Department of Energy

Reenergize Southwest Final Report

December 1, 2021

INTRODUCTION

On April 15, 2021, Governor Northam signed HB1899 and SB1252 into law. This legislation repealed the Coal Employment and Production Incentive Tax Credit and the Coalfield Employment Enhancement Tax Credit. Additionally, the legislation tasked the Department of Energy (Virginia Energy) with leading a workgroup to offer recommendations on how the Commonwealth can provide economic transition support to the coalfield region. The legislation directed the workgroup to focus on the following six main topics: workforce redevelopment, economic diversification, reclamation of coal-impacted lands and brownfields, community revitalization, infrastructure improvements and clean energy development.

In addition to Virginia Energy, the workgroup consisted of the Virginia Coalfield Economic Development Authority (VCEDA), the Virginia Economic Development Partnership Authority (VEDP), the Virginia Employment Commission, the Southwest Virginia Workforce Development Board, and the Virginia Council on Environmental Justice. Virginia Energy also received assistance from the Department of Housing and Community Development, the LENOWISCO Planning District Commission and the Cumberland Plateau Planning District Commission. In order to receive feedback from the public, Virginia Energy hosted three public listening sessions in Southwest Virginia. These sessions were also livestreamed via WebEx. Archived recordings of the sessions are available on Virginia Energy's website.

DATE	VENUE	LOCATION	APPROXIMATE NUMBER OF ATTENDEES
June 8th, 2021	Mountain Empire Community College	Big Stone Gap	20
July 6th, 2021	Richlands High School	Richlands	30
July 8th, 2021	Jettie Baker Center	Clintwood	40

Each listening session featured presentations from speakers related to the focus areas listed above. Public comment was also received at each session and is summarized in an appendix to this report. Comments have also been received via email, the WebEx chat function during the livestreams, a forum on the Virginia Regulatory Town Hall, and via U.S. Mail. Virginia Energy received comments through September 30, 2021.

SUMMARY OF PUBLIC COMMENT

Virginia Energy received dozens of public comments and they are contained in an appendix to this report. The majority of comments received were supportive of the efforts of VCEDA and recommended that the portion of its funding that stemmed from the coal tax credits be restored. Virginia Energy does not take a position on this recommendation as the agency believes its charge from the General Assembly requires a more holistic view of the region, its opportunities and challenges.

EXECUTIVE SUMMARY AND RECOMMENDATIONS

Coal production in the Commonwealth peaked in 1990 and has decreased 70% since then. The economy of Southwest Virginia has long been powered directly and indirectly by the coal industry. A recent federal report highlighted the fact that Southwest Virginia is the fourth most impacted coal community nationwide. As has been well-documented, the coal industry will never return to its past prominence due to a variety of factors. The effects of the industry's decline are still being felt by the communities and residents of Southwest Virginia. The jobs that powered the region and the Commonwealth for generations are largely gone and are not coming back.

The General Assembly should recognize that a new vision for Southwest Virginia must include more than jobs. A new, holistic vision must demonstrate that resources for downtown and community revitalization, site development, availability of goods and services, housing stock and child care are vital to regional redevelopment efforts. The General Assembly should further recognize that the region faces unique challenges that do not affect the rest of the Commonwealth.

This report, directed by the General Assembly, offers a new approach, more collaborative and regional in nature. The report also identifies existing mechanisms that should be modified to more accurately reflect the challenges facing the region. Finally, the report identifies new and emerging programs that can support economic diversification and community revitalization in Southwest Virginia.

Even if the General Assembly adopted every recommendation listed below, many challenges in the region would remain. Topography, absentee landowners, the lack of transportation infrastructure and the prevalence of substance abuse are just a few of the challenges facing the region that are outside the scope of this report. Virginia Energy believes this report should serve as the beginning of a conversation to improve Southwest Virginia, not the end.

Recommendations:

1. Ensure the coalfield region has access to funding for site development in the Commonwealth's site development fund.

2. Expand existing solar energy programs, ensuring low to moderate income residents across the Commonwealth can participate in the clean energy transition.

3. Support the growth of higher education in the coalfield region and enhance the quality of life for student populations in surrounding communities.

4. Establish an inter-agency task force that seeks stakeholder input to address the revitalization of Southwest Virginia, starting with a review of the following seven priority proposals, identified over the course of this report:

> *a. A downtown revitalization matching fund for communities of less than 2,000 people.*
>
> *b. Expansion of the Tobacco Commission's Talent Attraction Program.*
>
> *c. A "Simulated Workplace" pilot program modeled after a West Virginia initiative that has demonstrated a 95% success rate.*
>
> *d. A pilot program for child care facilities inside industrial parks in the coalfield region.*

e. Support for the Southwest Virginia Energy Park, known as the "Energy Lab" project.

f. Support for the innovative Energy Storage and Electrification Manufacturing (ESEM) project.

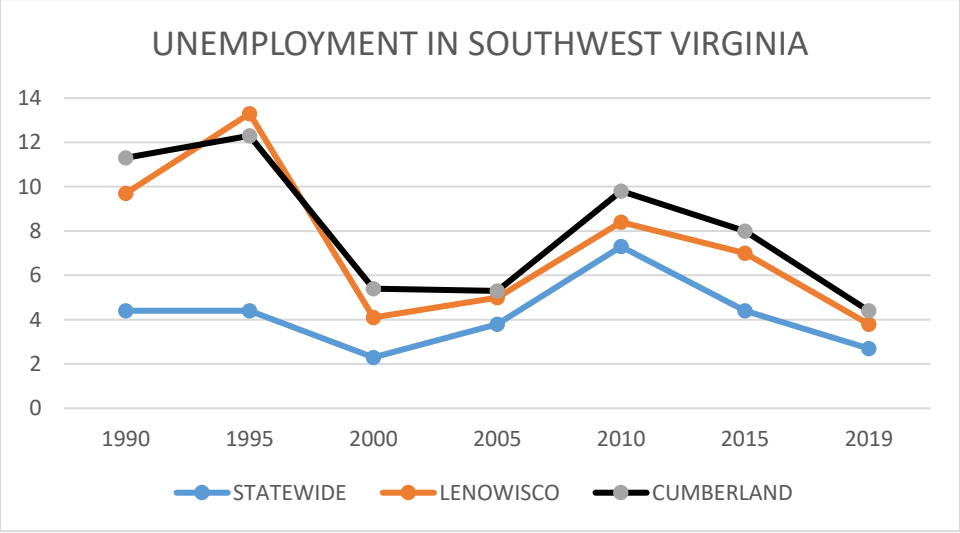
g. Reform the mission and stakeholder composition of the Virginia Coal and Energy Commission.

