

## **The Greater Baltimore Tech Hub: Bringing Biotechnology and AI/ML Together to Power Innovation and Better Outcomes for All**

*Executive Summary.* **This is our moment.** From downtown neighborhoods and suburban communities to rolling hills and family farms, the Baltimore-Columbia-Towson Metropolitan Statistical Area (MSA) will forge a new direction for American healthcare innovation. **The Greater Baltimore Tech Hub (Hub) will be a top tech destination that is inclusive – a place where we re-imagine the biotechnology, AI/ML, and healthcare landscape. The first Equitech model – born in Baltimore City and scaled in the region – can transform the industry globally.** There is no better place to develop precision healthcare technologies in the Key Technology Focus Area of AI/ML and biotechnology. Our foundation is unmatched. We have academic research powerhouses and tech startups; intentionality about diversity and equity; a robust defense and biomanufacturing infrastructure; proximity to the nation’s capital; and substantial biotech momentum. Representing this region, the **Greater Baltimore Tech Hub Consortium**, led by the Greater Baltimore Committee (GBC), is proud to apply for Phase 2 of the EDA Regional Technology Innovation Hub implementation grants. (See page 10 and commitment index for member and partner list.) Our MSA is diverse. It is home to 3.1M people and spans seven Maryland counties: Anne Arundel, Baltimore, Baltimore City, Carroll, Harford, Howard, and Queen Anne’s. (While outside the MSA, Cecil County is an active Consortium member.) We will combine the power of EDA funding with extensive commitments of capital, time, resources, and expertise to build on our foundation, fast-tracking the commercialization of precision healthcare and biotech, that fuels equitable economic development. [Take a first look at our vision here.](#)

*Vision.* **America’s First Equitech Region.** The Hub will be a global model for equity, commerce, and AI-powered biotech innovation. We will use EDA and partner commitments to catalyze, connect, and commercialize assets and technologies infusing diversity and equity into every aspect of development. Initially, biomanufacturing, biopharma, and digital health are the biotech verticals best poised to optimize our regional assets. Using the Economic Policy Institute’s investment multipliers, we estimate that within 7 years, Hub investment will result in \$4.6B in real value-add, or 2% of regional GDP. The widespread impacts of this economic growth, in addition to re-investment and increased commercialization, indicates that **within 10 years, Hub investment will catalyze \$8B in real value-add or 3.2% of regional GDP (up from 0.3% in 2022) and generate an estimated 14% cumulative ROI.**

To execute this vision and drive meaningful change, we will activate our strengths to address a fundamental challenge. **Our Hub has a mix of assets that does not exist anywhere else. We also have the ideal customers for precision healthcare including biotech, health systems, payors, providers, and pharmaceutical companies. Transformative science exists in our leading life sciences labs today.** Yet, we have historically underperformed in moving from lab to market. Our region’s challenge is not a lack of assets. It is a lack of integration across them. As a result, too many biotech entrepreneurs and companies stall out or leave. In 2022, our MSA trailed the national average of 2.7 new patent assignments per 1,000 residents at 0.3 per 1,000 residents (USPTO, Census, FRED, Accenture). Our state also lags in performance compared to the national average in biotech VC funding. According to Pitchbook analyses, 45% of Maryland’s biotech ventures fail before securing VC funding. **Our commercialization approach and component projects maximize how we use our assets to bring our region’s breakthrough scientific discovery past the startup incubation phase to market, at speed.** Our interconnected

component projects power our vision of a stronger, more connected region that has never been more ready for the national and global stage.

