the Department of Justice.
- The Marshall Institute for Interdisciplinary Research (MIIR) funded by state and federal sources.
- The Rahall Transportation Institute funded by state and federal sources.

MEASUREMENT

- Existing research clusters receive at least one federal/foundation grant or contract annually to support research work.
- At least two new clusters identified and funded by 2013.

IMPLEMENTATION PLANS

- Directors of existing research centers develop/revise evaluation plan to ensure that each center meets funding milestones and goals for economic development.
- Identify two or more emerging clusters by identifying research areas within the state's research universities that have the greatest potential for allowing researchers to obtain competitive funding and enhance economic development by October 2012.
- Identify and obtain funding, space, personnel and other requirements for emerging clusters by August 2013.
- Develop and implement an evaluation plan to ensure that each newly established center meets milestones and goals for competitiveness and economic development within 12 months of its funding.

GOAL FOUR

ESTABLISH STATEWIDE OR REGIONAL INFRASTRUCTURE TO PROVIDE 21ST-CENTURY LIBRARY RESOURCES TO ALL INSTITUTIONS.

ACCOUNTABILITY

Higher Education Policy Commission - Digital Library Consortium Steering Committee

RATIONALE OR BRIEF BACKGROUND

The annual costs for academic library serials and database subscription resources continue to rise at an alarming rate, often double or triple that of the annual consumer price index. In addition to these essential research materials that support resident and distance students, advances in mobile technologies have necessitated attention to providing electronic books and journals in portable formats and/or packaging library services to meet a "just-in-time" scholarly community. To meet increasing library demands when the state's academic libraries are making cuts to retain existing collections because of stagnant budgets, materials purchasing has declined sharply, leaving little room for innovation or expansion of services and resources.

A consolidated approach to purchasing is required to take advantage of potential savings to allow academic libraries to meet student and faculty demands. While academic libraries do serve a population in which specific curriculum and research needs are supported, it is essential that any consortium collaborate with existing statewide library network efforts such as those maintained by the West Virginia Library Commission, State Department of Education, and private academic colleges and universities to provide the most robust and diverse collection of academic library resources possible.

MEASUREMENT

- One-time funding of $1 million awarded to the HEPC to establish a statewide academic digital library network with the initial purchase of STEM and multi-disciplinary digital content.
- Annual funding >$1 million that anticipates rising inflation awarded to the HEPC to access, maintain, and increase digital library collections and services accessible to all higher education students and faculty in the state.
- Place emphasis on resources that support the STEM disciplines and general education serving the most institutions across-the-board.
- Place emphasis on linking existing networks such as the WV Info Depot and upcoming statewide Connecting2 Collections project spearheaded by Lyrasis.
- Gradually add programs that address higher education student/faculty demands such as *24/7 Ask a Librarian* chat services and statewide 24-hour rapid digital resource sharing to supplement existing interlibrary loan.

IMPLEMENTATION PLANS

- Establish a steering committee during spring 2012 that reports to the HEPC and consists of public and private academic library directors from strategically selected institutions representing a variety of sizes and types of institutions.
- Include representation on the steering committee from the Community and Technical College system, the Library Commission and U.S. Department of Education to ensure full collaboration and limit duplication.
- During FY 2012-13, obtain one-time funding to aid in purchasing full-text digital content that will establish the statewide academic digital library.
- After establishment, obtain annual ongoing support for initial purchases, inflation, and expansion of the materials and services provided by the consortium.
- Evaluate the digital library collections and services annually through usage statistics and user feedback; stay abreast of program changes in higher education to help anticipate statewide user support needs.
- Enhance materials and programs as library technology and information services evolve and improve.

GOAL FIVE

IMPLEMENT CYBERINFRASTRUCTURE STRATEGIC PLAN, RECOGNIZING ITS STRATEGIC IMPORTANCE TO SCIENCE AND TECHNOLOGY.

ACCOUNTABILITY

HEPC Vice Chancellor for Science and Research

RATIONALE OR BRIEF BACKGROUND

Research and technology as well as commerce are driven more and more by high-speed internet access and computer-thinking. In today's Information Age, this means the availability of and access to stores of digital data and the ability to rapidly move it from anywhere to anywhere in the world, specialized instrumentation and evermore powerful computational resources to process data into meaningful scientific understanding.