BACKGROUND

The challenge of how to diversify the economy in Southwest Virginia is not new. The General Assembly made the following finding of fact in 1988:

> "The economy of Southwest Virginia has not kept pace with that of the rest of the Commonwealth. The economic problems of Southwest Virginia are due in large part to its present inability to diversify. The Southwest has suffered, and continues to suffer, widespread unemployment in great disproportion to the rest of the Commonwealth."
>
> - § 15.2-6001 of the Code of Virginia.

The technology and energy evolution has introduced considerable change to the Commonwealth over the past 30 years. Changes in power generation, communications, and workforce needs are most significant. The unemployment rate in Southwest Virginia has consistently been significantly higher than the statewide average for 30 years and without innovative strategies, this region will continue to lag behind.



The coal mining jobs of the past are gone and along with them, the financial security to carry on family and community traditions. Hard working young people and recent graduates entering the workforce need new reasons to stay and the region needs to attract new talent and diversity. No single

replacement for the coal industry exists. This report recommends steps to broaden the mission to include life-quality issues beyond employment and income.

Broadening the mission means considering quality of life issues such as education, health care, housing, child care, tourism, and land use. While this report focuses primarily on the six issue areas identified in the legislation, it would still be incomplete without a broader examination of these interrelated issues.

These quality-of-life issues were also addressed by the public during the listening sessions. There exists a broad awareness that if the region is to attract and retain a sustainable workforce, the area needs to invest in community development and housing. The establishment of a thriving community goes hand in hand with job creation.

One advantage that Southwest Virginia boasts is the significant investment that has been made in recreational activities over the last two decades. Although the tourism and outdoor economy is a strength for the region, many jobs are seasonal or part-time. The challenge is to build on that success by adding additional community development staples, including restaurants, youth sport complexes, and other amenities that would entice workers to live in the area in which they work.

It is also important that this report serve as the start of the conversation, not the end. The effort to Reenergize Southwest will be a complex, multi-faceted one, necessitating unprecedented cooperation between federal, state, regional and local stakeholders. Virginia Energy is well positioned to support this effort and is confident that implementing new strategies will have improved and lasting effects on the economic and social health of the region.

RECOMMENDATIONS

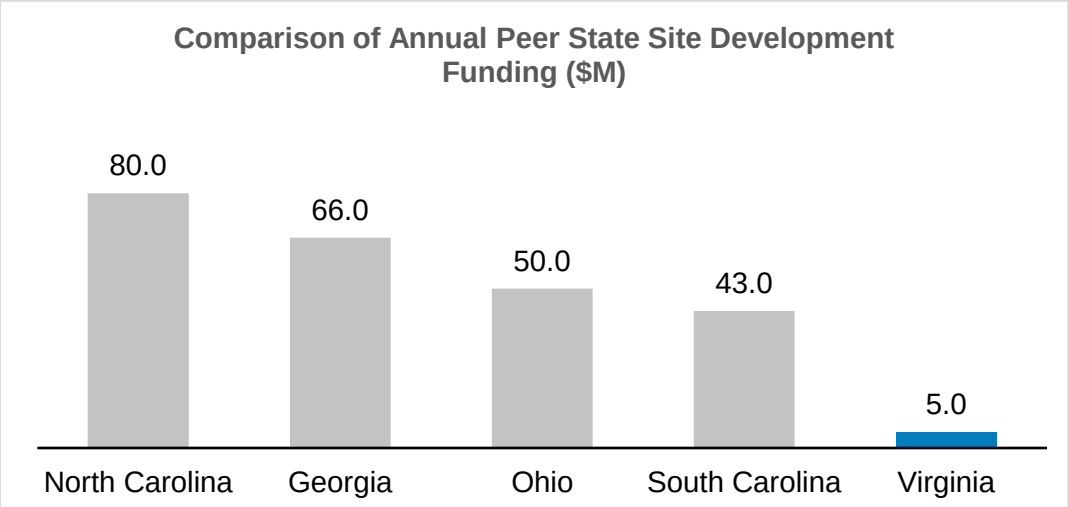
1. Ensure the coalfield region has access to funding for site development in the Commonwealth's site development fund.

The Case for Site Development

One of the most common reasons Virginia loses manufacturing and supply chain projects is the lack of a well-prepared site or, in some cases, an available building. Many of these sites are located in distressed or doubly distressed communities in smaller metros or rural regions with above-average unemployment or poverty rates, including the majority of localities in Southwest Virginia. Considering these projects' indirect and induced effects, investment in site development can help Southwest Virginia further diversify and transition from primarily a coal-driven economy.