*Embedding equity in the approach.* **Our Hub will become America's First Equitech Region. Equitech is our aspiration to build a thriving tech economy grounded by diverse leadership, equitable standards and practices, and a culture of belonging in tech.** UpSurge, a Consortium member, championed the Equitech vision in Baltimore and continues to drive this aspiration. Baltimore's diverse population (45% BIPOC according to the U.S. Census) makes it uniquely positioned to set the standard for Equitech. As an Equitech region, the Baltimore area will be a model of economic prosperity with more enterprises creating good paying jobs, a narrowing gender and wealth gap, safer neighborhoods and healthier citizens, a strong tax base to allow local leadership to be visionary, and a sought-after national appeal drawing visitors and new residents. As we discuss in our component project narratives (Sections 4b), empowering Black and female founders and workers from economically disadvantaged communities with resources to start businesses or jumpstart careers has powerful impacts in job creation, economic mobility, and economic growth for the entire region. At the same time, more diversity in the biotech industry will result in more equitable biotech solutions that improve health outcomes for all people.

*Equitably distributing Hub benefits.* **Equity is a core value in Baltimore and is carefully embedded into the Hub's processes and operations.** We will build common mechanisms across our component projects via the Regional Innovation Office (Innovation Office) to ensure that benefits of the investments are shared equitably. The Hub's governance structure will reflect diverse leadership from across the Consortium and partners. We will be intentional about helping founders and startups receive mentorship, programmatic support, access to pre-incubator or lab space, and to effectively navigate the ecosystem to scale. Biomanufacturing initiatives will target rural economic development, and our workforce initiatives will focus on veterans, opportunity youth from disadvantaged backgrounds, returning citizens, and low-income families, with hiring programs that reflect equity commitments.

*Key Technology Focus Area, Assets, and Economic & National Security.* **Strengths That Set Our Region Apart.** A history of triumphs and tragedies has made our region a foundational part of the American story. This has shaped Baltimore City's historical DNA as a blue-collar city with endless grit and pride. This same spirit will help us forge a future of bold ideas, fierce resolve, and groundbreaking success. The Hub will be the destination for future leaders with promising biotech and AI/ML innovations. These leaders stand on the shoulders of those who came before them – from soldiers and shipbuilders to scientists and activists. Baltimore's technology expertise, strategic location, assets, and people will come together to speed biotech and AI/ML commercialization, increasing economic competitiveness and national security. **Our competitive advantage is undeniable. With an unrivaled collection of academic research institutions with a strong healthcare and life sciences focus, we have powerhouse assets.** We are home to renowned research universities and medical centers (Johns Hopkins University, University of Maryland, Baltimore, University of Maryland Baltimore County, Loyola University Maryland, Towson University, Johns Hopkins Hospital, University of Maryland Medical System, and Historically Black Colleges and Universities Coppin State University and Morgan State University). For the first time, these institutions will come together to accelerate biotech startups and commercialization. Our universities had a combined \$3.2B in academic R&D spend in FY21. In FY2022, for the 44<sup>th</sup> consecutive year, Johns Hopkins received more federal funding for R&D than any other US university, a record-breaking \$3.4B ([source](#)). It had the most National Institutes

of Health (NIH) grants in 2022 (\$839M, an approximately \$15M increase over 2021) ([source](#), [source](#)). In fact, NIH funding to Baltimore area recipients is increasing year over year (JLL, Life Sciences Industry Insight). This vibrant research environment has attracted an influx of dynamic tech startups with diverse talent who are passionate about discovery and entrepreneurship. Over the past five years, Baltimore has seen +33% in tech firms and +6% in tech jobs, greater than most in the Mid-Atlantic, including Philadelphia (+28% and +3% respectively) ([source](#)). While Black Americans are underrepresented in Baltimore’s tech workforce (22% of tech workers vs. 60% of the population), the region’s percentage of Black tech workers is higher than any other market except Atlanta (23.5%) ([source](#)). This convergence of academic and private sector R&D is energizing pathways for inclusive economic growth and high-quality, well-paid jobs. It is also spurring cross-sector collaborations that we will build on. Blackbird Labs, a life sciences accelerator, recently launched a \$100M venture capital studio to work with Johns Hopkins University and the University of Maryland, Baltimore to support collective research to speed commercialization of novel medicines and technologies ([source](#)). In Phase 2, Blackbird will double down on ecosystem development and interconnectivity with Consortium partners by deploying \$50M in research funding and investments for Hub priorities over the next five years.

