

Overarching Narrative BBBRC Phase 2

1. SYNOPSIS – CLUSTER VISION

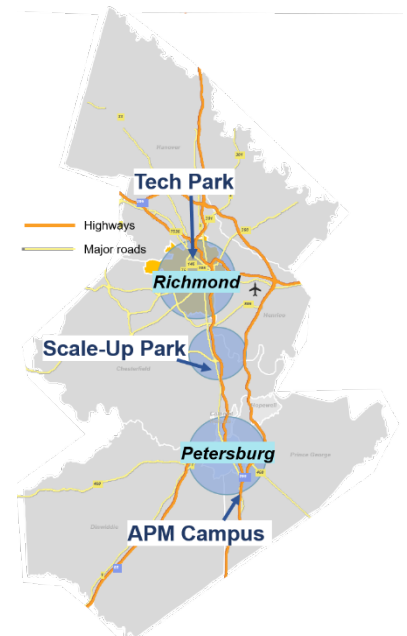
REGIONAL GROWTH CLUSTER

A coalition of 14 entities (Coalition) across the Richmond/Petersburg, Virginia MSA (Region) requests \$77,791,402 for six Component Projects (CP) to scale up its emerging Advanced Pharmaceutical Manufacturing and Research and Development Cluster (Initiative). The Initiative, led by the Virginia Biotechnology Research Partnership Authority dba Activation Capital (AC), will accelerate the growth and long-term sustainability of an advanced pharmaceutical manufacturing (APM) industry inside the U.S. Doing so will secure the nation's supply of quality affordable essential medicines and grow the regional economy in historically distressed communities. The total Initiative cost is \$99,957,957 with a 22% (\$22,166,554) non-federal local match.

A staggering 73% of Food and Drug Administration (FDA)-registered active pharmaceutical ingredients (API) manufacturing facilities are located outside the US – a significant risk to the medical supply chain.¹ This Initiative will advance the Region's mission to be a leader in end-to-end research and advanced manufacturing of essential medicines – a \$1.265 trillion global market.² The Cluster will a) create a secure supply of essential medicines for the US – an urgent national need and federal priority, b) re-shore manufacturing by developing new APM technologies, c) reduce the cost of high-quality medicines, d) reduce the environmental burden of APM through green chemistry, and e) create high-wage job growth in historically distressed and underserved communities concentrated in the Region.

The Region benefits from 80 distinct assets from which to build a globally competitive Cluster, anchored by the Cities of Richmond and Petersburg:

- **Richmond** is home to the [Virginia Bio+Technology Research Park](#) (B+T Park), a 34-acre life science and technology community. It houses nearly 70 private firms and nonprofits, research institutes, and laboratories, notably M4ALL (Virginia Commonwealth University's (VCU) Medicine for All Institute). M4ALL is a Gates Foundation-funded R&D institute leading the world in process intensification technologies for small-molecule manufacturing³, driving the new APM hub, and connecting it to a rich global industry, academia, and philanthropic network. Other industry leaders co-located in B+T Park include Phlow and United States Pharmacopeia (USP).



¹ [Building Resilient Supply Chains, Revitalizing American Manufacturing, and Fostering Broad-Based Growth](#), The White House, P. 213 (June 2021).

² IQVIA, [Global Medicine Spending and Usage Trends – Outlook to 2025](#), P. 36 (April 2021).

³ For a description of the breakthrough technologies including continuous flow, see [Whitepaper](#).

- **Petersburg** is home to a 200+ acre Petersburg Industrial Park (PIP) funded by nearly \$1billion in federal/private investment to build the nation's leading end-to-end APM campus. Notable industry leaders on the campus include Phlow, AMPAC, CivicaRx⁴, and the United States Strategic Active Pharmaceutical Ingredient Reserve (SAPIR).