When an economic development prospect or site-selection consultant searches for a new location, they prioritize sites that offer low development risk and speed to market. Often companies expect that facility construction be completed within 12-18 months. In just the last few years, Virginia's lack of prepared sites has contributed to the loss of projects representing more than 39,000 direct jobs, 75,000 additional jobs, $55 billion in capital investment, and more than $235 million per year

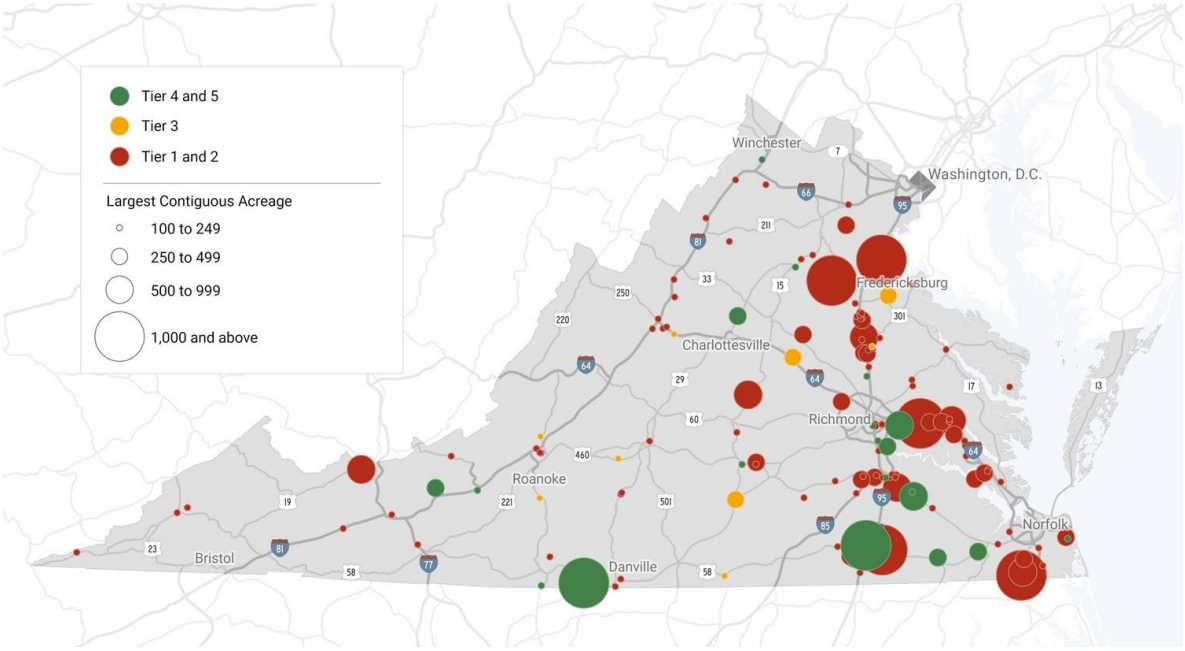
in new state general fund revenue[1]. Competitor states such as North Carolina, Georgia, Tennessee, and Ohio invest significant sums in site development, often giving them an advantage over Virginia in highly competitive economic development projects (See chart below). At the current investment rate, Virginia will not catch up with competing states investing tens of millions of dollars annually and will continue to lose mid-size and transformational economic development projects. Additionally, the lack of site preparedness across Virginia is accelerating the economic divide between Northern Virginia and the smaller metros and rural regions of the Commonwealth, such as Southwest Virginia.



Source: North Carolina Governor's Budget, Ohio Site Inventory Program, Savannah Now, OneGeorgia Authority Annual Report, South Carolina Rural Infrastructure Fund and Economic Development 'Set Aside' Fund, VBRSP annual budget

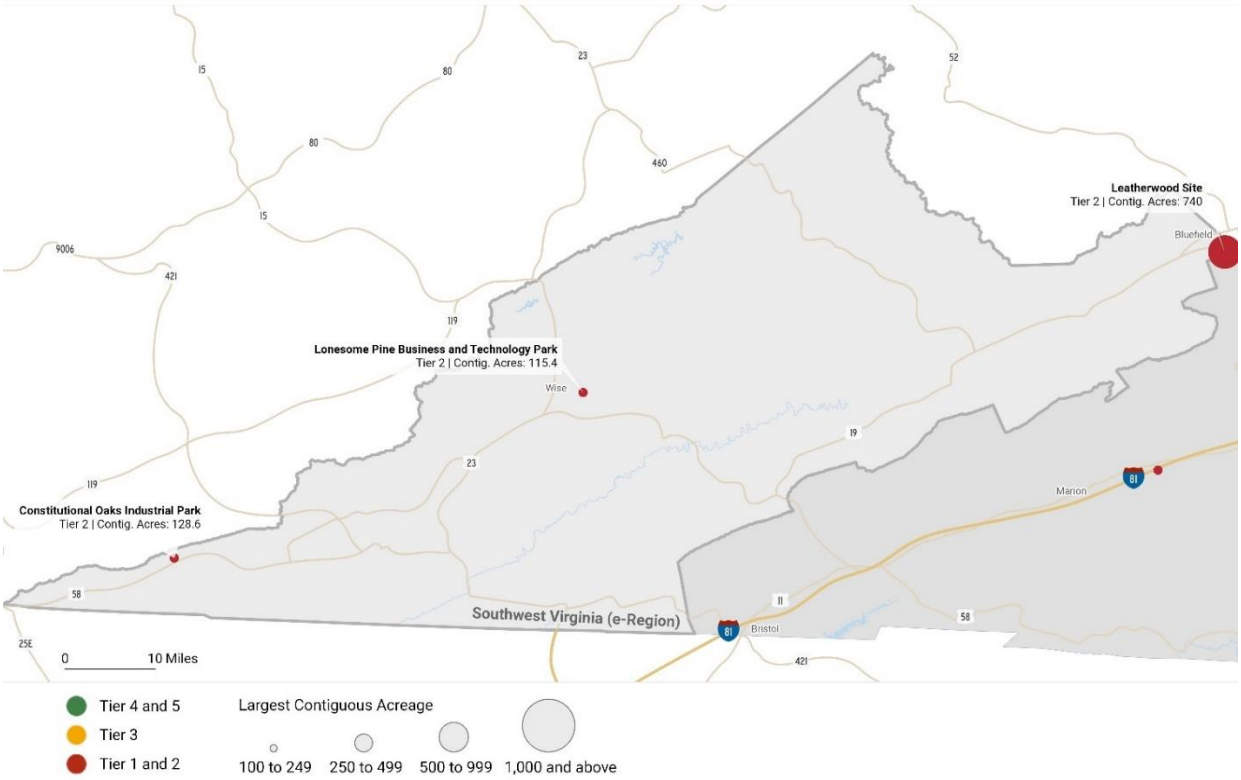
Several years ago, VEDP developed the Virginia Business Ready Sites Program (VBRSP), which in part includes a robust and well-vetted site characterization system to gauge the market readiness of sites. Thanks to one-time funding from the Governor's administration and General Assembly in 2019, VEDP partnered with three engineering firms to characterize over 450 development sites across the Commonwealth. Leveraging engineering firm support and KPMG's national site-selection practice, each site was evaluated for technical feasibility and cost of development, as well as its location attractiveness (e.g., available workforce, logistics) for target industry sectors. As a result, the Commonwealth now has the best site intelligence of any state in the country. The map below shows the characterization of those, and 86% of sites greater than 100 acres are not competitive for standard projects due to a lack of investment.