**Intentionality about Diversity, Equity, and Access.** Our region is a microcosm of the nation’s racial, socioeconomic, and cultural diversity. With a diverse population, the Baltimore area is the ideal location to be the epicenter of Equitech. In our Consortium, 21% of member organizations are women-led and 29% are BIPOC-led. Addressing equity and diversity is innate in how we think and what we do. Consortium members have a track record of standout programs. For example, UpSurge is an ecosystem builder focused on making Baltimore a launch pad for founders of all backgrounds. The Novella Center for Entrepreneurship supports diverse entrepreneurship, bringing more people into the innovation economy. Hutch, founded by Fearless, is a two-year program that helps entrepreneurs from underrepresented communities develop government digital services firms.

**Defense and Biomanufacturing Infrastructure.** Developing defense-related research and prototyping for commercial healthcare biotech and AI/ML applications is a “win-win” for economic growth and national security. Our region’s biomanufacturing assets are robust contributors to national security, strengthening the nation’s defenses against chemical and biological warfare and developing resilient supply chains. These assets include Aberdeen Proving Ground’s Chemical Biological Center (CBC), the Johns Hopkins Applied Physics Laboratory Theater Defense Mission Area, and Fort Meade. There are strong precedents to use defense assets to support commercialization. For example, Cold War defense spending fueled early growth in Silicon Valley, and Fort Detrick’s bacterial purification technologies revolutionized the production of antibiotics and other drugs. Tapping into our region’s defense assets is a proven way to cross-pollinate innovation and speed up commercialization. We have cross-sector partnerships in place to do this. For example, the CBC has invested \$40M into its biomanufacturing capabilities and has committed to providing the Consortium with technical expertise, support as a technology transition partner, and a workforce pipeline for internships and jobs. Harford County is committing a 20,000-square-foot, pilot-scale biomanufacturing facility along with technical support for build-out, process optimization, and scale-up of the facility.

**Proximity to the Nation’s Capital.** An hour’s drive from Washington, D.C., our region offers partners access to commercialization assets, dialogue, and advocacy opportunities on the future of the industry. Being close to federal agencies is a draw for startups, early-stage companies, and established companies to move to or scale within the Baltimore area. The NIH is a massive

biotech provider and consumer—a “superstore” of research products and tools for commercializing scientific discovery. Working with the NIH and tapping into its \$30B in annual grants is an excellent way to move innovative healthcare ventures from the lab to market. Start-ups that work with NIH-funded labs and universities get access to early-stage R&D capital including nondilutive funding (SBIR and STTR programs), access to institutional expertise and resources, and low-cost license agreements ([source](#)). Our researchers also have the opportunity to pitch organizations like [BARDA](#) (in collaboration with CARB-X and Blue Knight) and/or their [accelerator network](#). With 77 federal labs in Maryland, compared to a combined 35 across other states, we know federal lab dynamics well ([source](#)). We are also “down the road” from the I-270 BioTech Corridor, one of the nation’s top biotech/life sciences clusters. In addition, the Food and Drug Administration (FDA) will play a primary role in providing clarity, stability, and predictability for biotech businesses in the AI/ML space. With the FDA located in Maryland, our partners can stay close to and participate in the development of these regulations through workshops or through FDA’s small business and industry assistance offices. Finally, the strong presence of federal agencies like the National Security Agency positions our region at the forefront for integrating national security issues like cybersecurity into our Hub.

**Substantial Biotech Momentum to Build On.** In 2022, Baltimore was home to over 400 tech/scale startups, including 350 funded startups - 64% of which were in healthcare and information technology. Around 60 private sector entities are driving innovation in predictive healthcare technologies and 14 accelerators are supporting companies that advance technologies in healthcare analytics and services (e.g., Delfi Diagnostics, Protenus).

