What we will do today

/ Explain the West Virginia Forward project
/ Discuss WVU strategies
/ Discuss the environment to support STEM grads and business innovation
/ Review the implementation structure
/ Questions and answers
How today will work

/ Hear from Rob and Rocky
/ Open question and answer session
We are focused on understanding West Virginia’s strengths and opportunities to develop both short- and long-term strategies to revitalize the economy, create jobs and prime the state for success in our changing economic and technological landscape.
The West Virginia Forward analysis made it clear that WVU has opportunities to solve our State’s most intractable and important challenges.

Our best chance for success will be enhanced by focusing on solutions based in objective analyses and through collaboration among disciplines and with external partners.

The data and analysis from West Virginia Forward provides insight that provide pathways for alignment of our service, research and scholarly work that will better enable us to fulfill our land-grand mission.
**ECONOMIC SECTORS**

**Maintain Current Industries**
- Aerospace MRO
- Auto parts manufacturing
- Metals manufacturing
- Fulfillment distribution
- Building products

**Capture New Sectors that Have High Growth Prospects**
- Higher-end tourism
- Cyber security and cloud services

**Differentiate in Growing Sectors Where West Virginia Has a Presence**
- Fine chemicals
- Carbon fiber reinforced plastics

**Keep an Eye on Potential Opportunities**
- Life sciences
- Vehicle assembly plants
ECONOMIC ENABLERS

Business climate
/ Rebrand WV’s strengths
/ Establish plan to combat rising utility costs
/ Eliminate machinery, equipment and inventory tax

Innovation business development
/ Convene innovation actors in the state
/ Increase support to growing startups
/ Enhance small business support resources
/ Change mix of incentive types
/ Expand development office investment attraction capabilities

Infrastructure
/ Create financing mechanisms to fund capital projects
/ Launch site certification program
/ Expand broadband coverage

Human capital
/ Create concerted state-wide human capital effort
/ Expand STEM talent pool
/ Encourage returning/relocating to West Virginina
/ Combat the opioid crisis
/ Train workforce in jobs that are high in demand
HUMAN CAPITAL CHALLENGES

Investments in human capital are the most significant opportunity for improvement.

Access to a specialized workforce is a major factor for growth sectors.
Companies Report that STEM Grads are Among Most Difficult Employees to Find

<table>
<thead>
<tr>
<th>Category</th>
<th>Difficulty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management</td>
<td>26.4</td>
</tr>
<tr>
<td>Science/engineering</td>
<td>25.4</td>
</tr>
<tr>
<td>Computer programmers/IT</td>
<td>17.8</td>
</tr>
<tr>
<td>Sales/marketing</td>
<td>17.4</td>
</tr>
<tr>
<td>Customer service staff</td>
<td>17.2</td>
</tr>
<tr>
<td>Business support functions</td>
<td>12.8</td>
</tr>
<tr>
<td>Administrative support</td>
<td>9.3</td>
</tr>
<tr>
<td>Laborers, movers, drivers</td>
<td>8.6</td>
</tr>
<tr>
<td>Production workers</td>
<td>8.0</td>
</tr>
<tr>
<td>Manual tradesmen</td>
<td>7.5</td>
</tr>
<tr>
<td>Creative</td>
<td>7.1</td>
</tr>
</tbody>
</table>

QUALITY OF LIFE: PERSPECTIVES

West Virginia can improve on education and health outcomes — key markers of a region’s attractiveness.

/ Housing
/ Neighborhood
/ Transportation
/ Environment
/ Health
ENHANCE WEST VIRGINIA TOURISM

1. Capture more tourism spend.

2. Adopt a regional strategy:
   - Expand **adventure** options in the **southern region**;
   - Attract **second home buyers** in the **eastern region**; and
   - Attract **higher-income retirees** in the **north**.
SITE CERTIFICATION

Development-ready industrial sites that have completed a rigorous review and development process by the State and an independent, third-party engineering firm.
/ INNOVATION AND R&D LEADERSHIP: Develop an enriching innovation environment for students, faculty and local startups that effectively generates and commercializes the University’s intellectual property.

/ TALENT EXPANSION: Create the educational programs required to expand the talent pipeline for West Virginia, especially in new sectors that will diversify the economy such as cybersecurity, advanced materials and life sciences.

/ TALENT INVESTMENT: Partner with leading firms in diversification sectors, (e.g., cybersecurity, advanced materials, life sciences) to develop tailored training programs that meet their human capital needs and offer exit opportunities for University graduates.

/ ALUMNI OUTREACH: Establish connections with University alumni across the country in order to create business partnerships, attract investments and attract talent to the state.

