

**Tennessee Tech as an Economic Driver for the Upper Cumberland: A Practitioner's
Perspective on Leveraging Local Assets**

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Tennessee Tech's Role in the Regional Economy

Putnam County, Tennessee, and the larger Upper Cumberland region has a robust and strong economy with representation across major employment sectors. There is a high quality of life, good transportation infrastructure, and access to quality education, healthcare, and all major community amenities. Tennessee Tech University, a public research institution in Cookeville, Tennessee, plays a central role in the Upper Cumberland region's economy. While the university produces a steady pipeline of talent, much of that talent leaves the area due to limited local job opportunities and weak linkages between academia and industry. This paper explores how Tennessee Tech can be leveraged as a driver of regional economic development, particularly in high-tech sectors such as aerospace, electrical/computer, and nuclear engineering. It also examines the strategic role that economic developers can play in aligning local assets such as education, workforce, infrastructure, and industry, to support cluster development, talent retention, and innovation-driven growth. Putnam County is uniquely positioned to grow an engineering-focused economy—especially in the aerospace, electrical/computer, and nuclear sectors—if local institutions and industries strengthen collaboration and strategic planning.



Figure 1: The Upper Cumberland Region

Regional Context

The Upper Cumberland Region of Tennessee is located along the Cumberland Plateau between the Highland Rim in East Tennessee and the Nashville Basin in Middle Tennessee, spanning down to the Sequatchie Valley in the south and the Tennessee State Line in the north. The population of the fourteen-county region is roughly 340,847 per the 2020 census; however, recent surveys and data show a trend toward continued growth between now and 2030. Putnam County is the economic hub of the region with a population of around 84,894 as of 2024; the County Seat, Cookeville, has a population of 37,102. While this growth will eventually designate the area around Cookeville as a Metropolitan Statistical Area, the area is still considered a rural region with a micropolitan hub. Transportation accessibility in Putnam County is a major driver for industrial recruitment with direct access to Interstate 40 and State Highway 111 both running directly through the community. U.S. Route 70 runs along the south of the region providing connectivity to I-24. This infrastructure positions the region within a day's drive of about two-thirds of the U.S. population.