The MSA has a history of successful commercialization in the core tech domain, supported by significant VC investments in relevant fields; in 2022, \$500M+ was invested in life sciences, digital health, AI, and advanced manufacturing. In addition to R&D and VC spend the region currently has over 60 assets in the region at or above approximate technology readiness level (TRL) of 6. These TRL 6+ technologies fall into four broad categories: (i) medical diagnostics/interventions (e.g., Previsé’s licensed biomarker technology and Astek Diagnostics’ benchtop UTI diagnostic), (ii) health analytics (e.g., Haystack Oncology’s precision medicine platform), (iii) medical devices (e.g., EpiWatch, an app that detects seizures before they occur and Felix, a Smart Stethoscope), and (iv) gene / drug therapeutics (e.g., PGDx / LabCorp’s tumor profiling platform). All these technologies are spin outs from The Consortium’s members including Johns Hopkins University (JHU) and University of Maryland Medical System (UMMS).

Groundbreaking biotech work is happening in Maryland today; the industry adds \$20B to the economy annually ([source](#)). The biotech boom in Maryland is contributing to the state’s 20-slot jump in economic momentum in just ten months ([source](#)). 4MLK, a 250,000-square-foot building that extends the University of Maryland BioPark, is scheduled for completion later this year. It will have wet lab space, advanced labs, collaboration zones, convening spaces, and leading-edge facilities and tools for researchers and entrepreneurs. Baltimore’s largest commercial project currently under construction, the facility is expected to draw 50 to 100 biotech companies ([source](#)) and is supported by development partner Wexford. In another example, real estate developer South Duval has begun a lab space construction project to convert an existing incubator into lab space for multiple tenants. EDA funding will boost our burgeoning biotech and AI/ML foundation, catapulting the Hub to global leader status by enabling us to break down silos and amplify existing innovation across the region.

All this energy is driving the Baltimore area’s powerful renaissance. There is more than \$6.5B in development funding slated for downtown Baltimore by 2028 ([source](#)), which includes a

\$500M renewal of our iconic Inner Harbor. The redevelopment of Sparrows Point could bring a 70% boost to the Port of Baltimore's container capacity. Outside of Baltimore City, Howard County has created a master plan to create a more than 1,000-acre innovation district ([source](#)).

*Global competitiveness from component projects; problems preventing or slowing technology advancement and commercialization.* **Our Future-Proofed Commercialization Approach.** We are focused on precision health biotechnologies that include AI/ML use cases, with applications that will evolve in alignment with the market across biomanufacturing, biopharma, and digital health. We narrowed on these verticals to use our region's strengths and unique assets for maximum impact. We will develop technologies with many downstream applications and flex with the market in selecting use cases that prove most beneficial to our economy and society.

**Breaking Down Barriers.** Our approach addresses the top barriers to commercialization in our region. **Equitable access to wet labs:** The region currently has a 2.8% availability rate for R&D labs ([source](#)). As more investors and developers come online, the Anchor Innovation Hub project will provide a blueprint for the power of equitable lab access. **Commercialization focus:** The Anchor Innovation Hub project will supercharge commercialization, with a focus on AI/ML applications, by channeling startups to and/or scaling proven programs like I-Corps, SBIR/STTR, MII/BII and MIPS and coaching them through the funding process. **New approaches to manufacturing:** The Biomanufacturing Core project will build a state-of-the-art, modular biomanufacturing facility serving as a national node for the DOD/CBC's network to catalyze industry applications of defense-related biotechnologies. The project also includes a robust Biomanufacturing Catalyst program to support commercialization and Center for Community Impact in Manufacturing that focuses on socioeconomic and technoeconomic research. **Enhanced role for incubators and accelerators:** Black founders in Maryland receive only 1.8% of early-stage and 1.1% of late-stage VC funding (Pitchbook). The UpRise for Equitech project will create integrated data and startup networks to improve ecosystem navigation and startup outcomes for entrepreneurs, with a focus on Black and women founders. **Human capital to support growth:** Black workers currently earn about 42% less than other residents in the region ([source](#)). The Baltimore Biotech Jobs Initiative will take a systemic approach to preparing tomorrow's biotech and AI/ML workforce: getting hiring commitments from employers, offering school-based training, and developing biotech apprenticeship programs. We face challenges that cross sectors; no single organization can solve them alone. The infusion of EDA funding and the convening function of our Innovation Office and the Consortium is the springboard we need to come together to speed technology advancement and commercialization.

