Revitalizing Economic Security for Communities Utilizing Innovative Next Generation (RESCUING) Industries

Coalition’s Vision for a Defense and National Security Regional Growth Cluster: West Virginia has faced an increasingly volatile economy for many years, mainly due to the downturn of the coal industry, a lack of economic diversification, low workforce participation, the opioid crisis, and most recently, the pandemic. Since 2011, WV has lost 12,555 coal jobs (45%). The West Virginia Department of Economic Development (WVDED) is seeking to produce an effective collaborative strategy to create a defense and national security (DNS) industry cluster in energy communities. West Virginia has one of the highest per capita rates of Armed Forces Veterans, and as this population moves into civilian jobs, the coalition will capitalize on their skills and knowledge to support the DNS industry cluster. The geographical focus of the cluster is southern and central WV, encompassing many priority energy communities identified in the Interagency Working Group on Coal and Power Plant Communities and Economic Revitalization (IWG) plan. Southern and central WV counties rank 1, 3, 11, 23, and 24 on the IWG list of top coal dependent areas that need support and revitalization. Only nine out of 41 counties in WV with high concentrations of direct coal-dependent jobs have returned to pre-pandemic economic growth levels. The coalition’s efforts mainly target 20 of WV’s 25 counties that have been identified as persistent poverty counties targeted by EDA as investment priorities to meet the BBBRC’s equity goals.

The Revitalizing Economic Security for Communities Utilizing Innovative Next Generation Industries (RESCUING Industries) coalition links the expertise of WV's institutions of higher education, state government, and regional and local not-for-profit entities. It also capitalizes on existing regional assets, including leveraging public-private partnerships. Our vision focuses on defense-related supply chain, advanced manufacturing, high-value products from carbon (HVPC), energy materials (EM), cybersecurity, big data, data analytics, and training facilities for the DNS industry to create high-quality jobs, build capacity, diversify our economy, and attract private investment. The results of a preliminary study on the economic impact of the RESCUING Industries coalition’s component projects are included in Table 1.

Economic Opportunity Presented by the DNS Industry Cluster: National security can be defined as the ability of a country’s government to protect its citizens, economy, and other institutions, encompassing military and non-military aspects. Recent government publications have identified support for a vibrant domestic manufacturing sector, a strong defense industrial base, and resilient supply chains as a significant national priority. The erosion of the U.S. manufacturing sector over the last two decades has had a negative impact on the nation's ability to produce needed parts and systems, healthy and secure supply chains, and a skilled workforce, which curtails the military's ability to respond quickly to an emergency. For instance, proprietary carbon fibers, rare earth elements (REEs), and cobalt, which are increasingly critical manufacturing components, represent considerable U.S. supply chain vulnerabilities due to foreign dependency.

West Virginia’s opportunity to address these critical needs tied to national security is reflected in the Center for Regional Economic Competitiveness (CREC) analysis, created in partnership with the West Virginia Defense Industry Alliance (WVDIA), which identified defense industry-specific competitive advantages and gaps in WV to guide investment decisions to promote defense industry clusters and business growth. Historically, defense spending helped to industrialize large areas of the country and nurtured the techno-industrial complex now...
known as the Silicon Valley. Combined, DNS currently represents 2.5% of WV’s GDP, mainly comprised of the advanced manufacturing, building, and innovation-oriented industries. In 2017, $270 million in Army spending in WV generated approximately $600 million in additional economic output, 5,500 direct jobs, and over 3,500 military and civilian indirect and induced jobs. Notably, investments in defense research and development (R&D) result in many positive externalities to the private sector and civilian population, as evidenced by the commercial success of major innovations, including computers, GPS, the Internet, radar, jet engines, and other technologies. Drones, for example, were military innovations that are projected to generate 100,000 jobs and $5 billion in economic impact in the U.S. by 2025. Therefore, the technologies, investments, and innovations that will be brought about by the DNS industry cluster will also benefit civilians and the private sector in the short- and long-term.

