West Virginia University
Bridge Initiative for Science and Technology
Policy, Leadership, and Communications

Legislative Science and Technology Note

Advanced Manufacturing and West Virginia

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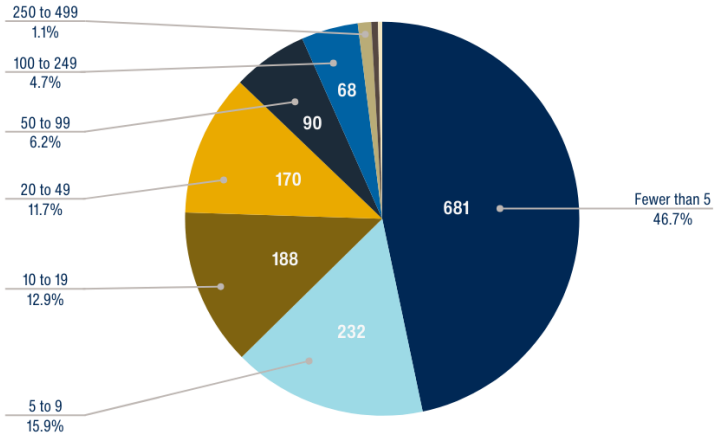
This Science and Technology Note discusses advanced manufacturing in West Virginia, which includes tools like machine learning, 3D printing, and robotics. Attracting advanced manufacturing firms and helping companies adopt advanced techniques could bring jobs and economic opportunities to West Virginia.

Advanced Manufacturing in West Virginia: Opportunities and Challenges

"Advanced manufacturing" refers to manufacturing companies incorporating innovative technologies or producing high-technology products. In recent years, West Virginia has attracted new advanced manufacturing firms and investments. In early 2023, about 17,380 West Virginians (about 47% of all manufacturing employees) were employed in advanced manufacturing based on Brookings' definition. Based on this definition, West Virginia ranks in the middle of Appalachian states for percent of total manufacturing firms (and employees) categorized as advanced.*

West Virginia Manufacturing Firm Size, by Number of Employees (2023, Q1)



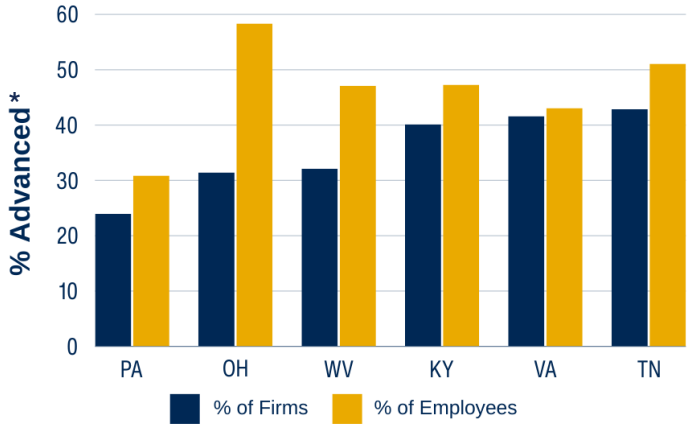
Source: WVU Bridge Initiative, based on data from Bureau of Labor Statistics, 2023

**No definition of advanced manufacturing is perfect. This note uses for its analysis a definition that may overestimate adoption by smaller companies and understate adoption for larger ones.*

Research Highlights

- About 32% of West Virginia's manufacturing firms could be classified as advanced. Attracting advanced manufacturing firms to the state could create jobs and boost productivity, wages, and the local economy.
- West Virginia has a large number of small- and medium-sized manufacturing enterprises (SMEs) where advanced manufacturing techniques may not be widely used, as well as resources like the Marshall Advanced Manufacturing Center.
- Policy options to spur advanced manufacturing in West Virginia include establishing a site readiness fund and enhancing the manufacturing investment tax credit.

Advanced Manufacturing Fraction of Total Manufacturing: Appalachian State Comparison



** "Advanced" as defined by the Brookings Institute, here.*

Source: WVU Bridge Initiative, based on data from Bureau of Labor Statistics: West Virginia, Kentucky, Tennessee, Ohio, Pennsylvania, Virginia

Advanced manufacturing technologies (AMTs) could help West Virginia firms identify inefficiencies, rapidly prototype and scale production, and automate time-consuming tasks. However, for small- and medium-sized enterprises (SMEs), which represent a large share of West Virginia's manufacturing firms, costs, capacity, and operation disruptions present particular challenges to AMT adoption.