*Component Project Overviews.* **Our collection of 5 component projects is poised to revolutionize the region's innovation landscape.** They reflect a theory of change that emphasizes business attraction, investment expansion, and entrepreneurship strategies to draw in biotech companies; nurture Black and rural businesses, startups/entrepreneurs, and workers; and support economic resilience and adaptability. Our immediate focus is purposeful: to increase the number and diversity of our biotech startups; improve the maturity and commercial validity of products developed here; cultivate homegrown biotech human capital; and strengthen relationships with corporations at end of the commercialization lifecycle.

**1. The Anchor Innovation Hub project connects, mobilizes, and leverages the region's physical and programmatic assets to help founders and early-stage entrepreneurs commercialize their innovations.** The project brings together these assets, many of which are housed at universities, to make them available to startups and early-stage entrepreneurs who wouldn't otherwise have access because they aren't affiliated with universities. Supported by

Governor Moore's Pava Lapere Legacy of Innovation Act of 2024, the project will also establish the Baltimore Innovation Initiative, funded at \$1.5 million in FY25 and FY26, to provide access to capital for technology startups, modeled after the Maryland Innovation Initiative University Partnership Pilot Program established in 2021.

**2. The UpRise for Equitech project creates a first-of-its-kind startup advancement network working with entrepreneur support organizations.** Unlike any other model that exists today, equity is the primary design principle from the start. This is a unique and transformational strategy that can be scaled nationally, grounded in resource connectivity, data sharing and integration, and capital and customer network development. It will use data insights to build a foundation for equitable innovation that lowers the barriers for Black and women founders who have historically been excluded from the innovation economy—and increase the promising ideas and talent that make it into the startup maturation pipeline.

**3. The Biomanufacturing Core project addresses national security vulnerabilities created by insufficient U.S. biomanufacturing capacity, boosts competitiveness by disrupting centralized manufacturing infrastructure, and supports equitable manufacturing.** The project creates a biomanufacturing catalyst program to recruit and develop innovators, startups, and federal and commercial partners. It grows capacity, reduces reliance on foreign materials, and encourages Black, rural, and low-income populations to upskill and participate in biotech and process innovation incorporating AI/ML. These efforts are supported by a state-of-the-art, small-scale biomanufacturing facility for early-stage manufacturing, process innovation, and training in Harford County. In addition, a robust Biomanufacturing Catalyst Program will support commercialization and Coppin State University will lead a Center for Community Impact in Manufacturing that will shape collaboration between community and commercial leaders.

**4. The Baltimore Biotech Jobs Initiative creates a sustainable pipeline of future-ready workers who will form the backbone of America's first Equitech region.** Working across sectors with more than 50 organizations, this project will rewire workforce approaches to help Baltimoreans be job-ready in the next decade. The project creates equitable career pathways to biotech jobs that do not require four-year degrees. Our scalable solution expands proven workforce development strategies and boosts access with fair, AI-powered technologies that make it easier for people to get and keep good quality, high-paying jobs.

**5. The Regional Innovation Office (Innovation Office), led by the Greater Baltimore Committee's Regional Innovation Officer (RIO) is the command center specifically organized to multiply innovation across all component projects with a "One Baltimore" approach.** Providing vital cross-institutional leadership, the Innovation Office is a powerful execution engine that works at the intersection of strategy and the component projects. Using proven governance structures led by passionate leaders who have implemented successful economic development initiatives, the Innovation Office offers pragmatic problem-solving, and shared measures so all members of the ecosystem can come together with their unique contributions to make a lasting impact on this region, and beyond.