**RESCUING Industries Coalition and Component Projects**: The WVDED has been designated as the lead institution of the coalition. The **mission of the WVDED is to drive the state’s economy and ensure that WV is positioned competitively for new investment**. As a state entity, the WVDED is well-positioned to lead the coalition, and it has the resources and capacity to carry out its goals. The coalition’s vision is in line with the **Recovery and Resilience EDA Investment Priority**. The component projects are also aligned with the following EDA Investment Priorities: **Workforce Development, Manufacturing, Technology-Based Economic Development, Environmentally-Sustainable Development, and Equity**. The WVDED will collaborate with the following coalition members who will be leading component projects: (1) the **West Virginia Small Business Development Center (WV SBDC)**; (2) the **West Virginia Community and Technical College System (WVCTCS)**; (3) the **U.S. Research Impact Alliance (USRIA)**; (4) the **West Virginia University Research Corporation-Data Driven WV (DDWV)**; and (5) the **Mingo County Redevelopment Authority (MCRA)**. Each component project is aligned with the regional Comprehensive Economic Development Strategies (CEDS) that cover the proposed DNS industry cluster (Regions I, II, III, IV, V, and VII). Each coalition member is strongly committed to economic growth in energy communities and the coalition’s vision, as described in Table 1.

<table>
<thead>
<tr>
<th>Component Project, Project Lead, &amp; Annual Economic Impact*</th>
<th>Opportunities for WV Energy Communities, Project Description, and Timeline</th>
<th>Proposed Phase 1 Activities</th>
<th>Proposed Phase 2 Activities (Note: Activities may be modified based on the findings of Phase 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIGH VALUE PRODUCTS FROM CARBON Project Lead: Matt Harbaugh, Executive Director, USRIA. Economic Impact: $121M in output 384 jobs $31.5M in wages and benefits $3M in tax revenues</td>
<td>It is vital to find innovative uses for coal that increase its value and decrease its environmental footprint. The USRIA component project will focus on capitalizing on opportunities for WV in the HVP from coal sector and catalyzing the development of automotive and aerospace carbon fiber parts or synthetic graphite battery components to meet the needs of the DNS industry. <strong>General Project Timeline</strong>: up to 48 months.</td>
<td>(1) Convene roundtables with industry partners/stakeholders; (2) identify HVPC areas of opportunity; (3) identify pilot projects and prospective sites for pilot plants with WVDED; (4) track companies interested in setting up pilot plants; and (5) work with DOE, WVU, and commercial partners to identify and commercialize new technologies related to high-value uses of carbon.</td>
<td>(1) Implement Phase 1 action items and continue to collaborate with key partners; (2) run an accelerator program for startup companies within the HVP from carbon sector; (3) market and ready sites tailored to the sector’s needs with WVDED; (4) focus a cohort of the DOE sponsored IMPACT Accelerator on carbon fiber; (5) develop curriculum with the WVCTCS to prepare workforce to serve the sector; and (6) produce incentives for business location with the WVDED.</td>
</tr>
<tr>
<td>ENERGY MATERIALS DEVELOPMENT, REUSE, AND RECYCLING</td>
<td>Manufacturing new materials for batteries, such as cobalt-free cathodes, and repurposing used batteries from national defense installations diminishes demand for minerals critical to DNS and the U.S. economy, as does recycling to recapture those minerals, lessening dependence on foreign sources. The project will assess opportunities to make, reuse, and recycle energy materials. General Project Timeline: up to 48 months.</td>
<td>(1) Organize roundtables with industry partners/R&amp;D entities; (2) identify EM areas of opportunity for WV; (3) identify near-term pilot projects and prospective sites for pilot plants; (4) identify training and curriculum to train workers; and (5) identify technologies with high commercial potential from the Department of Energy (DOE), WVU, and commercial partners. (1) Track companies interested in setting up plants in WV; (2) market and ready sites tailored to the needs of the EM project; (3) run an accelerator program for startup companies; (4) host a cohort of the DOE-sponsored IMPACT Accelerator on EM; (5) develop and implement workforce training for jobs ranging from manufacturing to R&amp;D; and (6) help to shape policy to make WV more attractive to businesses.</td>
