

Silicon Heartland-Appalachia Regional Engine for Semiconductors (SHARES)  
Tech Hubs Phase 1 Case for Designation

**Introduction**

In September 2022, President Biden visited New Albany, Ohio for the groundbreaking of Intel’s \$20-billion semiconductor fabrication facility, one of the largest and most advanced in the world. Calling the region the “Silicon Heartland,” President Biden underscored “the story of the field of dreams in the middle of Ohio where America’s future will be built.”<sup>i</sup>

But turning that dream into reality requires that the Columbus-Southeast Ohio region (Region)<sup>ii</sup> marshal the capacity—financial, political, and institutional—to collaborate at a scale commensurate with the opportunity before us. Through a Tech Hubs designation, the Silicon Heartland-Appalachia Regional Engine for Semiconductors (SHARES) Consortium, led by the Mid-Ohio Regional Planning Commission, will transform a high-potential emerging cluster into a globally competitive hub of high-performance computing, semiconductors, and advanced computer hardware and software. In doing so, SHARES would advance economic opportunity in the Heartland and bolster America’s economic and national security globally. Already, Columbus is the second-largest data center market in the Midwest and the sole emerging Midwest location for the most advanced chip production.<sup>iii</sup> Within KTFA 2, our selected core technology area is semiconductors, inclusive of fabrication and their use within high-performance computing and research and development (R&D). In addition to Intel’s historic investment—the largest project in Ohio’s history and among the top economic development announcements in North America in 2022<sup>iv</sup>—the Region has welcomed dozens of major investments in advanced cloud computing, such as Google and Amazon Web Services (AWS). Approximately \$33 billion has been committed in KTFA 2 enterprises in the Region since 2015.

These investments are transforming the regional economy and creating high-quality American jobs leading to broad-based opportunities for wealth creation and inclusive participation in the economy of tomorrow. The Biden-Harris Administration recently designated Columbus as a [Workforce Hub](#), ensuring a coordinated, national-model approach to meeting labor demand with a skilled, diverse workforce. Consortium partners in this Tech Hub application view designation and future funding as a complementary strategy further aligning federal, state, and local resources toward achieving generational change in communities ranging from urban Columbus to rural Appalachia of Southeast Ohio.

The SHARES Consortium is positioned to successfully deliver on the goals of the Tech Hubs program because of the Region’s history of collaborative corporate stewardship and deep, lasting commitment to developing into a global leader in the technologies of the future, embodied in the [Columbus Way](#). Accordingly, our Tech Hub application is for Designation only, as we are prepared to compete for the Implementation Grants under the Tech Hubs Phase 2.

**Designation Criteria**

**1. Technology-based potential of the region for global competitiveness**

The Region has all the components to accelerate, with Designation, into a globally competitive hub. It is the fastest-growing region in the Midwest, strategically located to provide KTFA 2 industries with one-day driving access to 60% of the US and Canadian population. Furthering national security objectives, the Region has access to an abundant supply of water, reliable electricity, and climate-resilient developable land with low risk of disruption from natural disasters. In addition, the 200,000 combined students and faculty of Ohio University and The Ohio State University—two consortium partners—fuel a dynamic talent pipeline, generating billions of dollars in economic impact and opportunities to scale with industry demand. The Region’s unique combination of existing assets, resources, and capabilities forms the basis of its technology-based potential for global competitiveness.

Semiconductor companies have announced more than \$500 billion in investments globally in the last two years, with sales expected to exceed \$1 trillion in the next decade.<sup>v</sup> Long-term

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drivers of growth in KTFA 2, including artificial intelligence, machine learning, automation, and cloud computing, play to existing regional strengths. Intel's commitment is driving unprecedented collaboration across the spectrum of economic development stakeholders. The State of Ohio, JobsOhio, and the City of New Albany are investing about \$2 billion toward successful development of the Intel project and the wider technology industry, including \$300 million in climate-resilient infrastructure (e.g. water reclamation), \$200 million in road and highway improvements, and \$40 million for workforce development.

As the anchor investment for the SHARES Hub, Intel's initial phase of building and operating two fabs is expected to create over 3,000 jobs with \$405 million in associated payroll. And more announcements of global semiconductor industry suppliers and related supply chain companies are expected. Construction activity will result in an additional 7,000 jobs over the next few years.