Cyberinfrastructure at its most conceptual level is the fabric of connectivity that enables levels of communication, collaboration and access necessary for 21st-century research. West Virginia must improve its cyberinfrastructure, just as any other component of the state's infrastructure, by not only improving access to the internet for both business and research, but also improving computational resources for data analysis and scientific computing at major research facilities.

When fully realized the West Virginia cyberinfrastructure will enable and support the full participation of our state's scientists and researchers in the international pursuit of new scientific discoveries and knowledge. Additionally, learning and workforce development will rely more on cyberinfrastructure as distance-learning, online educational resources, knowledge repositories and other research learning and collaboration opportunities increase.

MEASUREMENT

West Virginia will increase cyberinfrastructure by:

- Supporting and upgrading two small-medium facility high-performance computing centers at WVU and MU, which will enhance research and data analysis at the state's two top research institutions, and
- Establishing conference room facilities in each major building on the WVU and MU campuses. This will enable both distance-learning and virtual organization capabilities as researchers collaborate with their peers from across the world.
- Subscription to Internet2 through the SEGP at Marshall University by at least three primarily undergraduate institutions.

IMPLEMENTATION PLANS

- By 2014, three PUIs subscribed to Internet2 and using it for research.
- By 2015, Charleston will have connectivity to Internet2 at minimum participation levels.
- By 2013, double the number of web-conferencing rooms at WVU and MU, and increase these facilities by 25% per year until each building on the two main campuses is equipped with a web-conference-capable room.
- By 2015, high-performance computing facilities at WVU, MU and West Virginia State University utilized at 75% of capacity and supported by institutions and user fees for maintenance and growth.

GOAL SIX

DEVELOP INNOVATION ECOSYSTEMS TO ENABLE THE START-UP OF NEW TECHNOLOGY-BASED BUSINESSES.

ACCOUNTABILITY

State of West Virginia and Director of the Office of Technology Transfer

RATIONALE OR BRIEF BACKGROUND

To achieve the goal of growing the state's economy through research and innovation, new businesses must be created from the state's investment in university research. Biotechnology, nanotechnology, energy and the environment and advanced materials represent the leading multidisciplinary research efforts being advanced at WVU and Marshall.

MEASUREMENT

- Number of start-up companies based on university-developed technology.
- Number of employees working in those companies.
- Amount of financial investment in the companies.

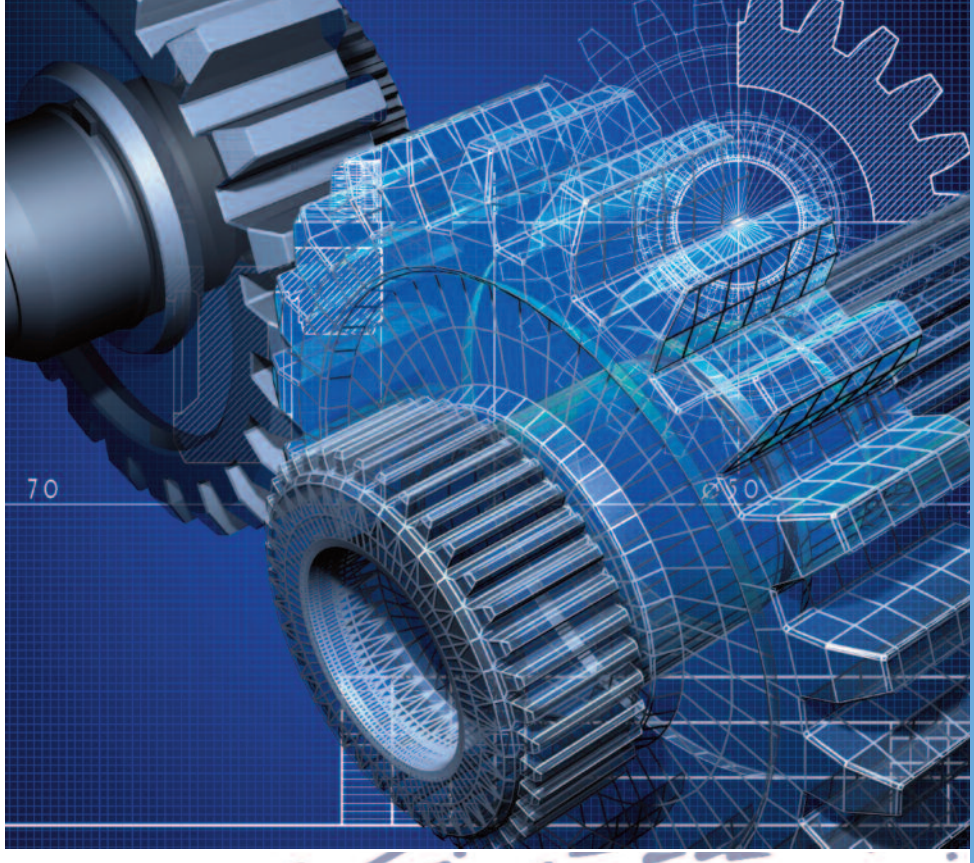
IMPLEMENTATION PLANS

A key to success will be efforts on behalf of the State to build a climate conducive to growth in venture capital investments – all other plans hinge on such a climate.