Regional Growth Cluster Coalition Members and Partners

An expert Coalition of 14 multi-jurisdictional stakeholders are actively driving the emerging Cluster's R&D, innovation/entrepreneurship, manufacturing, workforce development, and supply chain development: [Activation Capital](#), [the City of Petersburg](#), [the City of Richmond](#), [the Commonwealth Center for Advanced Manufacturing \(CCAM\)](#), [the Community College Workforce Alliance \(CCWA\)](#), [the Greater Richmond Partnership \(GRP\)](#), [Medicines for All Institute at Virginia Commonwealth University \(M4ALL\)](#), [Virginia Economic Development Partnership \(VEDP\)](#), [Virginia's Gateway Region \(VGR\)](#), and [Virginia State University](#). New additions to the Coalition in Phase 2 include [John Tyler Community College \(JTCC\)](#), [Reynolds Community College \(RCC\)](#), [Civica Foundation](#), and [GENedge](#). Of these stakeholders, six are leads/co-leads of CPs and four are sub-recipients. EDA's support will accelerate a decade's worth of asset building, R&D progress, investment, manufacturing expansion, exports, FDI, and job growth that will ensure competitiveness against foreign government-supported industry. *See Letters of Support (LOS) and Coalition Commitment Letters for more information.*

Component Projects

The six CPs fill fundamental asset gaps and strengthen existing assets in infrastructure, workforce, supply chain, and innovation, and meet seven EDA Investment Priorities:

1. The **Water and Wastewater Infrastructure Project (Petersburg)** will expand and upgrade the City's water/wastewater infrastructure to sustain current and future manufacturing capacity and provide the foundation for the robust expansion of the Cluster, including three beneficiaries: Civica Rx, Phlow, and AMPAC.
2. The **Innovation Center Project (AC)** will construct a Center to address an acute need for wet lab space and concentrate fragmented commercialization and startup formation assets and activities, housing four beneficiaries: VCU's Center for Drug Discovery (CDD), Virginia Innovation Partnership Corporation (VIPIC), Virginia Bio, and Virginia Catalyst.
3. The **Scale-Up Development Center Project (Civica Foundation)** will construct a Center for process and product scale-up (operated by M4ALL) lab space to support manufacturing and provide hands-on experience to students in the Talent Pipeline Project and the VCU-VSU Joint Project. M4ALL and Civica Rx will be beneficiaries.
4. The **Talent Pipeline Project (JTCC)** will create multiple needs-driven APM certificate programs, equip a state-of-the-art training lab, run a Bridge Program to underserved communities, and strengthen the lab technician pipeline at RCC.
5. The **VCU-VSU Joint Project** will provide a pipeline for VSU students, a Historically Black College and University (HBCU) including those from underserved communities, to obtain education, research experience, and industry training leading to degrees and careers in APM.
6. The **Supply Chain Project (AC)** will build a robust regional supply chain through the creation of a strategic plan, supplier recruitment, adoption of a cybersecurity plan, and

⁴ [Civica leads a national consortium that will manufacture the nation's most inexpensive insulin in Petersburg.](#)

collaboration between regional Economic Development Organizations (EDOs) sub-recipients, VGR and GRP, and unfunded project partner VEDP.

The choice of three construction and three non-construction CPs strategically ensures that physical infrastructure (Water and Wastewater Infrastructure, Innovation Center, and Scale-Up Center) and a technical workforce (Talent Pipeline Project and VCU-VSU Joint Project) are in place to support re-shored manufacturing and house expanding companies (Supply Chain Project) that drive equitable job growth. CPs were selected to plug gaps and strengthen assets in light of Technology Readiness Levels (TRLs), the end-to-end industry vision, the technology-talent-investment paradigm for technology commercialization, and the geographic integration of the Region. (See Alliance for Building Better Medicine LOS for more information).