[1] Actual losses likely are considerably higher, as these estimates only include projects for which the Commonwealth was actively considered. In many cases, Virginia is eliminated based on an initial scan of our sites database that involves no direct communication with VEDP.



High Potential Sites in Southwest Virginia

Specifically looking at Southwest, currently, only three sites over 100 acres were identified for investment by VBRSP (See map below). While Southwest Virginia's focus on manufacturing requires project-ready sites, the engineers and site consultants identified many challenges in the study, including topography, workforce, and proximity to infrastructure such as interstates, major airports, and the Port of Virginia. These challenges, particularly the topography, mean that sites will often cost more to develop in Southwest Virginia than in other parts of the state and may take longer to realize project wins. Despite these challenges, it is still imperative that investments are allocated to strategic sites to best position Southwest Virginia to compete for manufacturing and supply chain projects.



Funding VEDP's Virginia Business Ready Sites Program at $150 million would allow Virginia to begin to develop a portfolio of project-ready sites and provide a regional allocation specifically for Southwest Virginia to ensure that all regions participate in the economic growth of the Commonwealth. It is important to note that investing in sites alone will not drive success for Southwest Virginia. Continued investments in talent programs, including funding the Virginia Talent Accelerator Program, a customized workforce program to assist in recruiting and training employees for companies expanding or relocating to Virginia, must complement site investments. Additional funding to expand out-of-state marketing to share the available assets with site consultants and c-level executives is critical for long-term success.

The Case for Shell Buildings (CPPDC)

In addition to prepared sites, shell buildings have a proven track record attracting businesses to Southwest Virginia. The Cumberland Plateau Planning District Commission (PDC) has been a leader in this effort for the region. While the Cumberland Plateau PDC's early efforts were in the public works arena, the PDC began in earnest to promote and implement several innovative regional economic development initiatives in the late 1980s. Because of the obvious need for buildings to market, one of the earliest initiatives was an industrial shell building program implemented in 1987. Using its office building and property as collateral, the PDC obtained construction loans to build a shell building in each of its four counties. When construction was completed, the local government would assume the loan payments until the building was sold and then reimburse the PDC. Because of the fiscal challenge, this placed on the District's four counties, Virginia Coalfield Economic Development Authority (VCEDA) took on the loan payments on behalf of the counties. This was a critical element in the success of the

program. Through this innovative partnership, nine shell buildings were constructed and are now occupied supporting the creating of more than 1,000 jobs in the district.

2. Expand existing solar energy programs, ensuring low to moderate income residents across the Commonwealth can participate in the clean energy transition.

In recent years, the General Assembly has passed numerous pieces of legislation designed to accelerate the clean energy transition. In 2020, Governor Northam signed HB1634 and HB1647. These bills directed the State Corporation Commission (SCC) to establish regulations by which eligible customers could participate in shared solar programs. Shared solar programs are designed to appeal to those customers who either do not own their home or whose homes are not a good fit for solar installations. These customers can "subscribe" to a nearby solar facility and receive proportional credits on their utility bills, lowering their costs.

HB1634 allows ratepayers in Dominion Energy Virginia (Dominion) territory to have access to a community "shared solar" program that could enable low and moderate income households to save money on their electricity bills while supporting the clean energy transition, this program does not extend to any households in the coalfield region through Appalachian Power Company (APCo) nor Kentucky Utilities' Old Dominion Power (ODP). The General Assembly should direct the SCC to extend the rules and regulations of the Virginia Shared Solar program to APCo and ODP to enable their customers to opt in to shared solar subscriptions.

HB1647 allows multifamily residential buildings to participate in shared solar, but only within Dominion and ODP territories. The General Assembly should direct the SCC to extend the rules and regulations of the Virginia Multifamily Shared Solar program to APCo and its customers. By extending these programs into Southwest Virginia, there will be economic multiplier effects through job creation, workforce development, and community wealth building through lower energy bills, all while helping the Commonwealth meet its previously stated clean energy and greenhouse gas emission goals.

In addition to supporting the expansion of shared solar programs, the General Assembly should adopt the recommendations from the Clean Energy Advisory Board (CEAB) as written in their 2020 Annual Report, removing barriers to the success of the Low to Moderate Income Solar Loan and Rebate Fund. The General Assembly should appropriate funds to the CEAB to administer this program so that eligible customers can access financing for on-site (behind the meter) solar photovoltaic installations.

By funding these programs and ensuring a consistent policy landscape for utilities and ratepayers in the coalfield region that mirrors that of other regions of the Commonwealth, the General Assembly will be honoring its commitment to equitable access to the opportunities a clean energy transition brings, such as workforce development, lower electricity bills, and homeowner investments that lead to greater community wealth.

3. Support the growth of higher education in the coalfield region and enhance the quality of life for student populations in surrounding communities.