<td></td>
</tr>
<tr>
<td>SOUTHERN WEST VIRGINIA DEFENSE AND NATIONAL SECURITY HUB</td>
<td>Southern WV is positioned to provide the infrastructure and spaces to develop assets to benefit local economies through military readiness and commercial applications. The MCRA is helping transition southern WV from coal through initiatives such as the creation of the new publicly owned Southern WV Regional Airport (EBD)—built in one of WV’s largest reclaimed mine sites and laying the groundwork for the SWVDNS Hub. General Project Timeline: up to 48 months.</td>
<td>Produce an infrastructure plan for the EBD Airport, with the WV National Guard and WV Military Authority, for the expansion of the Evers Military Operating Area (MOA) to include building an air traffic control tower and an expanded fueling station. The EBD Airport, an AERO ready, FAA-approved facility, offers an ideal space for the expansion of the Evers MOA, which will offer realistic mission-oriented training to support air-to-air tactical fighters and other D.C. Air National Guard needs. (1) Identify sites that can be used for co-locating army research facilities that could be used to extract valuable REE from coal waste byproducts, on a pilot basis, and for pre-mission and combat mission rehearsal activities. The new surface training areas would be mainly used by special forces, and would help to enhance military capabilities to improve our national security. (2) Work with the WVMA, CM12, and coalition to implement these projects. (3) Connect the civilian population to jobs created by the SWVDNS Hub.</td>
<td></td>
</tr>
<tr>
<td>CYBER, BIG DATA, AND DATA ANALYTICS</td>
<td>Jobs in the cybersecurity and big data sectors are growing rapidly, but a high percentage is going unfilled in the military and federal government. Such shortages create many DNS challenges, posing dangers to our infrastructure, government, and businesses. WV has assets that make it an attractive location for such enterprises. DDWV plans to lead efforts to increase WV’s talent pool and capabilities to leverage such opportunities. General Project Timeline: up to 48 months.</td>
<td>(1) Work with the WVCTCS, particularly the Pierpont, New River, and BridgeValley CTCs, and WVU, Marshall University, and University of Charleston, which offer cybersecurity, data analytics and related programs, to identify pipelines to recruit more students and partner with more government agencies and private industry to develop cutting edge solutions and WV’s workforce. (2) Map supporting assets and work with key stakeholders to identify resource gaps (e.g., cyber range accessibility). (1) Implement solutions to key findings from Phase 1. (2) Lead efforts to help students attain security clearances, which are necessary for some DNS jobs, to increase their employability. (3) Become WV’s premier provider of cybersecurity, big data, and data analytics resources by connecting students and faculty with industry and government partners through tailored projects. (4) Fully develop this capability and help link students to jobs in the DNS cluster together with industry partners and government agencies.</td>
<td></td>
</tr>
<tr>
<td>SITE READINESS AND CERTIFICATION</td>
<td>Site readiness is a vital aspect to attracting new businesses to WV and growing our economy. WV can improve its competitiveness by launching a site certification and readiness program. Data shows that companies and investors prioritize sites that are ready for development because they are generally unwilling or unable to wait until a potential property is located or shovel-ready. General Project Timeline: up to 36 months.</td>
<td>Oversee the performance of phase one assessments and archeological studies and the production of preliminary engineering reports for site grading and infrastructure in public sites. Some sites that are in or around the energy communities include the former Hobet Mining site, MCRA EBD Airport site, Huntington Area Development Council ACF site, and former Century Aluminum site (total: 2,000 acres). (1) Lead efforts to ready public sites for development to serve the DNS industry cluster, with a focus on the location, expansion, or reshoring of advanced manufacturing, HVPC, energy materials, defense-related supply chain, and military training facilities. (2) Select a priority public site(s) to fully develop and have it ready for investment opportunities. (3) Market sites and work with component projects leads to attract companies to WV.</td>
<td></td>
</tr>
</tbody>
</table>
**WORKFORCE DEVELOPMENT**