Alignment with Regional Comprehensive Economic Development Strategy (CEDS)

The Initiative and CPs align with the Region's Comprehensive Economic Development Strategies. The Region comprises two separate planning districts encompassing Region 4 of the Commonwealth's GOVirginia (GVR4) strategic economic development initiative. The [2019 GVR4's Updated Economic Growth and Diversification Plan \(Plan\)](#) (covering the Richmond and Petersburg) emphasizes the emerging Cluster as a key economic opportunity for the Region and urges support as it lies at the intersection of the Region's three priority sectors: advanced manufacturing, life sciences, and logistics. The [2022-2024 Update](#) to the Plan identifies support for the Cluster as its top priority.⁵ Separately, the Crater Planning District covers the Petersburg area, and its [2021 Crater Planning District Commission \(CPDC\) CEDS](#) highlights the unique opportunity of the emerging Cluster and sets forth multiple strategies in support of the Initiative.⁶ CPDC recently prepared a Resilience and Recovery Report with special EDA funding, in which the leading strategy was the support of the Cluster, including the water and wastewater and workforce CPs in the BBBRC application.⁷ The Report also notes the need to address the fragmented entrepreneurship landscape and build an innovation/company pipeline to strengthen the regional economy. *Please see the detailed LOS from GOVirginia Region 4 and CPDC.*

Complementary Initiatives Summary

Multiple complementary initiatives align with and will help accelerate Cluster growth and competitiveness:

- **Cluster Accelerator** (renamed the Alliance for Building Better Medicines), launched by public/private stakeholders in 2020 to fast-track Cluster development with a [strategic analysis plan and roadmap](#) and a \$2.1M state grant with private and public support.
- **Federal Contract** – in 2020, Phlow was awarded a \$354 million (up to \$780 million) Health and Human Services Biomedical Advanced Research and Development Authority (BARDA) contract to secure the nation's supply of essential medicines by building, with AMPAC and CivicaRx, the nation's only end-to-end APM campus for this purpose.
- **Entrepreneurship Initiative** – region-wide strategy for growing inclusive entrepreneurship under development by AC will emphasize building a startup pipeline for the Cluster.

⁵ 2021-2024 G&D Update (p. 42).

⁶ 2019 G&D (p. 70), 2021 CPD CEDS (p. 69).

⁷ Resilience and Recovery Report, January 23, 2022 (p.28).

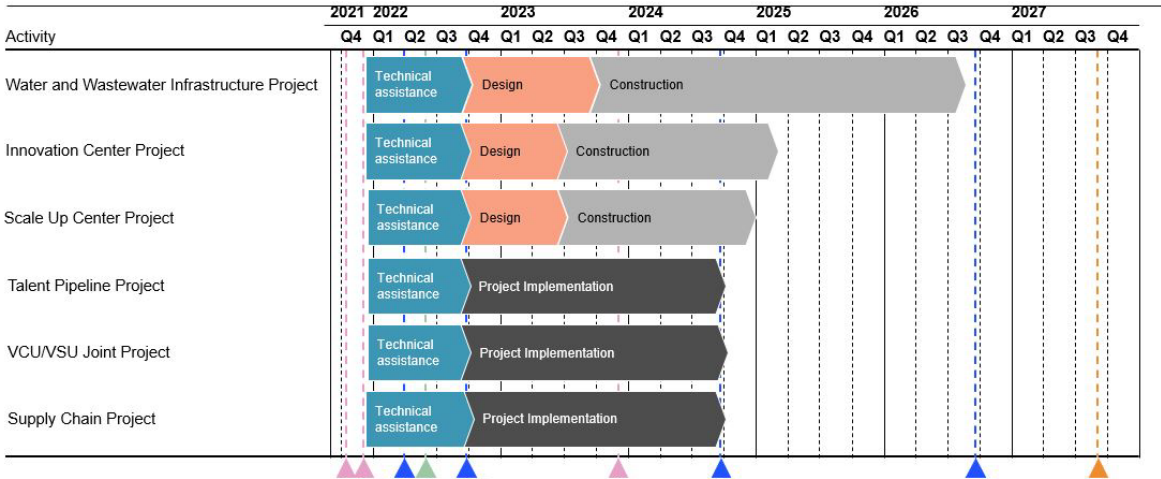
- **Small Rural College Agreement** – a career pathways partnership with VCU's College of Engineering to create an internship and employment pipeline for students on Virginia College Fund's rural campuses.
- **Richmond Innovation District** – City of Richmond's new District will maximize downtown's ability to expand entrepreneurial and innovation capacity for the Cluster.