*Government commitments; private sector participation, engaging labor unions.* **The designation of Baltimore as a federal Tech Hub has ignited a groundswell of support that reflects the momentum for change happening here.** We have secured a historic \$800M in commitments from across the region in support of our Phase 2 application. Our letters of commitment show the full scope of these investments. We are proud to highlight commitments from public and private sources that complement each other and will power our vision.

**All levels of government are engaged and mobilizing.** Cross-government support for the Hub is unprecedented, and it will help us catalyze outcomes. Governor Wes Moore has committed \$8.3M in FY25 new state funding ([watch video](#)). We expect this proposal to pass through the Maryland legislation this April and be available to the Hub by the time of the federal award. See Governor Moore's commitment letter for details on these exciting new economic development programs. The City of Baltimore has committed \$6.5M over five years to support innovation-driven projects that align with our MSA's strategic goals as a Hub. The Maryland Department of Commerce has robust grants, loans, and tax credit programs that support and amplify the Hub's work. For example, the Build Our Future Pilot Grant helps fund innovation infrastructure in technology sectors, including life sciences. In FY24, there is \$10 million in available grants. The Maryland Department of Labor is helping ensure we are leveraging and coordinating with existing workforce programs and future initiatives. Maryland State Senators Antonio Hayes and William Ferguson are strong supporters alongside Maryland House of Delegates Member Stephanie Smith. Maryland's US Senators Ben Cardin and Chris Van Hollen, and House Delegation members Dutch Ruppersberger, John Sarbanes, Kweisi Mfume, and David Trone, are strong champions, taking our story to the national stage.

**The higher education and private sectors are actively contributing to our component projects.** Supporting our Anchor Innovation Hub project, Johns Hopkins University has committed \$152M to infrastructure, entrepreneurial support, and ecosystem development, and Morgan State University is providing \$25M over five years to improve innovation partnerships between universities and businesses in the Baltimore region. 4MLK developer Wexford will provide equipment, technical services, and access to the space for startups. For our UpRise for Equitech project, Microsoft will launch its TechSpark program in the region, which expands access to quality computer science education to build pathways from schools to jobs and higher education. Approximately 30 companies will jointly commit to participating in the UpRise for Equitech Project's Entrepreneurial Support Organization network and likewise, 20 investors will join its Venture Capital network. As part of the Biomanufacturing Core project, DOD/CBC and Battelle will provide technical assistance for our biomaterials manufacturing facility. For the Baltimore Biotech Jobs Initiative, the Maryland Tech Council is extending the BioHub Maryland program to Baltimore, with support from AstraZeneca, GSK, Kite Pharma, Novavax, and other partners.

*Incorporating strong labor standards. We are working closely with the Maryland Department of Labor to set high standards for job placements.* Employers in the biotech sector have a low level of unionization. As such, our Hub and the Department will work to ensure that all job placements meet a rigorous standard whether apprentices, interns, or full-time workers. In the case of apprentices, we seek to increase the number of registered apprentices and will focus on hiring apprentices who are registerable. This means that they have training, wages, and support services. Given that the registration process can be challenging, the Department will further commit to hiring additional employer representatives to streamline registration.

*Specific outcomes from proposed projects and commitments; timeline. We have defined clear goals with outcomes and an overall project timeline.*

- **Goal 1:** Leverage the federal funds investment in our Hub to catalyze economic growth in the region. **Outcomes:** Real regional GDP grows at 1.5% above the business-as-usual baseline growth rate given the Hub's strategic investments; an annual ROI of 9% is realized in the second year of operations, increasing to double-digit 13.8% in the fifth year and 16.5% by 2033. There is \$8B in real value-add or 3.2% of regional GDP by 2033. The

region experiences a 30% increase in number of firms relative to its size by 2033 (from 24.4 to 32.3 firms per square mile).