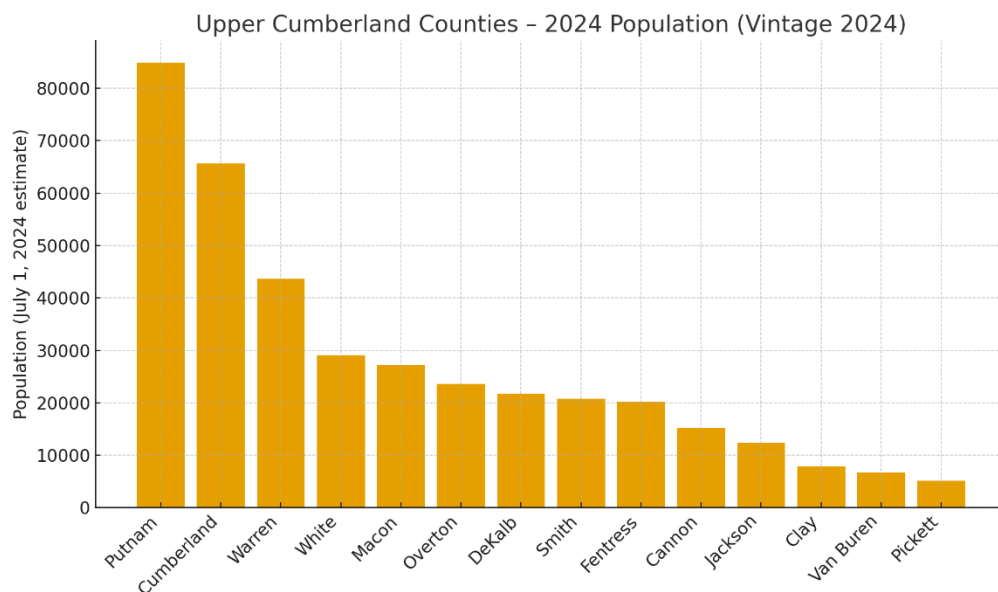


Figure 2: Population by county

Regional Overview

The karst topography of the region makes for myriad environmental challenges when planning for industrial growth, recruitment, and expansion, but provides the Upper Cumberland with a unique natural locale of caves, hills, hollers, and waterfalls. There is a notably high cluster of eleven state parks in the region with around 40 registered waterfalls and numerous caves, as well as three major man-made lakes created and managed by the U.S. Army Corps of Engineers. These amenities combined make the area a nationally recognized destination with tourism serving as a major economic driver in the region. The natural assets and sense of place associated with the Upper Cumberland are frequently cited as the main factor for transplants relocating to the area. Regarding community amenities, Putnam County boasts a city owned regional hospital, Cookeville Regional Medical Center, Tennessee Tech University, a quality K-12 School System, and comprehensive police, fire and EMS services county wide. With the recent announcement of a Target and Home Depot, citizens in the Upper Cumberland have convenient access to nearly all of the top major national brick-and-mortar retail companies. Sales tax is a major drive of local revenue to provide services to citizens in the area.

Economic Profile

From an economic standpoint, the region is comprised of a combination of the micropolitan hub of Cookeville and the more rural character of the surrounding counties. Cookeville is the base for the professional, education and healthcare, entertainment and hospitality, retail, and public administration sectors, while the greater region is driven by agriculture, resource extraction, and manufacturing. This blend of urban-adjacent and rural economies creates a diverse but uneven workforce landscape.

The region has a labor force participation of around 52%, and as of July 2025,

unemployment in the region and state is slightly up and averaging between 4% and 5%. The ratio of the working population with a bachelor's degree or higher vs. high school graduates is about one-to-three.

▼ Population 25 years and over	54,713
Less than 9th grade	3,899
9th to 12th grade, no diploma	2,830
High school graduate (includes equivalency)	16,342
Some college, no degree	11,197
Associate's degree	3,018
Bachelor's degree	9,159
Graduate or professional degree	8,268
High school graduate or higher	47,984
Bachelor's degree or higher	17,427

Figure 3: Educational Attainment in Putnam County

As of 2025, in Putnam County, the top employers included Cookeville Regional Medical Center (1,600), Tennessee Tech University (1,500), The Putnam County Board of Education (1,200), Averitt Express (1,150), Atmus/Cummins Filtration (950). These employers span sectors of healthcare, education, trucking and logistics, and manufacturing, illustrating a diverse and comprehensive workforce base in the region. There is also a strong blend of both white collar and blue-collar jobs represented by employers.

Education

Putnam County and the surrounding area offer a strong and diverse education network. Students have access to comprehensive CTE programs throughout K–12, three Tennessee Colleges of Applied Technology (Livingston, McMinnville, and Crossville), and two Volunteer State Community College campuses (Cookeville and Livingston). At the top of this ecosystem is

Tennessee Tech University, the region’s flagship institution, which enrolls approximately 9,200 undergraduate and 1,300 graduate students each year.

While larger counties in the region like Putnam and Cumberland naturally report higher levels of educational attainment, the trend is even clearer when viewed geographically. Counties directly adjacent to Putnam—such as White, Cumberland, DeKalb, and Overton—tend to report higher bachelor’s degree attainment than the more rural, outlying counties. This suggests that Tennessee Tech’s presence in Cookeville not only elevates attainment locally but also exerts a positive spillover effect on neighboring communities. Moreover, across The Upper Cumberland, the share of residents with a college degree has increased over the last several years. This suggests that educational attainment in the region is on the rise, positioning the workforce for stronger participation in high-skill and technology-driven sectors.