Metrics of Success

While each CP will measure success differently, the Initiative overall will track:

- **Job Growth and Unemployment Rates** - measures initial, direct, indirect, and induced number of jobs and unemployment rates in distressed census tracts. This metric will be measured through beneficiaries, APM jobs created, and changes in the unemployment rate.
- **Educational Achievement** - measures individual enrolled and completed programs through both VCU-VSU and JTCC.
- **Equity and Inclusion Benefits** - tracks jobs created for underserved populations, including people of color, women, and low-to-moderate-income (LMI) individuals. It also tracks educational achievement and beneficiaries' supplier diversity.
- **Capital Growth** - tracks beneficiaries' investment, venture capital investment growth, and new companies added through the Supply Chain Project.

Implementation Timeline



2. PROJECT LOCATION

Primary Service Area

Home to over 1.2 million people, the Richmond/Petersburg MSA in Central Virginia has 28 [Qualified Opportunity Zones \(QOZs\)](#) or economically distressed communities across 17 counties and independent cities.⁸ **Counties** include Amelia (51007), Charles City (51036), Chesterfield (51041), Dinwiddie (51053), Goochland (51075), Hanover (51085), Henrico (51087), King and Queen (51097), King William (51101), New Kent (51127), Powhatan (51145), Prince George

⁸ American Community Survey (2015-2019 5-Year Estimates), Richmond VA, Urbanized Area.

(51149), Sussex (51183). **Independent cities** include Richmond (51760), Petersburg (51730), Hopewell (51670), and Colonial Heights (51570).

Communities Served

The Region is diverse – more than 30% minority.⁹ The cities of Richmond and Petersburg, home to the bulk of Cluster activity, are – and historically have been – distressed and are majority-minority cities. Both are classified as Poverty Persistent County (PPCs) equivalents by EDA.¹⁰ The situation in Petersburg is particularly challenging. The City's per capita income is just 69.2% of the national average, and the unemployment rate is more than twice the national average.¹¹ In addition, over half of Richmond's census tracts have an unemployment rate of at least 1% greater than the national average. Nearly half have capital money income less than 80% of the national average. The tract in which the Bio+Tech Park is located is severely more distressed.¹² Petersburg and Richmond also are rated as among localities experiencing the highest levels of fiscal distress in the Commonwealth,¹³ making necessary long-term investments difficult. The COVID-19 pandemic has worsened the economic situation in Central Virginia. In December 2021, the Region's unemployment rate saw a 23% increase from pre-pandemic levels in February 2020, and the second-highest unemployment rate for any metro area in Virginia.¹⁴

Target Participants and Stakeholders Engaged

To create transformational change, the Initiative will target individuals from across the Region in urban and rural areas, including students, entrepreneurs, small businesses owners, and veterans. More specifically, the Project will target low-income and minority populations disproportionately impacted by economic distress and the COVID-19 pandemic, representing 33% and 27% of the regional population, respectively.¹⁵ The Project will target individuals with varying educational levels, including those who do not have a high school diploma, to funnel into the workforce. Engaged stakeholders include major APM companies, state and local EDOs, higher education institutions, schools, philanthropies, and many localities. They are well organized and collaborate under the Accelerator. *See LOS for more information.*

Regional Assets

The Region is home to a diverse array of more than 80 regional assets across complementary industries and functions that will be leveraged to expand the Cluster. Regional assets include educational institutions, research facilities, applied research/commercialization institutes, private industry and entrepreneurial partnerships, workforce development training organizations, civic engagement organizations, specialized business services, logistics, data centers, robust internet and cyber-infrastructure, and most importantly, organizations dedicated to creating equity.

⁹ Ibid.

¹⁰ FY 2021 Poverty Persistent Counties List.