The 400 acres purchased by Amazon Web Services as part of its \$7.8 billion investment in Central Ohio is located in New Albany as well. This building momentum in KTFA 2 has propelled the Columbus market to #32 in a recent ranking of global data center markets.<sup>vi</sup>

Smaller, locally-grown companies are also contributing to the Region's emerging strength in KTFA 2, as evidenced by venture development organizations that provide the connective tissue necessary for sustaining innovation-based economic development. Their results illustrate what Tech Hub Designation and funding can mean for the Region and the entire Midwest.

Much like the goals of the Tech Hubs program, the founders of consortium partner Drive Capital relocated from Silicon Valley to Columbus to start a venture capital firm to show that "big, successful companies could come from the heartland."<sup>vii</sup> Drive has raised \$2 billion for investments in more than 80 companies outside of Silicon Valley.

Another key leader is Rev1 Ventures, a nationally recognized Investor Startup Studio and recent [winner of a \\$1.4 million EDA Build to Scale award](#), ensuring that the next generation of entrepreneurs in the Region are representative of its residents.

Leading centers of innovation around the world also have organizations that can bridge the gap between federally funded sources of research and development, such as government agencies, national labs, and universities, and companies interested in innovative breakthroughs.

Battelle Memorial Institute, headquartered in Columbus, is playing that role for the SHARES Consortium. Battelle oversees more than 40,000 employees at nine national labs, including the largest U.S. Department of Energy lab at Oak Ridge. Its expertise in delivering advanced cyber solutions, microelectronics inspection, and security assessments for the U.S. Military and other global customers incorporates the perspective of a leading national security stakeholder into the SHARES Consortium.

## **2. Role of the private sector**

The SHARES Consortium includes participation from three private sector leaders in the KTFA 2 market: Intel, Amazon Web Services (AWS), and Google. The team also includes Battelle, a private nonprofit corporation, Adelphi Bank, one of only 21 Black-owned banks in the country and the only one operating in Ohio, venture capital firm Drive Capital, startup development organization Rev1 Ventures, and Connect Housing Blocks, a company focused on addressing affordable housing demand with prefabricated apartments.

The Consortium is applying for Designation and potential Implementation Grant funding to coordinate and leverage existing and planned future commitments, such as:

- **Intel, AWS, Google** – jobs, capital investment, implementing education programs, workforce training credentials in collaboration with providers, workforce boards, and unions
- **Battelle** – technology commercialization, federal labs, and national security expertise

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- **Adelphi Bank, Huntington Bank, Drive Capital, Rev1** – access to capital, startup mentoring, scaling, exits
- **Connect Housing Blocks** – affordable, scalable workforce housing solutions, jobs, skills training

The Columbus Partnership and Appalachian Partnership, two private sector led economic development organizations, are partnering with the Mid-Ohio Regional Planning Commission, serving as the lead applicant and employer of the Regional Innovation Officer (to be hired in the coming weeks), to manage the proposed work program for the Consortium. Additional commitments to the Tech Hub effort from the public sector, education and training providers, and nonprofits are described in sections below. The Consortium members understand and acknowledge that these commitments will need to be specified in more detail with Designation and eligibility to compete for Implementation Grant funding in Phase 2 of the Tech Hubs program. The attached letter of support documents the commitment from each firm in the SHARES Consortium toward the success of the Tech Hub.

### **3. Regional coordination & partnerships**

While this application for Tech Hub Designation and potential funding represents the first formal effort to organize as the SHARES Hub Consortium, it constitutes the next step in a long history of these organizations partnering on economic development to grow the Region into a globally competitive center of innovation.

In 2021, the Mid-Ohio Regional Planning Commission (MORPC) partnered with One Columbus, the Mid-Ohio Development Exchange, and 11 county economic development leaders to complete the [Region's first Comprehensive Economic Development Strategy \(CEDS\)](#) and apply to EDA for designation as an Economic Development District. The vision and goals of the CEDS align with the One Columbus mission articulated in its [strategic plan](#): To be the most prosperous region in the United States.

One Columbus and Ohio Southeast are the JobsOhio partners in their respective regions, creating seamless alignment with state-level priorities. Together, they cover 36 Ohio counties and provide world-class economic development leadership in their communities.