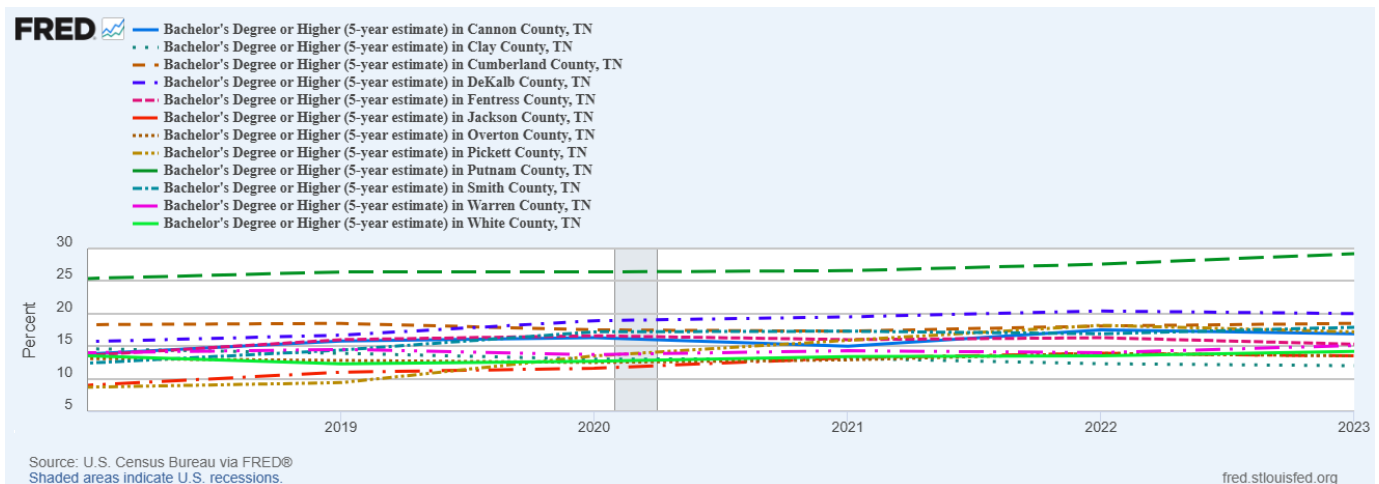


Figure 4: Educational attainment by county

The Role of Tennessee Tech University

In addition to its importance in education, Tennessee Tech University plays a major role in the local and regional economy as one of the top employers for educational faculty and staff with about 1,500 total employees throughout its system. Tech's major expansion of its facilities in recent years including new buildings for lab sciences, chemistry, engineering, and a new football stadium have proven to be major capital projects with a major economic impact on the local and regional construction sector as well.

Tennessee Tech serves as a major workforce pipeline, supplying professional, technical, and business talent to leading regional employers such as Averitt Express, ATC Automation, Atmus/Cummins Filtration, Tutco, and Flowserve. The university also plays a key role in strengthening the regional healthcare sector through its steady output of nursing graduates, many of whom serve at Cookeville Regional Medical Center. In addition, Tennessee Tech supports the broader education system by preparing teachers for area public schools, which rank among the largest employers across the Upper Cumberland.

Tennessee Tech is primarily known and more commonly recognized outside of the Upper Cumberland for its academic specialization in engineering. Nearly one third of its enrolled students study engineering and roughly 400 engineers graduate from the university annually. The university offers engineering concentrations in chemical, bio-molecular, chemical manufacturing, environmental, civil, computer, electrical, mechatronics, vehicle engineering, mechanical, aerospace, robotics concentration. Most recently, a nuclear engineering concentration has been added to the catalog. The most popular focus areas are mechanical, civil, and electrical engineering, both of which are listed in the top 10 highest enrolled undergraduate programs offered by the university.

The college of engineering encourages students to participate in cooperative education programs to attain real world experience through students partnering with some local industries as well as entities like TVA, Oak Ridge National Laboratory, Nissan, Bridgestone, etc. elsewhere throughout the state. Local employers with an engineering base include Ficosa (automotive), Aphena Pharma (pharmaceutical), Research Electronics International (electrical and computer), ATC Automation (mechanical, electrical), Atmus/Cummins (automotive), Tutco (mechanical), Flowserve (mechanical), Horman (mechanical), Whisper Aero (aerospace) and several others. Despite Tennessee Tech's strength as the state's leading producer of engineering graduates, gaps remain between the number and specializations of its graduates, and the skill demands of local industry. While elsewhere in the state, companies increasingly seek engineers in aerospace, nuclear, pharmaceutical, and computer disciplines, the local manufacturing base in the Upper Cumberland does not fully align with the emerging opportunities and the output from Tech.