Current Advanced Manufacturing Policies in West Virginia

The West Virginia Economic Development Authority and the West Virginia Department of Economic Development (WVDED) seek to grow advanced manufacturing in West Virginia. These agencies, along with state resources such as the Marshall Advanced Manufacturing Center (MAMC) and the West Virginia Manufacturing Extension Partnership offer access to advanced manufacturing technologies (AMTs), consulting services, workforce training, and other programs and incentives.

WVDED is in the process of developing a "Ready Sites Program," which will assess industrial site development readiness. In 2024, West Virginia legislature passed a law (HB 5162) that will create a "Youth Apprenticeship Program" and expand registered apprenticeship programs. HB 4548 (proposed in 2024) would have allowed for application of the existing manufacturing investment tax credit to personal income tax; this bill passed the House but not the Senate.

While West Virginia is attracting advanced manufacturing investment and has a significant advanced manufacturing industry (32% of total manufacturing by Brookings' definition), West Virginia manufacturing experts interviewed in 2024 described adoption of advanced techniques in the state as "immature, slow-growing," and "stalled."

Advanced Manufacturing and Economic Development

Supporting greater adoption of AMTs has the potential to improve West Virginia manufacturing productivity and wages. An analysis using 2023 U.S. Bureau of Labor Statistics (BLS) data showed average weekly wages about 65% higher for West Virginia manufacturing employees in advanced manufacturing sectors compared to those that did not meet the "advanced" criteria.

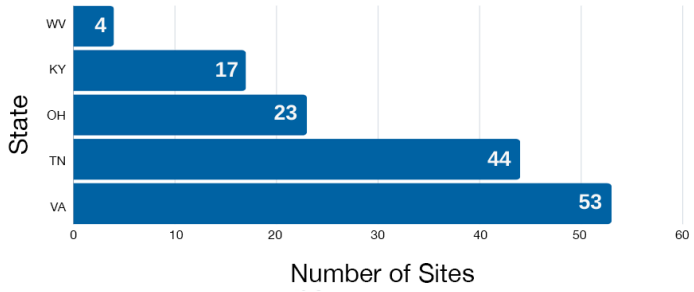
Actions to support AMT adoption could improve the competitiveness of SMEs, providing economic benefits for the state. Attracting advanced manufacturing companies to West Virginia could benefit not only manufacturing workers but the surrounding communities. The state's many brownfields, such as former minelands, could become sites for future businesses.

West Virginia and Neighboring State Policy Efforts

An August 2023 assessment found that West Virginia ranks 26th in competitiveness for manufacturing investment. A 2022 Industrial Market Overview reported that West Virginia has low industrial real estate availability.

West Virginia, in comparison to several other Appalachian states, has fewer "shovel-ready" industrial sites. Kentucky is doubling investment in career and technical education. North Dakota has an automation investment tax credit. Virginia has a discretionary site-preparation fund.

Certified or Shovel-Ready* Sites Larger than 25 Acres



** "Certifcation" and "shovel-ready" do not have a consistent definition across states, so comparisons should not be taken as direct. West Virginia has not yet completed its initial "Ready Sites Program" site reviews as of early March 2024.*

Source: WVU Bridge Initiative, based on data from West Virginia, Kentucky, Ohio, Tennessee, and Virginia

Policy Options for Attracting and Expanding Advanced Manufacturing in West Virginia

Policy options that support the goals of attracting advanced manufacturing companies and assisting SMEs with adoption of AMTs include

- creating a fund like Virginia Commonwealth's Development Opportunity Fund for developing site infrastructure like high-speed internet connections required for advanced manufacturing, and
- expanding the manufacturing investment tax credit to apply to personal income tax.

Each of these proposals carries a financial cost and uncertain economic benefit. However, advanced manufacturing has the potential to contribute value to West Virginia through more efficient company operations, high-paying jobs, and local community benefits.

This Science & Technology Legislative Note was written by Ryan Nesselrodt, PhD, West Virginia Science and Technology Policy Fellow on behalf of West Virginia University's Bridge Initiative for Science and Technology Policy, Leadership, and Communications. The Bridge Initiative provides nonpartisan research information to members of the West Virginia Legislature upon request. This Science and Technology Legislative Note is intended for informational purposes and does not indicate support or opposition to a particular bill or policy approach. Please see https://scitechpolicy.wvu.edu/ or contact scitechpolicy@mail.wvu.edu for more information.

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