- Engage a technology marketing group to assist in the assessment of WVU and MU-developed technologies.
- Grow technology business incubator capacity focused on such companies.
- Have a plan for housing such in the WVU Research Park, Kinetic Park or the West Virginia Regional Technology Park.
- Expand the capacity of the network of Angel and Venture financing available in West Virginia.
- Expand the network of technical assistance and business support available to university spinouts.
- Develop technology harvesting capability through a program modeled on those in Kentucky.
- Develop entrepreneurial sabbatical policies at MU and WVU.
- Continue to collaborate with TechConnectWV to develop entrepreneurial support programs in the major multidisciplinary clusters.

GOAL SEVEN

INCREASE COMPETITIVE EXTERNAL FUNDING TO REACH AT LEAST $240 MILLION BY 2015 AND GROW ANNUAL PUBLIC AND PRIVATE R&D EXPENDITURES.



ACCOUNTABILITY

Vice Presidents for Research at WVU and MU

RATIONALE OR BRIEF BACKGROUND

This goal was created in 2005, well before the current economic and federal funding climate. If current economic and political conditions make this goal unachievable, the alternative goal is to increase our standing in the NSF-reported rankings of funding and expenditures, with WVU achieving a ranking in the top 100.

MEASUREMENT

- Ranking in NSF reports of R&D expenditures.
- 2012 WVU ranks 116
- 2020 goal is to rank 100

IMPLEMENTATION PLANS

- Increase industrial R&D support received by institution.
- Continue grants writing workshops for faculty.
- Increase intensive mentoring of new faculty in grants writing.
- Place specialists in colleges to assist faculty with growing the competitiveness of their proposals.
- Match faculty expertise to higher probability funding programs to increase efficiency of grants writing.
- Grow teams capable of seeking and securing large dollar multi Principal Investigator grant programs.

goal seven

GOAL EIGHT

EACH INSTITUTION (WVU AND MU) WILL CREATE AN ENVIRONMENT TO ENCOURAGE INNOVATION, COMMERCIALIZATION, ECONOMIC DEVELOPMENT AND ENTREPRENEURISM AMONG FACULTY AND STUDENTS.

ACCOUNTABILITY

State of West Virginia and University Deans

RATIONALE OR BRIEF BACKGROUND

When coupled with the appropriate ecosystem, such environments will stimulate growth in technology-based employment for West Virginians.

MEASUREMENT

- Number of start-up companies based on university technology.
- Number of employees working in those companies.

IMPLEMENTATION PLANS

A key to success will be efforts on behalf of the State to build a climate conducive to growth in venture capital investments – all other plans hinge on such a climate.

- Modify promotion and tenure policies to encourage and reward technology transfer and entrepreneurial activities.
- Bring private partners to campus to explore with faculty how their innovations can be commercialized.
- Develop an entrepreneurship track for STEM graduate students interested in commercialization of innovative discoveries.
- Introduce start-up companies to incubator space at the West Virginia Regional Technology Park in South Charleston.
- Develop policies facilitating entrepreneurial sabbaticals.