- **Goal 2:** Create jobs associated with the Hub’s investments and component projects. **Outcomes:** Approximately 32,700 direct and 65,600 supplier and induced jobs are created across skill levels and relevant sectors by 2033, representing a **~6.9% growth in job creation** above business-as-usual growth over a 10-year period.
- **Goal 3:** Create equitable economic growth in the region so that disadvantaged populations benefit from economic growth at the same rate as other groups (see also section 4b of component project narratives). **Outcomes:** \$1.7B expected from approximately \$4.4B growth in consumption by 2033 and additional earnings reinvested in economic development and community welfare, workforce development, and inclusive growth.

*Outcomes from the joint impact of the component projects in SMART format. For interim goals, milestones, or outputs, see Sections 1b of component project narratives.* The Innovation Office will provide a metrics lead and platform-based tracking for data gathering and evaluation.

- **Goal 4:** Anchor Innovation Hub, UpRise for Equitech, and Biomanufacturing Core projects provide access to critical resources and support services to accelerate commercialization. **Outcomes** (by Year 5): 40 new and diverse entrepreneurs and companies access lab space and/or supportive services commercialization programs through 540 “program engagements” with these services, to which they otherwise would not have had access. At least 800 entrepreneurs are connected to investors and customers.
- **Goal 5:** Anchor Innovation Hub, UpRise for Equitech, and Biomanufacturing Core projects support startup creation and advancement as a result of the federal funds investment. **Outcomes** (by Year 5): Approximately 300 startups/firms are created: 160 pre-seed or seed venture capital deals worth ~\$400M in revenue. At least ~\$183M in follow-on private investment and \$461M in revenue from commercialized products is created. ~1-5 patents /IP are generated for every \$1M spent on R&D.
- **Goal 6:** The Baltimore Biotech Jobs Initiative and Biomanufacturing Core projects effectively train and upskill the workforce in the MSA to obtain high-quality, well-paid jobs. **Outcomes** (by Year 5): 2,000 individuals across the MSA receive direct training in the first five years. 350 individuals graduate from Harford-based programs, including BioHub Maryland and Harford Community College. There is a 15% increase in the number of qualified biomanufacturing professionals in the region. Biotech employers publicly commit to hire for 5,000 new jobs.
- **Goal 7:** All projects catalyze a culture shift in the MSA and nationally/globally and prove a new model for equitable technology-led growth. **Outcomes** (by Year 5): Quantitative IP and qualitative policy data indicate that policymakers and P3 stakeholders adopt and scale key elements of the model broadly within the region as part of future economic development investments and strategy. The perception that individuals need a four-year degree to enter the biotech workforce shifts.

Figure 1 represents a high-level timeline for the combined efforts of the component projects.



COMPONENT PROJECTS	MOBILIZE		SCALE		SUSTAIN	
	PRE-AWARD	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
Anchor Innovation Hub	Commercialization Navigation & AI/ML Programming					
				Program Refinement	Growth Plan Development	
UpRise for Equitech	Baltimore Tech Connect 3.0 Upgrade		ESO Network Convenings, Investor & Customer Engagement and Event Series, Digital Health Interoperability			
	Biomufacturing Catalyst Program and Center for Community Impact in Manufacturing Kickoff		Delivery and Refinement of Biomufacturing Catalyst Program and Center for Community Impact in Manufacturing			
Biomufacturing Core	Construction Prep & Design for Biomufacturing Wing in Harford County		Construction Activities	Ongoing Operations of Biomufacturing Wing in Harford County		
	Competency Model Convening		Competency Model Refinement			
Baltimore Biotech Jobs Initiative	Community Outreach, Career Pathway Connections, Skilling & Training Programs Development					
	Governance Structure Stand-Up		Governance Structure Refinement		Future State Op Model Development and Sustainability Planning	
Regional Innovation Office /RIO	Overarching Program Support, Monitoring, and Evaluation					

★ Construction Complete

Figure 1: Overall Project Timeline

**Sustainability. Building a Self-Sustaining Model.** Strategic investments in technology and innovation like the Tech Hubs program are imperative in today’s environment of rapid change. While this investment is critical, sustainable growth requires more.