As the only public four year university in the region, University of Virginia's College at Wise County (UVA-Wise) has been, and should continue to be, a key economic driver for the area as pointed out in numerous public comments during the listening sessions. Focus on expansion of enrollment at UVA-

Wise, as well as two year public institutions of higher learning and even indirectly the private institutions of higher education in the coalfield region (Bluefield University, Lincoln Memorial University, etc.) has the opportunity to not only bring economic benefits, but also transform the area in ways that few other development efforts can by attracting a younger, more diverse workforce to the area. These institutions have already been innovative in working to attract larger student populations (example: UVA-Wise allowing students from across Appalachia (ARC Region) to pay in-state tuition rates, regardless of their state of residence). No doubt if the region were to improve its economic situation, attracting more students would be an easier endeavor as would retaining those graduates. Nevertheless, the Commonwealth should provide every reasonable resource to UVA-Wise to assist this effort.

UVA-Wise has already postulated a strategy to retain graduates in the area. Serving as staff for GO Virginia's Region One, UVA-Wise drafted the Region One Growth and Diversification Plan (GDP). The GDP was insightful and has been specifically used by Virginia Energy as a playbook for its project development work. The GDP highlights four industry targets: Advance Manufacturing, Agriculture and Food and Beverage Manufacturing, Information Technology and Energy and Materials. UVA-Wise is uniquely positioned to train its graduates in areas that will feed into these industries, thereby retaining this young and diverse workforce.

A detailed analysis of the region's degree offerings was not within the scope of this report. However, if not already available, an analysis should be completed to determine graduate pathways to the target industries. Once complete, consideration should be given to fill as many of the gaps as possible to train graduates for those industries.

4. Establish an inter-agency task force that seeks stakeholder input to address the revitalization of Southwest Virginia, starting with a review of the following seven priority proposals, identified over the course of this report.

As has been stated in the background to this report, the challenges facing Southwest Virginia are complex and interwoven. These multi-faceted problems require a cross-government approach, to ensure that multiple programs work in harmony. An inter-agency task force, chaired by the Secretary of Commerce and Trade (or a designee) and comprised of the Virginia Economic Development Partnership (VEDP), Virginia Energy, Virginia Tourism (VTC), Department of Housing and Community Development (DHCD), Virginia Department of Agriculture and Consumer Services (VDACS), and the Tobacco Commission (TRRC), would allow for the most effective implementation of their various programs targeted to benefit the coalfield region.

In addition to coordinating programs already in existence, this task force would also seek to study and propose possible expansions to current programs, or when necessary, entirely new programs for the region. The task force would also serve as the central collection point for stakeholder input, to ensure that local voices are heard and the region's best interests are represented. Over the course of the Reenergize Southwest Virginia stakeholder meetings, the following seven proposals were put forth, which should serve as the foundation for the inter-agency task force's initial mission.

a. A downtown revitalization matching fund for communities of less than 2,000 people

Downtown and Business District Revitalization

Downtown Revitalization and Business District Revitalization is a critical tool for communities that have experienced economic transformation. Business District Revitalization is central to place-making efforts that are critical to talent attraction and retention to help communities attract tourists, and retain and attract workers and businesses. The Department of Housing and Community Development (DHCD) operates several programs that assist localities with their locally led downtown revitalization efforts. This includes some federal resources such as Community Development Block Grants and Appalachian Regional Commission Funding. In addition, state general funded programs such as the Industrial Revitalization Fund, Main Street, Enterprise Zones and Small Business Resurgence Funds. Main Street, Small Business Resurgence and Industrialized Revitalization Fund have received one time increases through the American Rescue Plan fund.

Downtown and Business District Revitalization efforts require significant acquisition costs and infrastructure costs. Existing resources require local match and effort which is difficult for small towns. Additional set aside funds in existing state general fund programs would make more downtown revitalization efforts feasible for small towns. Below is a list of current DHCD resources, and explanation of their missions.

Community Development Block Grant
Address physical and economic blighting conditions in the downtown area, address infrastructure improvements, as well as provide planning resources targeting business district revitalization

Appalachian Regional Commission
Assist with building an entrepreneurial and small business ecosystem, asset based development including cultural, natural and heritage tourism components, as well as provides infrastructure improvements, and organizational or leadership capacity building opportunities

Industrial Revitalization Fund
Renovate and revitalize former commercial or industrial properties supporting revitalization efforts

Virginia Main Street
Assist with building small business ecosystem as well as assess building renovations and viable usages

Enterprise Zones
Designated zones incentivizing job creation and real property investments

Small Business Resurgence Fund
Advance and accelerate historically economically disadvantaged communities post-pandemic

Virginia Housing
Mixed Use Mixed Income funding to assess and revitalize buildings with an emphasis on creating new affordable housing units in downtowns

b. Expansion of the Tobacco Commission's Talent Attraction Program

Population loss in the coalfield region continues unabated. As the GO Virginia Region One Council noted in its 2019 report, "[t]he population decline in far Southwest Virginia is accelerating and is projected to lose 17,942 people through 2029. This is compared to 8,119 when the plan was

completed two years ago. This metric alone underscores the significance of GO Virginia Region One's work, which must include reversing the accelerating decline."

The Virginia Tobacco Region Revitalization Commission recently created its Talent Attraction Program, (Program) and its purpose "is to encourage recent graduates to live in the Tobacco Region and work in targeted, hard-to-fill occupations in the Tobacco Region by providing up to $12,000 annually in student loan repayment with a two-year commitment." The Program also allows "loan repayment awards [to] be renewed for another two years if eligible (maximum award of $48,000)."

The Program is seeing success even in its early years, with more than 200 new residents attracted to the region to fill specifically-targeted and in-demand jobs in fields like IT, engineering, STEM education, and others. These residents are required to live in the region, work full-time in their field, and be civically engaged, which is defined as performing at least 50 hours per year of work as a volunteer. To date, the program has obligated just over $3 million dollars, with around $800,000 paid out over its first three years.