¹¹ EDA StatsAmerica, using U.S. Census Bureau (ACS 5-year PCMI) data (3.9% compared to 9%).

¹² EDA Stats America / distress. (Unemployment 6.2 % greater and per capita money income 59.2%)

¹³ <https://www.dhcd.virginia.gov/sites/default/files/Docx/clg/fiscal-stress/fiscal-stress-final-copy.pdf>

¹⁴ Bureau of Labor Statistics, Unemployment Rates Not Seasonally Adjusted - Richmond, VA MSA.

¹⁵ EPA EJSCREEN Report, VA EPA Region 3 - Richmond Metro Region.

Over 30 leading pharmaceutical companies and medicine manufacturers have settled in the Region, accounting for 14% of Virginia's pharmaceutical companies.¹⁶ From 2015 to 2020, the Region experienced 80% higher employment growth in APM relative to national averages and 70% higher employment growth relative to statewide averages. As of 2020, approximately 2,700 APM jobs were in Virginia, and 30% were in the MSA.¹⁷ The CPs will build on these existing assets and help to create a robust Cluster able to support both manufacturers and the workforce.

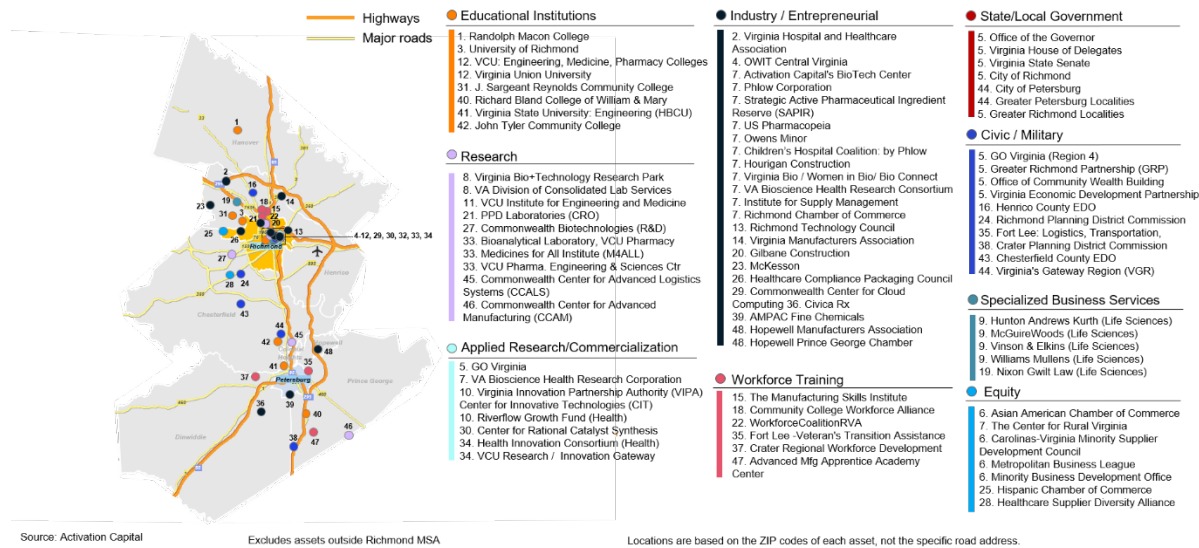


Figure 1-More than 80 Assets to grow the Cluster. Full map available upon request.