GOAL NINE

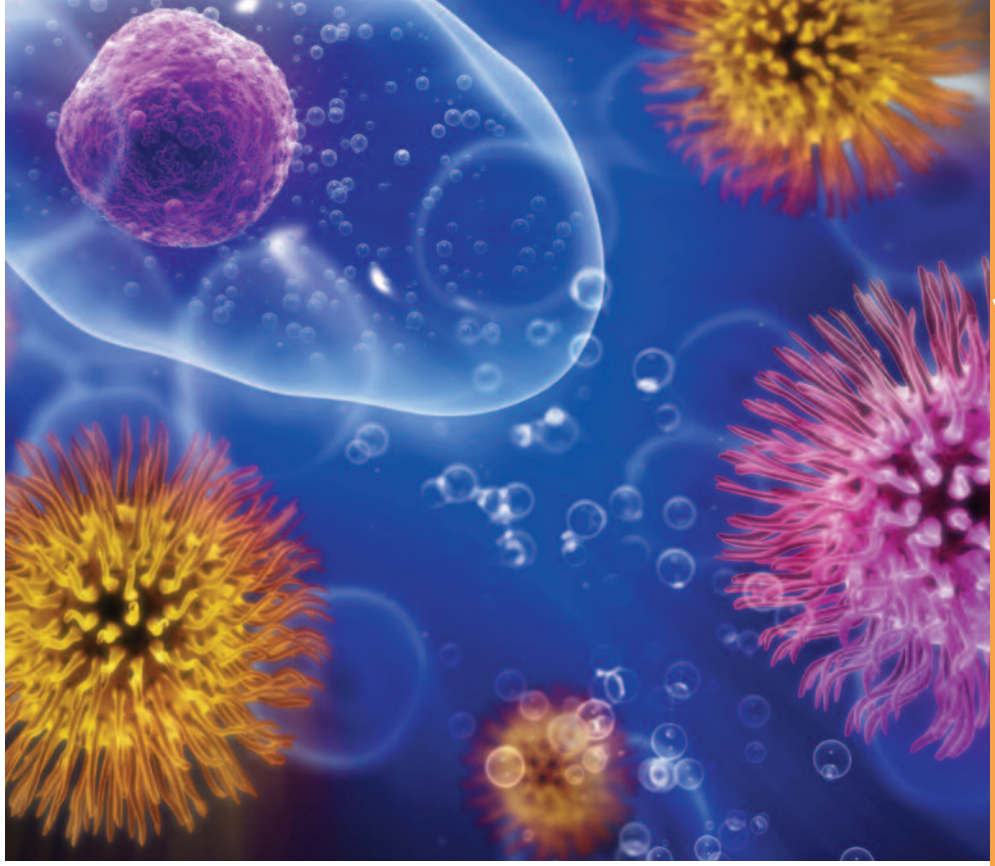
DOUBLE STATE-BASED, LONG-TERM, DEDICATED FUNDING FOR RESEARCH AND INNOVATION THROUGHOUT WEST VIRGINIA.

ACCOUNTABILITY

HEPC Chancellor

RATIONALE OR BRIEF BACKGROUND

The West Virginia Legislature created the Research Challenge Fund in 2004 to dedicate 0.5% of racetrack video lottery proceeds toward research funding. Although it produced about $4 million annually for the West Virginia research community in its early days, it now generates only about $3.2 million. Increasing the proportion incrementally from 0.5% to 1% by 2015 or $6.4 million annually would provide significant new and recurring Research Challenge Funds. In addition, funds derived from shale gas development fees or coal severance taxes could also be devoted to science and research by funding the RCF. RCF can be used to advance research and innovation to full commercialization and to develop the highly skilled workforce required for the high technology businesses relocating to West Virginia and for other businesses being established in the state from new university start-ups.



MEASUREMENT

- 2005 BASELINE: 0.5% of video lottery proceeds to RCF
- 2015 GOAL: 1.0% of video lottery proceeds to RCF
- 2015 GOAL: $1 million of energy production fees to RCF annually

IMPLEMENTATION PLANS

- Obtain sponsorship of a bill to increase the lottery proceeds dedicated to RCF by January 31, 2013.
- Obtain sponsorship of a bill to direct $1 million of shale gas and/or coal severance fees annually to RCF by January 31, 2013.

GOAL TEN

STRENGTHEN CURRENT REGIONAL ALLIANCES AND CREATE NEW ACTIVE REGIONAL OR GLOBAL ALLIANCES AMONG RESEARCH UNIVERSITIES, THE PRIVATE SECTOR AND GOVERNMENT AGENCIES BY 2015.

ACCOUNTABILITY

University Presidents

RATIONALE OR BRIEF BACKGROUND

The future funding climate will necessitate partnerships with other academic institutions, private entities, and federal agencies in order to retain a robust R&D effort at West Virginia's research universities.

MEASUREMENT

- Number of such teaming arrangements and number of active grant awards received by such teams.