Continued population decline is one of the largest challenges facing the coalfields. Virginia Energy recommends enhancing and expanding this program. Virginia Energy further recommends adopting the following criteria for the program:

- Individuals must have a post-secondary degree.
- Individuals must either live or work in the coalfield region.
- Individuals must have a full time job with a salary at or above the median income for the region.
- Individuals must have qualifying educational loans.

Individuals who meet these criteria would be eligible to have 25% of their student debt paid off per year until the debt is fully repaid.

Virginia Energy believes this program has promise and should be expanded within the coalfield region. Virginia Energy recommends expanding the number of eligible occupations as widely as possible. Preference should be given to occupations within the industries targeted by GO Virginia Region 1 in its 2017 and 2019 reports: agriculture and food/beverage manufacturing, information and emerging technologies, advanced manufacturing and energy and minerals.

c. A "Simulated Workplace" pilot program modeled after a West Virginia initiative that has demonstrated a 95% success rate

According to Department of Education statistics from 2016, Southwest Virginia had 660 students that graduated but did not pursue employment or education post high school. That statistic, which has not changed much through the latest year statistics that are available (2019), indicates that there are a significant number of youth that are not engaged in the workforce in the region. As the region continues to diversify, employers struggle to find enough employees to fill skilled labor positions. Those employees often lack the interpersonal skills to maintain their employment. Increases in substance abuse also impact how students are being raised and the work ethic that is being demonstrated to them prior to graduation. Establishing an education model in the career and technical centers that focuses on learning but also incorporates the application of work ethic, soft skills, and business principles is a great start to changing the workforce climate in the region.

West Virginia, a sister coalfield state, has faced very similar issues within its communities. Its solution: implementing the Simulated Workplace design in the career and technical centers. The West Virginia (WV) Department of Education describes Simulated Workplace as, "a powerful learning environment that maximizes students' learning experiences by transforming the traditional classroom into student-led simulated workplace companies that strictly follow their respective business processes." According to statistics from WV Department of Education, 95% of students in the Simulated Workplace programs have entered the workforce or higher education after graduation, and 98.4% of students successfully pass their drug screening. Since piloting its program in 2013, West Virginia has successfully graduated over 8,400 work-ready individuals for its workforce.

Southwest Virginia needs to retain the youth in the region. To do that, we must create an opportunity for the region's youth to get the training and life skills necessary to obtain and retain self-sustaining employment.

Simulated Workforce is designed around 12 protocols that simulate an authentic work environment and fosters students' ownership of their learning experience. These protocols include:

- Student-led companies
- Application-interview structure
- Formal Attendance System
- Drug Free Work Zones
- 5S Environment
- Safe Work Areas
- Workplace Teams
- Project-Based Learning/Student Engagement
- Company Name and Handbook
- Company Meetings
- Onsite Business Reviews
- Accountability

Simulated Workplace's student-based model allows each student to take accountability for their learning. Each curriculum is operated as a company with a name and company manual. Students hold positions in the company from CEO to safety manager and take charge of leading the company. Teachers act as facilitators. Students must apply to programs and are interviewed by their peers. Students are required to drug-test and must adhere to attendance policies similar to a paid job.

The programs are designed to simulate a real-life job. For example, the IT program manages all of the IT for the school system. A teacher that is experiencing a computer issue would submit a work order to the program and students would be dispatched to troubleshoot the issues, repair the computer, order any materials, and then invoice the school and complete reporting. The automotive program services the school system and the county's fleet vehicles with similar processes.

This real-life work experience helps students develop the soft skills that employers indicate are sorely lacking in youth and make a more seamless transition into the workforce upon graduation. In addition to graduating high school with a technical skill and a certification, students are truly work-ready and understand the expectations of their employers. The success of this model in West Virginia has created demand for these programs and boosted enrollments helping to resolve the lingering stigma around career and technical programs.

d. A pilot program for child care facilities inside industrial parks in the coalfield region

As noted earlier in this report, a holistic view of the coalfield region and its challenges and opportunities is necessary to fully realize the region's potential. Just as there are increasingly innovative economic development initiatives underway in the region, it is time to bring similar innovations to the workforce and community spheres. In addition to support for set asides for site development and shell buildings, better roads and transportation systems, water and sewer projects and other "hard" infrastructure projects, innovations to support working families are critical to redeveloping the coalfield region.

As the Commonwealth and nation continue to emerge from the pandemic, workforce shortages are becoming more acute. The current available workforce in far Southwest (Lee to Tazewell Counties) is 41.6% (VEC LMI). In August of 2021, according to the VEC, there were 462 individuals who were registered job seekers in the same region. But, at present, even before new jobs are created, there are about 1,000 job openings in the area.

EMSI, a leading provider of labor market data to professionals, higher education, economic development, workforce development, talent acquisition and site selection published a study in 2021 called *Demographic Drought,* that begins its research report with, "This research highlights one of the most important issues in our lives: living in a world where there are simply not enough workers to manage and grow our companies."[2]

Economic development professionals in the region should join with workforce development professionals to create the social infrastructure that will be necessary to maintain current and attract new workers. This is but one way the region needs to pull together to meet its collective goals. *Demographic Drought* provides further insight by stating that "[t]o help retain valued people, the crusade to improve employee experience is growing by leaps and bounds. Not only are companies investing in tools to make the workplace safe, there is an arms race of new IT systems, wellbeing offerings, and culture programs to make companies more enjoyable and rewarding, all with the goal of increasing tenure and retention."

Specifically, in this area, childcare, housing and transportation are now as much a part of workforce development considerations as training, upskilling, career exploration, recruitment and job search. With this setting in mind, the General Assembly could support a pilot childcare facility within an industrial park in each of the coalfield's planning districts. An additional feasibility study should also be conducted to create an "employee services center" that could include: clinic/nurse, health and wellness center (gym), cafeteria/food truck facility and childcare. Currently, most

[2] https://www.economicmodeling.com/demographic-drought/

manufacturers maintain a clinic/nurse on premises so that one facility with cost sharing would be a savings. Gym facilities, in addition to a morale booster, would provide opportunities for healthier workforce, reduction of obesity, and discounts for wellness in health insurance premiums. In rural areas there are often less opportunities for employees to leave work, travel to eating establishments, get lunch and return in the time allotted for lunch breaks. Cafeteria and food truck facilities would be a huge "wellbeing offering" in addition to offering better nutrition choices to employees.