**Commercial sustainability.** The best safeguard for sustainability is growth. Our primary focus will be to de-risk our projects to obtain the targeted market return. Our commercialization approach, proactive risk management, and adaptable Innovation Office design will make the Hub self-sustaining beyond the award period. Securing additional funding streams is also critical. The Innovation Office will monitor federal funding beyond the EDA funds for opportunities that complement and strategically evolve the scope of the Hub. We also plan to evaluate mechanisms to convert to a revenue model as early as possible, such as encouraging startups with significant follow-on funding to reinvest in programs or converting select services to fee-for-service models.

**Environmental and social justice sustainability.** In the pre-award period, the Innovation Office will develop a comprehensive climate, environmental, and social justice plan across projects: conducting a sustainability audit and identifying areas for improvement; setting measurable objectives for improvement; embracing sustainable construction materials (where applicable and feasible); implementing green waste management; and assessing ecosystem partners’ plans.

**Housing sustainability.** We expect rising housing supply from repurposed vacant and abandoned properties and intra-region migration to contain and counterbalance upward pressures on housing and rental prices. There is significant policy momentum at the state level to reduce property vacancies in Baltimore City over the next 15 years, including key provisions in Governor Moore’s Housing Plan and Budget that increase funding and flexibility for the Creating Opportunities for Revitalization and Equity initiative (Project CORE). \$50M per year in funding for Project CORE will provide grants and loans for interior and exterior demolition, land assembly, architecture and engineering, and site development for certain revitalization projects. The Baltimore Regional Neighborhoods Initiative is expected to receive \$27M per year, in addition to density bonuses and process streamlining for development of properties within a mile of passenger rail and that contain at least 25% affordable housing.

We expect housing to remain affordable in the region and not only prevent displacement of disadvantaged residents, but also, create pathways to improve their standard of living. Long-term average vacancy rates in our region are currently estimated at 6%, while median home values are projected to grow below the U.S. national rate at a CAGR of 4.1% between 2021 and 2028.

*Hub’s global competitiveness in approximately a decade. We have a powerful vision to achieve global competitiveness for the Hub over the next 10 years.*

**In the Mobilize phase (Pre-Award-Year 1)**, we will supercharge biotech innovation, integrate AI/ML through education and application, and begin targeted workforce development programs. We will start the base for a biomanufacturing network, begin accelerator programs, and arrange shared wet lab spaces and startup supportive services. At the same time, we will invest in training programs and building awareness of the Hub. **In the Scale phase (Years 2-3)**, we will attract new startups, suppliers, private investors, and additional government support. We will remain at the forefront of technology. For example, we plan to scale up funding for high-potential biotech AI/ML use cases, explore platform-based solutions for interoperability in healthcare, and use Baltimore’s demographics as input to improve clinical trial diversity. **In the Sustain phase (Years 4-5+)**, we will share our Equitech model nationally, showcasing the replicable success; collaborate with investors and developers to bring more wet lab spaces online; and work with suppliers and biopharma companies to grow their businesses locally. We will continually enhance our infrastructure to support growth. **Over time**, we plan to extend our operations beyond our initial verticals and national borders. We will collaborate and partner with international incubators and startups, tailor regional marketing to attract foreign portfolio investment, and invest in futuristic biotech and exploratory research to remain at the forefront of innovation.

*Members of the Greater Baltimore Tech Hub and Alignment to Phase 1 vision. Please refer to the commitments index for the full list of Consortium and non-Consortium members and additional partners including those making investment and policy commitments.<sup>1</sup> Figure 2 below shows our Greater Baltimore Tech Hub Consortium partners.*



Figure 2: The Greater Baltimore Tech Hub Consortium

<sup>1</sup> This Phase 2 application submission is consistent with our Phase 1 Consortium and the overall scope and vision of our Phase 1 designation application, with no substantive changes. Please see the commitments index and associated documentation that confirms all Consortium members and partners (including those making investment and policy commitments) have read this narrative and are committed to executing their defined roles, responsibilities, and commitments related to the Tech Hubs effort.