/ BUSINESS SUPPORT: Offer business and legal support services to small businesses in partnership with the State Commerce Department.
Creating an enabling environment to support STEM grads and innovation to create new businesses involves focusing on four levers:

1. Academic Alignment
2. Investment in talent and research
3. Innovative Corporations
4. Funding
Deliver Best in Class Academic Opportunities for WVU Students

Innovative WVU Faculty Inspire Student Success
Increasing the STEM Grad Pool: Ideas on Design, Training, and Delivery

| Sector specific curricula                                                                                       | • **Activity-based courses and degrees for priority** competencies in priority sectors (e.g. cybersecurity, material sciences degrees) |
| ▪ **Skill-based modules** that **stack up** or **stand alone**                                                  |                                                                                                                                |
| ▪ **Train on skills** (technical & behavioral) **that matter most** to employers** (20% of skills differentiate top performers) |                                                                                                                                |
| ▪ **Link classes** to industry-recognized **skills qualifications & certificates**                           |                                                                                                                                |
| ▪ **Increase** **practical, hands-on learning opportunities** through simulations                              |                                                                                                                                |
| ▪ Expand “**open access**” institutions                                                                      |                                                                                                                                |
| ▪ Deliver **highly standardized curriculums** using **nontraditional channels** (i.e. Internet)             |                                                                                                                                |
| ↑ capacity, affordability of vocational training                                                             |                                                                                                                                |
| ▪ **Develop positioning with** benefits packages and incentives                                            |                                                                                                                                |
| ▪ **Invest in R&D and commercialization** to attract faculty                                               |                                                                                                                                |
| ▪ **Explore innovative teaching methods**                                                                  |                                                                                                                                |
**McKinsey:** Business Incubators and Accelerators are Fragmented and Have Limited Capacity; Small Business Support is Lacking

**WVU:** Increase incubation and business assistance for researchers, students and entrepreneurs across West Virginia

<table>
<thead>
<tr>
<th>Researchers</th>
<th>Students</th>
<th>WV Businesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Sciences Innovation Center</td>
<td>LaunchLabs and MakerLabs</td>
<td>BrickStreet Center</td>
</tr>
<tr>
<td>Patenting and Licensing Services</td>
<td>IDEA Fellows</td>
<td>Women’s Business Center</td>
</tr>
<tr>
<td>Commercialization Training Seminars</td>
<td>Student Intellectual Property Services</td>
<td>Entrepreneurship and Innovation Law Clinic</td>
</tr>
<tr>
<td></td>
<td>WVU Young Innovators</td>
<td>New B&amp;E Accelerator program</td>
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<td></td>
<td>Innovators-in-Residence</td>
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<td></td>
<td>Innovation Living-Learn Community</td>
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<td></td>
<td>Competitions and Hackathons</td>
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</tbody>
</table>
WVU: Recruit Innovative Researchers in Key Fields

<table>
<thead>
<tr>
<th>2010-13: WVU Mountains of Excellence “cluster hires”</th>
<th>2015-17: WVU Medicine Signature Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radio Astronomy</td>
<td>STEM Education</td>
</tr>
<tr>
<td>Regional Health Disparities</td>
<td>Shale Gas Utilization</td>
</tr>
<tr>
<td>Water Resources</td>
<td>Cancer</td>
</tr>
</tbody>
</table>

2016: Achievement of Research “R1” Status
New Hires are Bringing Startups and IP to WVU
Funding.

McKinsey: Venture Capital Funding is Extremely Limited, with Zero Early-Stage VC Funding in West Virginia

WVU: Create internal pools of funds for students and researchers; partner with private investors for angel and venture capital funding

Internal WVU Funding:

/ Huntington Bank Student Seed Fund $50 K/yr

/ Mountaineer Innovation Fund $1 million

External Private Funding:

/ West Virginia Growth Investment (Angel Fund): $1.6 million

/ Mountain State Capital (Venture Fund): $25 million target
WVU: Change the way we work with companies to enable deeper, more strategic cross-campus relationships

/ Created central Corporate Relations office to deliver concierge service for corporations with cross-campus potential

/ Created the WVU Innovation Corporation to facilitate “commercial” applied research projects with corporate customers and DOD
IMPLEMENTATION STRUCTURE

/ MOU between WVU, the Commerce Department and Marshall University
/ Will create a structure of accountability
/ Engage stakeholders
/ Steering committee
/ Implementation work groups
$83.7 BILLION ENERGY INVESTMENT BOOSTS STATE, WVU ON WORLD STAGE

/ Agreement between the State of West Virginia and China Energy Investment Corporation Limited (China Energy)

/ Signed by Woody Thrasher and China Energy witnessed by Presidents Trump and Xi in Beijing

/ WVU will work closely with the state Department of Commerce and other state officials to help coordinate the investment, with funding focused on developing an Appalachia Storage and Trading Hub, itself a key piece of reinvigorating the state’s and region’s petrochemical industry
QUESTIONS

FOR MORE INFORMATION, PLEASE VISIT
WVFORWARD.WVU.EDU
www.bureaucracybusters.wvu.edu

You may continue to submit questions to campusconversations@mail.wvu.edu

Next Campus Conversation: Thursday, November 16, 1 p.m. to 2 p.m., Salon C, Erickson Alumni Center (Live-Streamed at webcast.wvu.edu)