The Central Ohio Transit Authority and Columbus Regional Airport Authority are committed to major regional capital programs linking with global trade and travel, including the [LinkUS initiative](#) and a new international airport terminal.

This application for Designation is an opportunity for the Columbus Region and Southeast Ohio to demonstrate to other places in the Midwest and nationwide how compete globally and effectively collaborate around equitable economic development. Toward that end, Consortium members have been conducting stakeholder engagement in preparation for this opportunity. Tech Hub working groups were convened on innovative “lab to market” approaches, composition and capacity of the regional workforce, and the technology-based potential of the region for global competitiveness, with over 50 representatives of organizations across the economic development and workforce development ecosystems.

### **4. Equity & diversity**

Equity, diversity, and environmental justice are central to the SHARES Hub strategy. Despite the accessibility of semiconductor careers, today's semiconductor workforce does not reflect the diversity of the United States. The Consortium is designed to build direct and deliberate bridges between urban and rural communities as well as prosperous and distressed communities. This would help address gaps in business ownership and create ladders of opportunity for women and underrepresented minorities. Commitments from key partners toward the development of the SHARES Hub include:

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- **Color Coded Labs** – technology skills training for working adults in underserved communities which increases household incomes by an average of \$20,000.
- **Columbus Urban League** – small business assistance to Minority Business Enterprises in Columbus and through the [Columbus Minority Business Assistance Center](#) in Athens.
- **National Center for Urban Solutions** – postsecondary training via the [AWS Partner Program](#).
- **Building Trades** – Affiliated Construction Trades Ohio and its Columbus/Central Ohio Building and Construction Trades Council have launched [Building Futures](#) for residents of underserved communities to obtain the necessary skills for apprenticeships, supported by a \$686,000 FY 2023 Congressionally Directed Spending request from Ohio Senator Sherrod Brown, as well as local funding from the City of Columbus and Franklin County.

#### 5. Composition and capacity of the regional workforce

More than 10,000 workers are employed at Columbus-Southeast Ohio companies in the KTF A 2 sector<sup>viii</sup>, but thousands more will be needed in the talent pipeline to meet expected industry demand. Furthermore, wraparound services and strategies are critical to ensuring broad-based access to emerging labor markets.

While the Region's workforce is specialized in several key occupations relative to the US average, such as software and web developers, assemblers and fabricators, and general laborers and material movers who could be upskilled for semiconductor technician positions, talent availability is the most pressing challenge to overcome in achieving the Region's vision.

Major workforce partnerships are underway to address that challenge, encompassing skilled trades, technical, and engineering education. In as little as a year, workers can participate in this emerging market with a training certificate which can be converted into other postsecondary credentials. Most regional building trades union chapters are training the largest number of apprentices in their history. Key assets from Consortium partners include:

- **Intel Semiconductor Education and Research Program for Ohio (SERP)** – Intel will invest \$50 million in semiconductor manufacturing education, training, collaborative research in Ohio, with [\\$17.7 million](#) already committed to proposals encompassing more than 80 institutions across the state. Members of the SHARES consortium are leading four of the eight SERP programs, with new degrees and certificates available for Fall 2023.
- **The Ohio State University (OSU)** – the Center for Advanced Semiconductor Fabrication Research and Education (CAFE) and The Ohio Partnership for a Diverse and Inclusive Semiconductor Ecosystem and Workforce. In addition, the [largest gift in OSU history](#) (\$110 million) was announced recently to establish the Center for Software Innovation. Other relevant KTF A 2 assets include the Ohio Supercomputer Center, the Institute for Cybersecurity and Digital Trust, and the AI Institute for Intelligent Cyberinfrastructure with Computational Learning in the Environment.
- **Ohio University** – the [Appalachian Semiconductor Education & Technical Ecosystem](#), a coalition of Appalachian-region institutions to recruit students from underrepresented groups and offer training programs for fab technicians, entry-level engineers, and advanced-degree holders.
- **Columbus State Community College** – the [Ohio Semiconductor Collaboration Network](#) of 23 community and technical colleges are dedicated to building a strong technician pipeline. **Central Ohio Technical College** serves as a leading member of this network.
- **Regional Workforce Development Boards**, including the Workforce Development Board of Central Ohio, South Central Ohio Workforce Partnership, Area 14 Workforce Development Board, and Greater Ohio Workforce Board, [created a regional alliance](#) to eliminate barriers and forge workforce connections based on best fit, rather than location, establishing a cohesive, leveraged response to computing and manufacturing workforce demands.