IMPLEMENTATION PLANS

- WVU is currently engaged in one such partnership with the Regional University Alliance. This alliance seeks to be self-sustaining via external funding by 2015.
- WVU has an ongoing collaboration with National Radio Astronomy Observatory and international universities funded by an NSF Partnerships for International Research and Education award. One additional such award will be sought in the area of energy.
- WVU and Marshall will sustain their RII-funded collaboration and build a new collaboration for future RII opportunities, to include industrial partners.

GOAL ELEVEN

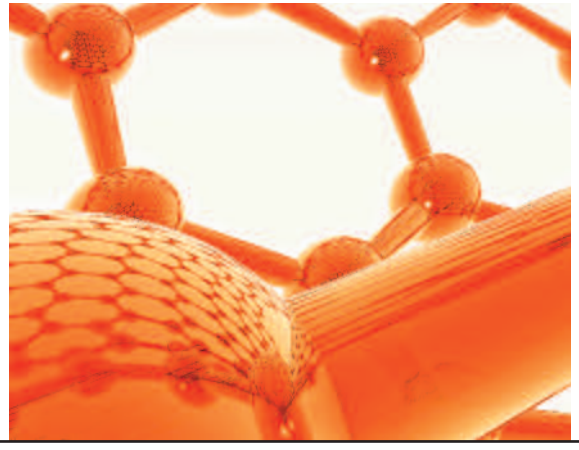
INCREASE THE GRADUATION OF STEM STUDENTS BY 3% PER YEAR, WITH AN EMPHASIS ON BROADENING PARTICIPATION. MAINTAIN MINORITY PARTICIPATION AT LEAST IN RATIO TO GROWTH.

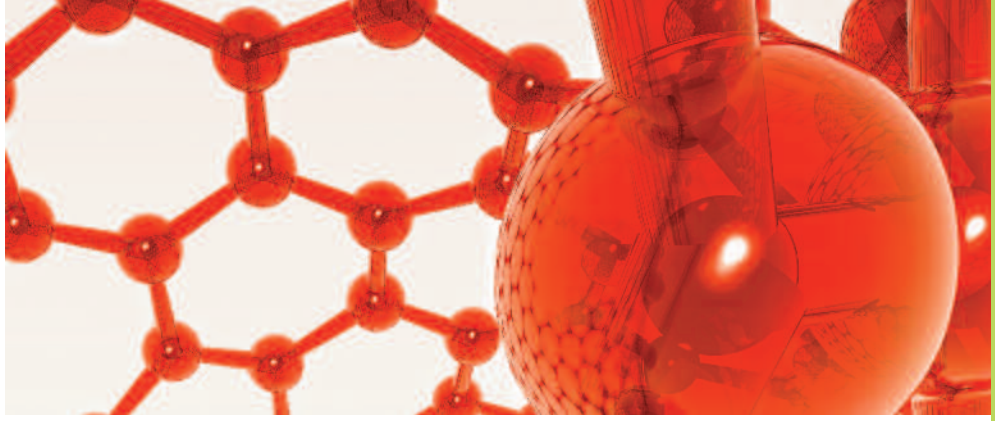
ACCOUNTABILITY

Provosts at WVU and MU

RATIONALE OR BRIEF BACKGROUND

The vision "*research and innovation will be the number one driver of West Virginia's economy*" requires an increase in the number of scientists and engineers completing degrees and working in the state. Increasing the number of STEM graduates is an essential component of workforce development for supporting new, technology-focused businesses.





MEASUREMENT

Number of STEM degrees awarded in each year

- BASIS: 1,472 STEM bachelor's degrees awarded by WVU in 2010
- GOAL: 1,706 STEM bachelor's degrees awarded in 2015

- BASIS: 142 STEM bachelor's degrees awarded to minority students in 2010
- GOAL: 164 STEM bachelor's degrees awarded to minority students in 2015

- BASIS: 292 STEM bachelor's degrees awarded by Marshall in 2010
- GOAL: 338 STEM bachelor's degrees awarded in 2015

- BASIS: 18 STEM bachelor's degrees awarded by HEPC institutions to minority students in 2010
- GOAL: 21 STEM bachelor's degrees awarded by HEPC institutions to minority students in 2015

IMPLEMENTATION PLANS

- Increase recruiting efforts and scholarship offers to attract students, including minority students, to STEM programs.
- Develop and implement strategies to raise first-year retention rates.
- Identify at-risk freshmen and sophomores in STEM fields and provide supporting infrastructure for success.
- Promote awareness of STEM career opportunities to K-12 students.
- Improve K-12 STEM preparation through an institutional initiative involving both education and content specialists.