3. PRIVATE SECTOR PARTICIPATION PLAN

The Initiative enjoys enthusiastic support from the leading private sector entities driving the Cluster. Eight are project beneficiaries and combined have committed to creating/retaining 640 jobs and providing \$145.3 million in investment as a direct result of the Initiative. *See LOS.*

- **VCU M4ALL** – M4ALL will be a beneficiary of the Scale-Up Center, investing \$300,000 and creating 15 jobs. It will use the Center for scale-up and provide students and prospective lab technicians with hands-on learning experiences.
- **Civica Rx** – Civica Rx will be a beneficiary of both the Scale-Up Center (45 new jobs and \$5M investment) and the Water and Waster Infrastructure Project (180 new/saved jobs and \$140M investment). Civica Rx will use the Scale-Up Center for manufacturing lab space. It has committed to a new 120,000 square foot (SF) manufacturing facility in the PIP, generating an additional \$124.5 million investment.
- **AMPAC** – AMPAC, also a beneficiary of the Water and Waster Infrastructure Project, reopened a shuttered plant in the PIP in 2019 and has committed to create/save 266 jobs.
- **Phlow** – similar to Civica Rx, Phlow is constructing a new manufacturing facility in the PIP and requires water and wastewater capabilities to ensure the facility's success. This construction will directly create 65 new jobs.

¹⁶ Dunn & Bradstreet.

¹⁷ U.S. Bureau of Labor statistics, Moody's.

- **Cluster Accelerator** (newly named Alliance for Building Better Medicine) is led by Jeff Gallagher, a 25-year life sciences veteran, co-founder of Lyotropic Therapeutics, and former CEO of trade association Virginia Bio. Phlow's Chief of Staff, Robby Demeria, is the Founding Board Chair of the Accelerator's Leadership Board.

The private sector has worked strategically to create the Talent Pipeline, Scale-up, and Joint Degree projects. Current Cluster engagement extends beyond beneficiaries, as noted in the LOS. In addition, the Accelerator's full-time Executive Director will facilitate private sector relationship development with EDO members.

See the Sustainability section for university, state-level, and philanthropic commitments.

4. SUSTAINABILITY PLAN

Each CP has a sustainability plan for post-project periods to be overseen by the Accelerator. Overall, the sustainability of the Initiative is driven by the urgent, important national need, large market size, community support, financial investment, and existing regional governance.

- **Market Opportunity** – the nation has awoken to the insecurity of the essential medicines supply chain and is urging a solution with significant public and private investment. The market is sizeable. This Region's current lead in APM and research will attract industry stakeholders seeking to enter and support the emerging Cluster and national mission.
- **Community Support** – a growing number of local entities have committed to supporting the Cluster's scale-up, and more are in the pipeline:
 - **University Commitments** – anchor institutions VCU and VSU are driving two CPs. M4ALL will anchor the Scale-Up Center. VCU Center for Drug Discovery (CDD) will relocate to the Innovation Center (saving 50 jobs) and centralize multiple university units translating discoveries into precision medicine clinical trials and pharmaceutical spinouts.
 - **State-level Commitments** - GO Virginia has funded multiple scale-up projects. VIPC and Virginia Catalyst, as beneficiaries of the Innovation Center (create/save 19 jobs), will help catalyze IP commercialization, startup activity, and private capital for pharmaceutical innovation. VEDP, GRP, and VGR will drive supply chain development.
 - **Philanthropic Commitments** – The Cameron Foundation commits to funding workforce development for the Cluster (*See LOS*).
- **Financial Investment** – the Coalition expects to see additional financial commitments in the Region from Coalition members, beneficiaries, and other private parties, helping to provide a sustainable base for physical infrastructure and programming. Last month alone, Walgreens [announced](#) a \$34.2M investment in Hanover County to build a micro-fulfillment center for high-value pharmaceuticals. The Coalition expects investments like this to spur additional growth to create additional jobs. *See individual CPs for capital stack details.*
- **Regional Governance** – the existing structure initially created by the Accelerator was expanded by the BBBRC Phase 1 technical assistance funds. The Accelerator combined with Phase 1 funding will ensure diverse stakeholders have input and strategically plan for future Cluster scale-up activities. It will also keep Coalition leadership diverse, focused on targets, and set a strategic agenda for the Region. Its Executive Director oversees Cluster marketing and fundraising to ensure its growth and sustainability.