The need for childcare facilities in the area is well documented, although updates of closings due to Covid-19 may not yet be reflected. The following chart displays the dearth of childcare facilities available in the region.

LOCALITY	# OF LICENSED CENTERS[3]	# OF FAITH-BASED CENTERS	# OF LICENSED HOME-BASED CARE CENTERS
Buchanan County	7	1	0
Dickenson County	4	0	0
Lee County	10	0	2
Russell County	10	0	6
Scott County	13	4	1
Tazewell County	12	3	2
Wise Co./City of Norton	10	7	1

Infrastructure to support job growth is critical to the region's success, but infrastructure to support family and community growth is also important and regional economic and workforce development efforts should devote considerable attention to both.

e. Support for the Southwest Virginia Energy Park, known as the "Energy Lab" project

Many commenters noted the importance of maintaining the Commonwealth's existing metallurgical coal industry. Primarily exported to make steel, Virginia's metallurgical coal resources are some of the finest in the world. It is estimated that there are decades' worth of reserves remaining in the most productive mines in the Commonwealth. In addition to that ongoing economic development opportunity, the remnants of historic coal mining also present unique opportunities to grow the region's economically while protecting the environment.

In 2019, the General Assembly created the Southwest Virginia Energy Research and Development Authority (Authority). One of the tasks set before the Authority was to assist "energy technology research and development by promoting the development of a Southwest Virginia Energy Park." Over the last four years, parties associated with the Authority have been working to establish a private energy lab that will be governed by a non-profit board. That Energy Lab will be a conduit for private and public investment that will flow into the region to study innovative concepts with the goal of creating jobs for the region.

[3] This figure includes Head Start facilities

Southwest Virginia has key assets that can be leveraged in the search for new energy innovation. With over 100,000 acres of previously disturbed mine lands, ample access to clean water, topography and a workforce trained in energy, Southwest Virginia can be a leader in energy innovation. The lab concept, according to Dr. Michael Karmis from Virginia Tech, who spoke at a listening session and presented written comments, will provide land to companies and entrepreneurs to test their ideas. The concept is more about outdoor open space than indoor lab space as most energy innovation needs space to deploy. The region has the available land to make this idea successful. Furthermore, this concept would be the only one of its kind in the Western Hemisphere and would be a catalyst for energy investment.

Federal investment in clean energy technology has been and will continue to be helpful. A recent budget proposed by President Biden released in June increased the U.S. Department of Energy's Office of Energy and Renewable Energy's Budget by $2.0 billion or 65% and established a new Advanced Research Projects Agency- Climate office with $500 million in funding. With Dr. Karmis' leading Lab research, the Lab will be uniquely positioned to be competitive for research grants particularly with his relationships with federal national laboratories. Most of these grants require a 20% non-federal match and land to conduct the research can be used as that match. However, the Lab will need support to purchase and maintain the property.

Critical mineral extraction from waste coal is a project that the lab is currently working on and is vital to the region's and the country's future. The definition of a critical mineral is a mineral that is considered vital to the economic well-being of the U.S.'s economy, yet whose supply may be at risk due to geologic scarcity, geopolitical issues, trade policy or other factors. The federal government lists 35 minerals[4] that meet that definition. Many of these minerals are necessary components that are key in meeting our renewable energy goals like lithium for electric vehicle batteries.

Several of these minerals have been found in coal waste streams like gob and refuse piles that are abundant in Southwest Virginia. When coal is mined, operators must process it further or clean it before it can be used. This "cleaning" process produces a waste product that is left behind in permanent holding areas. These areas or gob piles can leach into streams and rivers which can pollute those waterways. Finding a use for waste coal is a significant hurdle in reclaiming the affected land in the region given the significant size of the problem.

Dr. Karmis and Virginia Tech are leading a four state initiative (Virginia, West Virginia, Kentucky and Tennessee) to evaluate this opportunity that is being funded by a nearly $1.5 million grant from the U.S. Department of Energy. That grant funding, through multiple phases, will eventually lead to an implementation grant. The Energy Lab is working with Dr. Karmis to position Virginia for future funding by securing grant dollars. Virginia Energy is supporting the Lab by providing resources to test additional Virginia refuse piles and by providing a research geologist to assist in the Virginia Tech grant. Additionally, Virginia Energy's Geology and Mineral Resources program will provide additional geologic support to the project.

The efforts to establish the Lab started with projects that have seen initial success such as Project Oasis (Oasis). Oasis is a detailed analysis of the Region's potential to serve as a location of choice for data centers, but also the project evaluated the potential to adapt an HVAC cooling system by

[4] See https://www.govinfo.gov/content/pkg/FR-2018-05-18/pdf/2018-10667.pdf

using underground water found in abandoned coal mines. The technology adaption proved to be a viable option potentially saving a data center over $1 million a year in energy. The Lab is currently working on an implementation project for Oasis.

The Energy Lab is a unique opportunity for Southwest Virginia to capitalize on the leavings of the coal industry. The Lab will allow the region to attract significant grant dollars and energy innovation that can lead to long-term economic development for the area.

f. Support for the innovative Energy Storage and Electrification Manufacturing (ESEM) project

Due to the passage of the Virginia Clean Economy Act in 2020 and other related legislation, the amount of renewable energy placed onto the grid has increased exponentially in recent years. As fossil fuel-based generation is phased out, it is critical to replace this baseload generation to ensure the intermittent nature of renewables does not lead to unreliable electric service. As the technology continues to evolve, energy storage will play a critical role as the Commonwealth increases clean energy usage.