GOAL TWELVE

INCREASE THE NUMBER OF Ph.D.'s AWARDED IN S&E FIELDS BY 20% IN FIVE YEARS, WITH ADDITIONAL FOCUS ON U.S. NATIONALS AND DIVERSITY.

ACCOUNTABILITY

University Deans with science and engineering programs

RATIONALE OR BRIEF BACKGROUND

To achieve our vision, we must increase the number of Ph.D.'s awarded in the state in S&E fields (1) to match growth in S&E research funding and programs and (2) to provide human resources in support of state economic development.

MEASUREMENT

Number of Ph.D.'s awarded in S&E fields each year

- BASIS: 70 STEM Ph.D.'s awarded in 2010
- GOAL: 84 STEM Ph.D.'s awarded in 2015

IMPLEMENTATION PLANS

- Add new faculty lines to mentor additional Ph.D. students and additional lab space to accommodate them.
- Award additional graduate research assistantships in line with anticipated externally funded research growth.
- Develop graduate scholarships to enhance the recruitment of high-profile doctoral candidates.
- Create additional incentives for increase in timely completion of doctoral degrees.
- Pursue recruiting opportunities for domestic minority students.

GOAL THIRTEEN

CREATE A STATEWIDE P-20 STEM EDUCATION AND WORKFORCE DEVELOPMENT PLAN.

ACCOUNTABILITY

Chancellors of the Community and Technical College System and the Higher Education Policy Commission

RATIONALE OR BRIEF BACKGROUND

In order to meet the needs of the 21st century, West Virginia and the nation need a scientifically literate and trained workforce. Students from pre-school through college must have education and training to meet the employment needs of the future.