5. COMMUNITY ENGAGEMENT AND STRONG LABOR STANDARDS PLAN

The Cluster will ensure that all three construction CPs incorporate strong labor standards, prioritize supplier diversity, and create equitable job access. They will work closely with the Coalition's Diversity Coordinator, hired through BBBRC Phase 1 funding to:

- Identify underrepresented vendors, including Black, female, and veteran-owned businesses.
- Engage community and recruiting entities to funnel underserved populations into jobs.
- Prioritize community colleges and HBCU recruitment (including JTCC and VSU).
- Leverage the Cluster's 'outreach network' of community/civic entities to coordinate recruitment, including Richmond's Community Wealth Building, Petersburg's Workforce Development, Women in Bio, and Fort Lee's Veteran Transition Assistance.
- Attract veterans through the [Virginia Values Veterans \(V3\) Certification Program](#).

Dedication to strong labor standards will not stop with recruitment. All beneficiaries will conduct routine engagement surveys for Cluster employees to track equity and fair labor practices. The leading manufacturers are committed to wages and benefits that exceed the regional average.

6. EQUITY PLAN

The Coalition is acutely focused on the equitable distribution of impacts across the Region. AC prioritized hiring a Diversity Coordinator with BBBRC Phase I funding and has selected [Vanessa Womack Consulting, LLC](#) (VWC), to lead this effort. VWC has 25 years of experience providing diversity consulting and training and entrepreneurship development and is well poised to lead the Cluster's diversity, equity, and inclusion effort. VWC will oversee the Equity Plan, which focuses on four opportunity areas: a) Communications, b) Training and Education, c) Employment, and d) Supply Chain. Throughout the Phase II solicitation period, VWC has actively engaged in CP development to ensure meticulous individual equity plans are created in addition to the overarching Equity Plan.

Each CP prioritizes outreach to underserved communities, including minorities, women, veterans, those residing in rural areas, and those with a high school diploma or less for 1) enrollment in university programming and lab technician training, 2) placement in direct jobs created by beneficiaries, 3) opportunities to become suppliers and, 4) business development expansion as a result of supply chain development. The outreach and recruitment strategy will be implemented by CP lead applicants but also by beneficiaries, sub-recipients, and additional project partners invested in the growth and diversification in the Region. VWC will help CPs broadly implement communication plans and ensure they are consistent with the overall goals of the Initiative. Potential Initiative impacts beyond the direct jobs created by beneficiaries include:

- Creation of 1,569-2,709 (32-33%) jobs for people of color.
- Creation of 2,146-3,647 (44%) jobs for women.
- Creation of 2,068-3,376 (up to 41-43%) new jobs for moderate-income individuals.¹⁸

This work is achieved through the Phase 1 Equity Plan to ensure equal access to the Initiative's economic opportunities regardless of race, ethnicity, gender, or geographic location. The Plan focuses on four opportunity areas five equity strategies that will continue to be employed during

¹⁸ Impact projections derived using data from Economic Modeling Specialists International.

the Phase 2 project periods and beyond: workforce diversity, supply diversity, programmatic diversity, educational diversity, and geographical diversity.

7. EXPECTED OUTCOMES OVERVIEW

Each CP will generate significant economic impacts on its own, and collectively the Initiative expects to generate \$145.3M in direct investment and create/retain 640 direct jobs. The table below gives a brief summary of the top goals, outputs, and outcomes expected from each (for full metrics, see individual CPs):