Manufacturing to support the mining industry in Southwest Virginia has long been an area for growth. Now as the mining industry declines, energy storage and electrification is emerging as a promising sub-sector for growth in Southwest Virginia's manufacturing space.

The Energy Storage and Electrification Manufacturing project (ESEM) is creating and sustaining jobs while attracting investments in distressed Appalachian counties by providing technical assistance, business expansion and capital access support to legacy manufacturers seeking to enter new and growing low-carbon energy-related markets. ESEM is led by Appalachian Voices, which received a GO Virginia Enhanced Capacity Building grant to run the program.

Central Appalachia has deep expertise in battery and electrified heavy industrial applications via underground mining equipment and operations. The ESEM project is currently supporting manufacturers in this sector to expand into new markets in the electrification of transportation, infrastructure and electric grid sectors in two SWVA counties. The successful ESEM model is poised for regional scaling and could benefit from additional investments in both state and federal dollars.

Increasing focus and investment in energy storage and electrification manufacturing achieves the coalfield's economic diversification goals in a tangible way, and is a natural evolution of the manufacturing infrastructure and the region's workforce skills and core competencies. Many of the technological underpinning that supported electrified functions in underground mining can be translated to in-demand renewable energy applications, such as battery enclosures and charging stations. Production of these new niche products requires many of the advanced manufacturing competencies in electronics, metal fabricating and specialty electric machine production.

The extensive market research already conducted and underway in support of the ESEM project illustrates industry sector growth potential, and indicates investments into ESEM upscale are justified. Leading companies in this sector have already made substantive advances into the energy storage market, with significant investments and job creation on the horizon in the short term.

Additional support resources devoted to the ESEM project would fund new research within the Energy Storage sector, both for companies already participating and those seeking to join the initiative. These companies could be any manufacturer with competencies in advanced metal fabrication and/or electrical. Additionally, with investments and business expansion already underway, an essential and emerging need is the development of sites and buildings for business retention and expansion as companies grow to meet new market demands.

Insights already gained through the ESEM program point to multiple weaknesses or threats that should be addressed to ensure program sustainability. These include industry side considerations such as supply chain weakness associated with Covid-19 disruptions. Additionally, workforce concerns and barriers are already hampering growth as companies struggle to find and retain sufficient qualified local workforce to meet growing demand. While traditional approaches such as training, certification and apprenticeships should be considered, secondary societal issues -- such as housing, childcare, and recovery -- also must be considered in any successful workforce approach.

Southwest Virginia is emerging as a leader in pivoting legacy coal-related manufacturers to capture growth and value in the rapidly growing low-carbon economy. Initial efforts have demonstrated proof of concept within a sub-sector of the region, paving the way for a comprehensive regional approach to ensure that the region remains a relevant and influential player in the nation's energy economy for generations to come.

In addition to research already conducted on behalf of four ESEM pilot project companies located in the coalfield region, monies made available through Reenergize Southwest could be utilized to identify other manufacturers located in the region's planning district commissions whose metalworking, engineering and technical expertise could translate to the growing energy storage space. As this initiative works to aid in the diversification of their product lines and the industry sector itself continues to grow worldwide, these companies will need new equipment, additional or larger facilities and more skilled workers.

To further support this recommendation, the General Assembly could establish a grant or loan-loss reserve program to assist existing manufacturers in pivoting to the energy storage industry.

g. Reform the mission and stakeholder composition of the Virginia Coal and Energy Commission

The Virginia Coal and Energy Commission (Commission) was established by the General Assembly in 1979. The Commission is charged to "… study all aspects of coal as an energy resource and endeavor to stimulate, encourage, promote, and assist in the development of renewable and alternative energy resources other than petroleum."[5] The Commission is also charged to act in an advisory capacity to the Governor and executive branch agencies upon energy related matters.

Though Virginia's metallurgical coal industry remains viable and should continue to be so for years to come, the mission of the Commission should be updated to reflect the challenges facing the

[5] See § 30-189 of the Code of Virginia.

coalfields. Virginia Energy recommends changing the name of the Commission to the Joint Commission for Coalfield Economic Transition. The mission and membership of the Commission could be modified through legislation to focus on economic transition and associated equity and environmental justice issues. Non-legislative members appointed by the Governor could include the Director of the Department of Energy or his designee, and other citizen leaders with backgrounds in community revitalization, workforce development, environmental justice or renewable energy.

There will likely be large amounts of both federal and state resources flowing into the coalfield region in the years to come. The General Assembly should exercise oversight over these dollars and solicit recommendations in order to maximize the utility of those resources. A reimagined Joint Commission for Coalfield Economic Transition is the appropriate vehicle and could serve as a model for other rural areas of the Commonwealth facing similar issues.

CONCLUSION

Though Southwest Virginia is facing challenges, there are many opportunities for the Commonwealth to support the region. If decision makers and legislators choose to adopt the recommendations from this report, those decisions must be made with the understanding of how they will affect the region as a whole.

Because the region faces unique challenges, a unique set of solutions must be developed to confront those challenges. The region is affecting positive change. As discussed above, efforts to grow the tourism economy have benefited the region. Also, recent efforts to retool industries to serve the development of renewable energy, energy storage, and specialty agricultural products for local markets capitalize on built-in regional advantages. Developing and promoting new business opportunities to existing local industrials and farmers is important in building a sustainable economy. These innovative public-private partnerships are just beginning to bear fruit for the region, in some cases literally.

In conclusion, this report helps represent the beginning of the conversation. Creating new offices, establishing new relationships, reworking existing stakeholder groups, participating in current programs, and crafting innovative ideas can produce a model that can be replicated in other rural areas of the Commonwealth. Virginia Energy stands ready to do its part and will continue to work with stakeholders to improve the quality of life in the region. Virginia Energy, with its regional knowledge base, particularly regarding previously mined property, can provide assistance in all areas of economic development for the Region. With ongoing efforts at both the federal and state levels, the time is now to Reenergize Southwest.

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