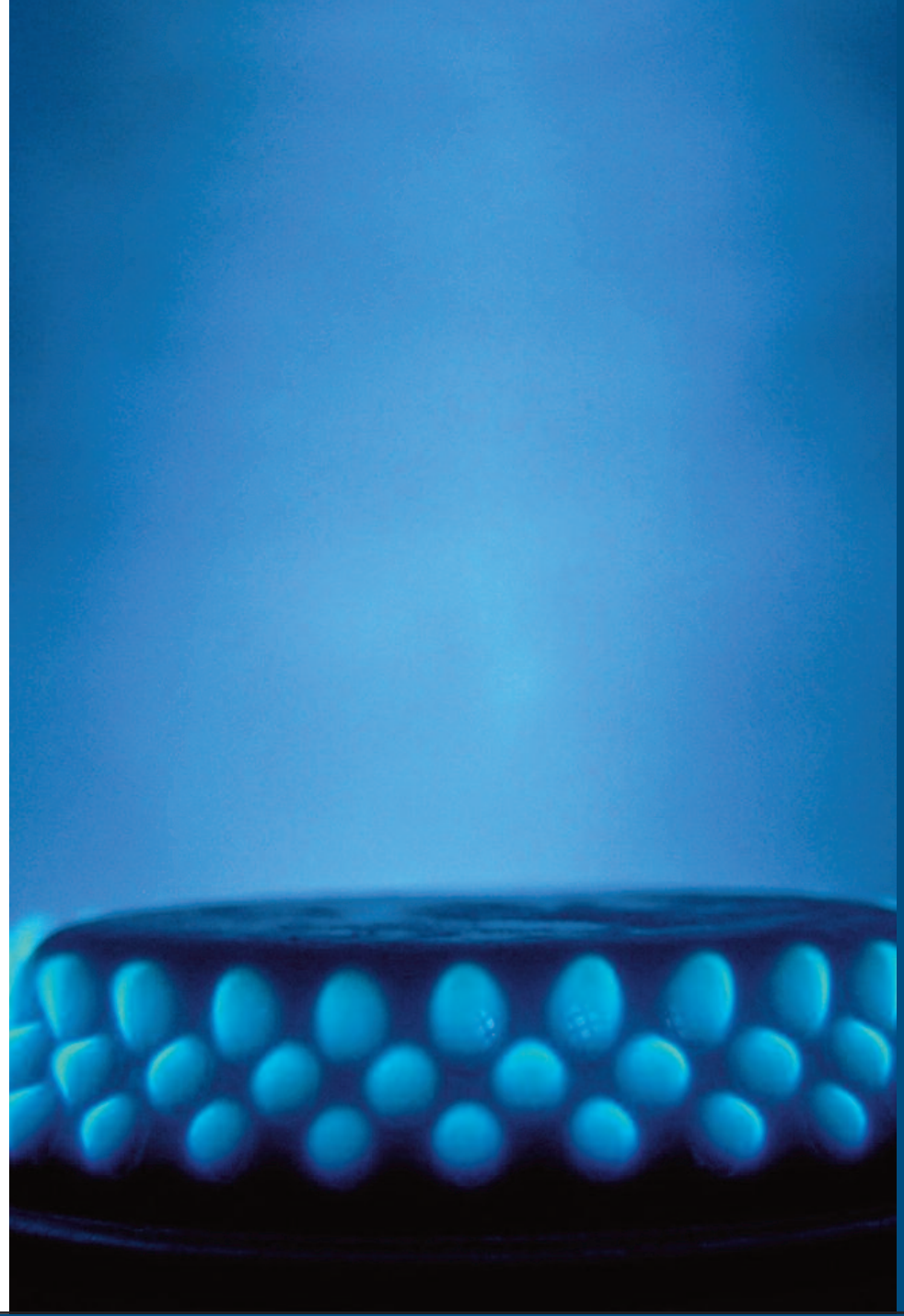
MEASUREMENT

- P-20 STEM education and workforce plan developed by June 2013.

IMPLEMENTATION PLANS

- Committee of education and economic development specialists formed to develop plan in July 2012.
- Plan drafted by January 2013 and public comment solicited.
- Plan revised and approved by the Science and Research Council and the Higher Education Policy Commission by June 2013.

goal thirteen



Economic Development

GOAL FOURTEEN

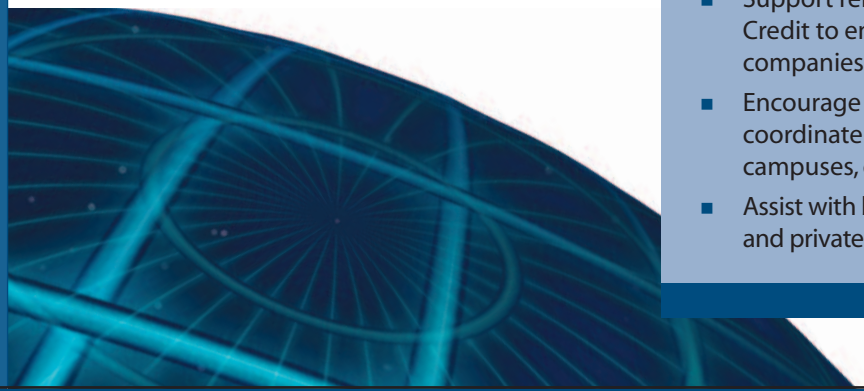
CREATE EARLY-STAGE FUNDING MECHANISMS TO ASSIST IN THE COMMERCIALIZATION OF TECHNOLOGIES FOR ENTREPRENEURS, START-UPS, AND SMALL TECHNOLOGY FIRMS.

ACCOUNTABILITY

TechConnect West Virginia

RATIONALE OR BRIEF BACKGROUND

To achieve our vision for a diversified and innovation-based economy, we must dramatically increase the amount of technology transfer and commercialization occurring on higher education campuses. New firms, licensing agreements and industry collaborations must be created around products and technology developed in labs at our higher education institutions.