| Component Application Goals | Outputs | Outcomes/Impacts |
|--|---|--|
| Water and Wastewater Infrastructure – enhance PIPs ability to attract/retain industry manufacturers | Construction of water and wastewater infrastructure | Investment of \$140 million and creation/retention of 511 jobs through Civica Rx, AMPAC, and Phlow |
| Scale-Up Center – create a venue for commercial developers of new advanced technologies to collaborate and scale-up products | Construction of a 52,800 SF building in Chesterfield County | Investment of \$5.3 million and creation of 60 jobs through M4ALL and Phlow |
| Innovation Center - add needed wet lab space for R&D and gather commercialization and startup assets and activities | Construction of a 100,000 SF building in the B+T Park | Creation/retention of 69 initial jobs through VCU CDD, Virginia Bio, Virginia Catalyst, and VIPC |
| Talent Pipeline Project – best in class needs-driven training with industry linkage in the Cluster to individuals from underserved and excluded communities | Creation of credit and non-credit certification programs for the industry | Train 164 transitioning veterans, unemployed/underemployed individuals, high school and community college students |
| VCU-VSU Joint Project - build VSU capacity to support student education and training in research and manufacturing | Creation of five-degree tracks through VCU and/or VSU | Training and employer connections for over 200 underrepresented students |
| Supply Chain Project: identify firms and individuals/candidates to fill supply chain gaps | Lead generators and EDOs work to generate leads | Generation of 200 leads for supply chain growth in the Region |

The CPs are expected to be catalytic and potentially create a total of 4,866-8,210 jobs following CP conclusions.¹⁹ The projects are also expected to decrease Petersburg unemployment by 7.3-1.2% points. The Coalition estimates that investment by EDA into the Initiative could yield returns between 8-17 times the initial investment amount by 2030.²⁰

¹⁹ Projections estimated based on historical performance of peer states, as reported by Moody’s Analytics.

²⁰ Ibid

8. PHASE I – PHASE II INTERIM WORK AND CHANGES COMPLETED

Overview of work conducted

The Coalition is expeditiously implementing Phase I funding. Since the award, the Regional Economic Competitiveness Officer (RECO) was hired to oversee the Initiative. The Water and Sewer Engineering Coordinator was retained for the Water Infrastructure Project. Other positions were scope expansion for existing staff actively involved in the CPs.

Five of six planned consultants have been secured through a competitive bid process, including the Diversity Coordinator, Grant Administrator to oversee reporting requirements, and three design and engineering consultants. All three design/engineering consultants have been heavily involved in Phase II CPs to ensure projects are well designed and feasible. AC plans to bid for the sixth consultant (Economic Development Strategist) by Spring 2022.

The Cluster completed a regional website and branding in early March 2022 to execute its marketing and communications strategy. A Kickoff Event outlined in the Phase I application to rally the Coalition, Region, and Cluster to align and perform Phase I work is planned for Spring 2022. Building a supply chain database will follow the Kickoff Event and be available to the Supply Chain Regional Co-Directors by Summer 2022.

Mitigated Risks

Regional cohesion was previously cited as a barrier to implementation due to the size of the Initiative. Since the Phase I award, all Coalition members, beneficiaries, sub-recipients, and stakeholders have been unified in their determination to support Regional growth. VGR and GRP, traditionally competitive EDOs, have agreed to work collaboratively to recruit companies to expand their operations. Similarly, VCU and VSU have crafted a new way to collaborate and are co-applicants. Growing competition from overseas markets racing to cement a position in the APM industry was also cited as a potential barrier. The Phase I award garnered renewed regional attention from investors and has helped bolster its standing among competitor markets.

9. PROJECT CHANGES LIST

Several changes expand the Coalition's reach and ability to make large-scale impacts. The Coalition expanded from 10 members to 14, with Civica Foundation, JTCC, RCC, and GENEDGE adding expertise and resources as CP applicants or sub-recipients. JTCC and RCC have notably allowed the Cluster to expand its reach into the Region's community colleges and ensure equitable access and training in industry pathways. Three CPs have widened their scope since the Phase I award. [*Private Sector & Sustainability sections list other new commitments.*]

- The **Scale-Up Center Project** has been expanded to include labs to support manufacturing and hand-on teaching labs for students from VCU-VSU and JCTCC. CCAM will be an operational partner for its translational research expertise and industry contacts.
- The **Talent Pipeline Project** will be led directly by JTCC as the direct provider of the manufacturing technician training. RCC will be a sub-recipient and strengthen equitable access to its lab technician program – identified as an acute need in Phase 1.
- The **VCU-VSU Joint Project** has been expanded to include research with an additional reach of more than 200 students directly (150 more than estimated in Phase 1).