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- **Manufacturing Extension Partnerships (MEPs)**, including the MEP at Columbus State and the OSU South Centers MEP, are committed to serving small and medium-sized manufacturers in the semiconductor industry.

**6. Innovative “lab to market” approaches**

Many of these investments feature a focus on establishing and improving “lab to market” pipelines. Under the CAFE proposal co-funded by SERP, OSU will provide an experiential learning environment to advance the state of semiconductor fabrication for next-generation device technologies.

Another key example is the OSU Carmenton innovation district. Most recently completed there is the Pelotonia Research Center, a \$227.8 million, 305,000-square-foot laboratory building that is designed to facilitate interdisciplinary collaboration across multiple areas of R&D, including semiconductors.

Finally, the venture capital and startup organizations in our consortium, Drive Capital and Rev1 Ventures, are committed to a leading role to support cutting-edge research and prototyping in semiconductor technology.

**7. Impact on economic and national security of the entire United States**

The Center for Strategic and International Studies (CSIS) [writes that](#) “All major U.S. defense systems and platforms rely on semiconductors for their performance. Consequently, the erosion of U.S. capabilities in microelectronics is a direct threat to the United States’ ability to defend itself and its allies.”<sup>ix</sup>

President Biden underscored this in remarks at the Intel Ohio groundbreaking, saying that our need for domestically-produced semiconductors “goes well beyond commercial need. This is about our economic security. It’s about our national security.”<sup>x</sup>

SHARES presents an opportunity to diversify geographic risk in the national portfolio of critical semiconductor technology and manufacturing, from the standpoint of climate change, infrastructure availability, industry concentration and workforce. Most advanced semiconductor production has been concentrated in the western and southwest U.S. and will benefit from diversification to diverse geographies like the Midwest.

**8. Potential concepts for implementation grants**

The SHARES Consortium has identified several market failures that, if remedied, would support greater global competitiveness in our core technology area. Projected growth in workforce and population will create additional pressure on an already-challenged housing market, necessitating affordable, scalable solutions like Connect Housing Blocks. More educational facilities, faculty, and staff are required to implement emerging workforce pipelines, particularly at regional community and technical colleges. Regional Venture Capital (VC) and startup ecosystems need to rapidly scale and enable key innovations with further support for R&D-based companies. The building trades need further investments in facilities and pre-apprenticeship programs.

To further integrate Appalachian and rural areas into these pipelines, the consortium contemplates a hub-mini hub-node strategy to expand semiconductor and high performance computing activities through the extension of workforce development, supply chain, and specialized research at a mini-hub at Ohio University in Athens, Ohio. The mini-hub will coordinate select node activities in micropolitan areas with a focus on Southeast Ohio. Such a hub and spoke strategy allows for both the extension of key urban economic activities to more Appalachian and rural areas while also supporting rural-oriented development throughout the SHARES Hub.



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## Appendix

### Citations

- i <https://www.whitehouse.gov/briefing-room/speeches-remarks/2022/09/09/remarks-by-president-biden-on-rebuilding-american-manufacturing-through-the-chips-and-science-act/>
- ii See consortium graphic below
- iii <https://www.cushmanwakefield.com/en/united-states/news/2023/01/cw-releases-global-data-center-market-comparison-report>
- iv <https://siterelection.com/issues/2023/may/top-deals-2023.cfm>
- v EY Knowledge Analysis of WSTS Blue Book data and WSTS forecast (November 2022)
- vi <https://www.cushmanwakefield.com/en/insights/global-data-center-market-comparison>
- vii <https://www.drivecapital.com/our-story>
- viii EY analysis of Lightcast data (2022)
- ix <https://www.csis.org/analysis/semiconductors-and-national-defense-what-are-stakes>
- x <https://www.whitehouse.gov/briefing-room/speeches-remarks/2022/09/09/remarks-by-president-biden-on-rebuilding-american-manufacturing-through-the-chips-and-science-act/>

### Consortium Graphic