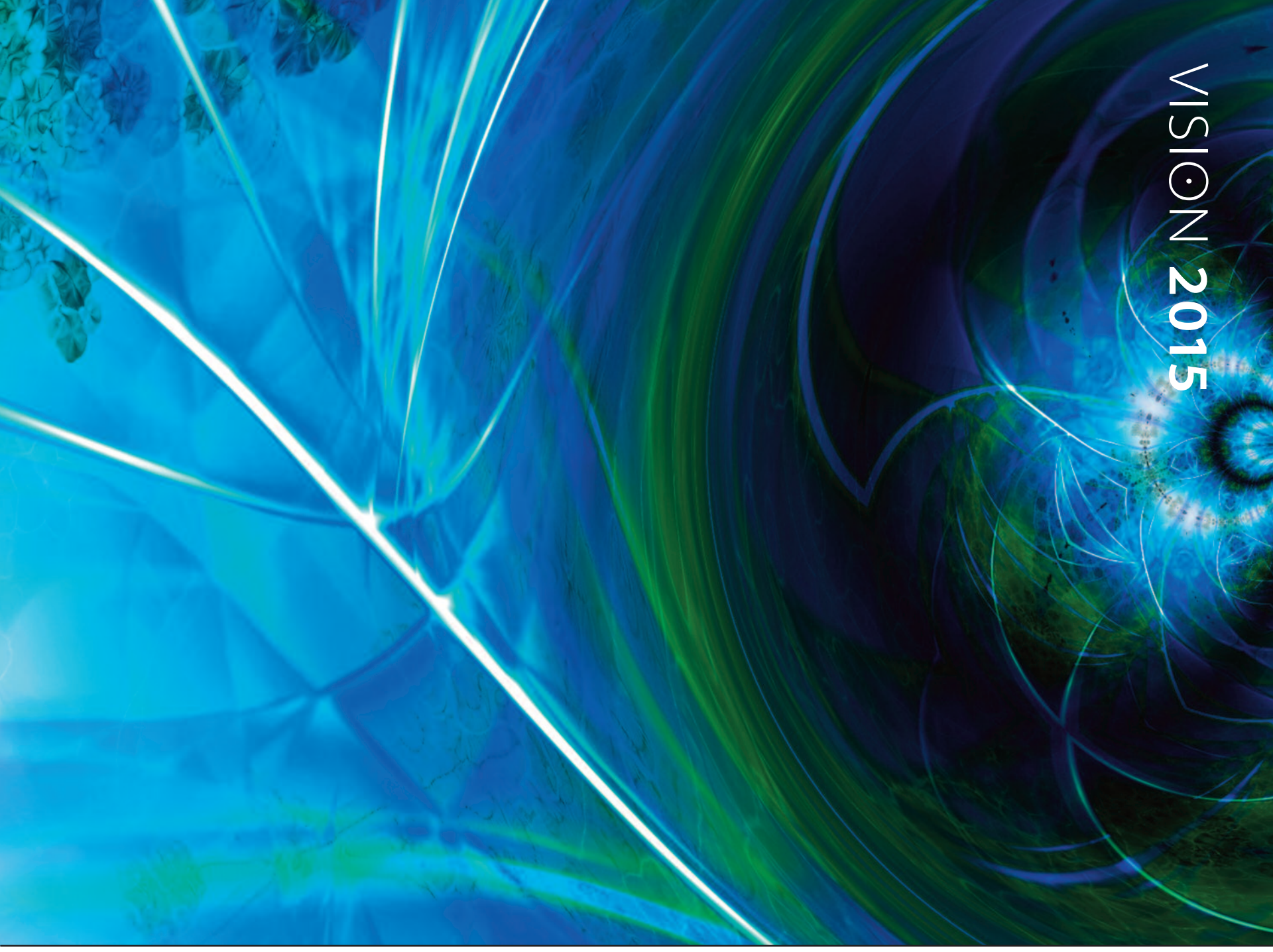


MEASUREMENT

- Increase in amount of early-stage funding available.
- Number of newly formed start-up firms, licensing agreements and research collaborations which lead to newly commercialized products and technologies, job creation and capital investment.
- BASIS: Calculate amount of early-stage funding available in 2010 (total of INNOVA funding and WVJIT funding for that year). Average number of university spinout firms created annually between 2005 and 2010; average number of licenses issued annually between 2005 and 2010.
- GOAL: To increase early-stage funding of 2010 by 25% between 2012 and 2017. To increase number of spinout firms and licenses by 25% between 2012 and 2017.

IMPLEMENTATION PLANS

- Coordinate with higher education institutions to identify and inventory research and other programs and activities that have commercial potential.
- Collaborate with members of TechConnect West Virginia (INNOVA, MATRIC, CAZ, CAA) to provide infrastructure to support those discoveries and technologies.
- Work with West Virginia Angel Investor Network to take the lead on identifying in-state capital development, as well as possibilities for accessing capital through other programs including the Jobs Investment Trust, the Capital Access Program, the Natural Capital Investment Fund, and other programs.
- Support reinstatement of the High Growth Business Investment Tax Credit to encourage angel investing by wealthy West Virginians in start-up companies.
- Encourage entrepreneurial studies/efforts on campuses, align and coordinate various entrepreneurial support programs both on and off campuses, celebrate entrepreneurial success stories.
- Assist with building an innovation culture in West Virginia in which public and private sectors engage to promote economic diversification.


VISION 2015

VISION2015

science and research council

Dr. Pamela Balch
President
West Virginia Wesleyan College

Brian Bell
Vice President & General Manager
Global Science and Technology Inc.

Keith Burdette
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