**Project Leads:** Sarah Tucker, Chancellor; Christopher Treadway, Vice Chancellor; and Tiffany Ellis-Williams, Director, Workforce & Economic Development, WVCTCS. **Economic Impact:** built into the other calculations.

Training for jobs that will support the DNS cluster will be completed through WVCTCS. The Pierpont, BridgeValley, Southern WV, New River, and Mountwest CTCs are located in the targeted region. CTCs take a sector-centered approach to work with industry leadership to develop training to prepare students for meaningful professions. Industry leaders produce a curriculum that meets 85% of their needs with the remaining education coming through on-the-job training. **General Project Timeline:** up to 48 months.

1. Conduct a needs assessment and mapping of curriculum and assets, and work with the coalition to assess workforce needs. (2) Recruit students to enroll in priority programs. The main focus will be on former coal miners, veterans, women, minorities, and excluded populations. Former coal miners have a number of transferable skills, which are highly sought after in the manufacturing and DNS industries, including computerized equipment operation, pipefitting, welding, and industrial maintenance.

**INNOVATION AND ENTREPRENEURIAL SUPPORT**

**Project Lead:** Debra Martin, State Director, WV SBDC. **Economic Impact:** built into the other calculations.

West Virginia ranks last on the Milken Institute’s 2020 Indexes, which measure the knowledge economy. To advance innovation-led economic development, the WV SBDC proposes the revamping of its Innovation-Technology (In-Tech) Program, which focuses on holistic commercialization strategies, to support the DNS industry cluster. The program will include expertise to advance DNS-based innovations. **General Project Timeline:** up to 24 months.

1. Convene industry partners/coalition to identify strategies to increase infrastructure to support the commercialization of WV’s innovation through the In-Tech Program. (2) Update the program to focus on tailored coaching for clients around commercialization, business development, and connections to industry and key experts to support the DNS cluster. (3) Engage an innovation council. (4) Work with WV Industrial Extension (WVIEI) to identify needs around ISO 9000 certifications, which are now a requirement for bids on defense-related service contracts.

- Economic impact numbers are based on assumptions. Details about the calculations can be provided upon request.

---

**Figure 1. RESCUING Industries Coalition Circular Economy for the DNS Industry Cluster**

**Circular Economy for the DNS Industry Cluster:** Figure 1 provides a visual of how component projects are interconnected and structured to support an innovative DNS industry cluster to transform energy communities in southern and central WV.
**Preliminary Proposed Metrics of Success:** The RESCUING Industries coalition will use the following metrics of success for the proposed component projects: number of jobs created, reversal of the decreasing population trend, gross domestic product growth, increase in private sector investment, wage growth, increase in per capita incomes, deal generation, increased numbers and levels of educational attainment, number of people connected to jobs, number of businesses launched in the state, increase in defense spending in WV, increase in labor force participation rates, number of SBIR/STTR awards, number of businesses that have obtained ISO 9000 certifications, number of new defense-related contracts, number of companies that engage in the accelerator program, and number of sites certified and that have completed due diligence. The coalition will work closely with the WVU John Chambers College of Business and Economics to develop additional project-specific metrics of success and produce progress reports to the EDA on the ongoing impact and outcomes of the DNS industry cluster and each component project.

**Barriers to Implementation and Strategies to Mitigate:** West Virginia has low workforce participation rates, many child care deserts—a top workforce barrier—and an opioid crisis. Coalition members are involved in many initiatives to mitigate those challenges to include: Workforce WV, developing child care startup guides, Jobs & Hope WV, and Jobcase. Also, many manufacturers want to be assured that their facilities will be powered 100% by renewable energy, which could create challenges for the coalition’s efforts to attract firms to the state because less than 6% of WV’s energy portfolio is made up of renewables. To mitigate this challenge and attract green companies to WV, the coalition is planning on capitalizing on a green energy law that was recently enacted by the WV Legislature and on an agreement that was recently signed between MCRA and a private company to bring a large solar farm to the Mingo County area. The state also has a skills mismatch, which presents a challenge to filling the jobs that will be created by the DNS industry cluster. The coalition will heavily rely on the WVCTCS leadership—who is already committed to doubling the number of West Virginians with postsecondary credentials—to bridge this gap. Also, identifying non-federal funds to support ISO 9000 certifications is another barrier that will be addressed during Phase 1. Most importantly, this is the first time that the WVDED and component project leads are coming together and pooling their resources to implement a first-of-its-kind initiative to address these challenges. That is, the main strategy to mitigate barriers to implementation is through the coalition’s work and the complementary strengths of its members, which will be leveraged to transform energy communities.

**Accessibility of Matching Funds for Phase 2:** Each component project will be supported by a 20% non-federal match that will be available as needed, committed to the project for the period of performance, unencumbered, and consistent with the requirements of EDA investment assistance. For the initiative led by the WVDED, State funds will be used to meet the match. The WV SBDC will have access to matching funds through the State and the Entrepreneurship and Innovation Investment Fund. For the MCRA-led project, matching funds will be provided by the Mingo County Airport Authority, Mingo County Commission, and the State. For the WVURC-DDWV-led component project, WVU leadership has set aside matching funds. The WVCTCS will use existing non-federal grant programs as a match. For the USRIA-led component, matching funds will be provided by industry partners.