Strengths of Tech for Economic Development

Tennessee Tech is strategically located nearby the booming engineering hubs of Oak Ridge and Huntsville, Alabama in an area that comprises the Tennessee Valley Corridor. Tech has displayed by its output of engineers and the successes of local, homegrown industry that it is a talent engine capable of bolstering a workforce pipeline in sectors that comprise the top employers in the region (education, healthcare, etc). Additionally, the university has a plethora of institutions like the TCATs and Vol State that focus on and offer certifications in manufacturing technology and ancillary disciplines for engineering projects. It also has precedence in serving and collaborating with the already established manufacturing base. In all, Tennessee Tech is well poised to continue to grow and sustain its supply to the regional workforce and economy proven success, existing relationships, and competent leadership.



Figure 5: ATC Automation—a local employer of engineers

Challenges Faced in Local Economic Development

One approach to further collaboration between industry and academia is by fostering a greater sense of entrepreneurial spirit within STEM programs. With incentives and emphasis placed on commercialization, licensing, and practical applications of research, the potential for startups and homegrown companies within the community would become more likely. A concerted effort to link entrepreneurship with academia would promote niche, in-group specialization within the engineering program. This alignment would increase the likelihood of retaining capable, relevant talent by creating clearer pathways from research to commercialization.

Perhaps the greatest challenge to talent retention and the development of a sustainable workforce pipeline in the Upper Cumberland is the absence of large-scale anchor employers in high-tech fields such as nuclear energy, aerospace, or pharmaceutical manufacturing. The region would benefit from either the recruitment of a national major-scale employer capable of catalyzing cluster development with adjacent manufacturing and educational partnerships; or

from a continued yet amplified strategy of recruiting smaller-scale operations whose combined demand would significantly expand opportunities for engineers across multiple disciplines.

Strategic Recommendations for Growing an Engineering Cluster

Examples from peer regions and scaling larger economies' practice models to fit the needs of the Upper Cumberland can provide insight on ways to more effectively retain the area's dense talent network and promote and grow economic development aimed at high tech, high skill projects. Huntsville, Alabama is a key city in aerospace and rocket propulsion engineering for NASA and the U.S. Army; the national anchors of United States Army Aviation and Missile Command and NASA's Marshall Space Flight Center have served as the springboard for the area's engineering and technology driven economy. While the scale and proportion of Huntsville are not likely to be recreated in Cookeville, the emphasis on the recruitment of a federal contract in a field like energy, aerospace manufacturing, defense could prove to be transformative in recruitment of ancillary projects. Landing a major project on the federal level would assuredly promote continued collaboration between industry, education, and research resulting in talent retention from Tech's engineering grads.

Oak Ridge, Tennessee is famously the home to Oak Ridge National Laboratory is perhaps the most prime example of collaboration between the government and an educational institute with the United States Department of Energy sponsoring research and development administered by UT-Batelle, LLC. These entities have combined public, private, and educational resources to facilitate some of the most large-scale, cutting-edge programs taking place anywhere in the world. Partnerships between these entities and sectors have proven key to advancing an engineering cluster economy in a city right up the road from the Upper Cumberland.



Figure 6: Oak Ridge National Laboratory

Austin, Texas's Austin Technology Incubator is a collaboration between Economic Development efforts and the University of Texas to foster commercialization of research-based innovations in technology, energy, healthcare, and more. The Upper Cumberland's Biz Foundry, in collaboration with LaunchTN and Tennessee Tech's Center for Rural Innovation, already provide technical assistance to local entrepreneurs and Tech faculty innovators. By continuing to scale these organizations, Putnam County and the surrounding region can further cultivate an ecosystem that supports public-private partnerships and positions the area for high-tech economic development.

The Economic Developer's Role

The Upper Cumberland has in place the foundational assets for a thriving engineering sector in addition to its already thriving sectors of healthcare, education, manufacturing, and transportation and logistics sectors. This paper has explored the gaps in the output of Tennessee Tech University graduates, specifically in engineering concentrations and opportunities for

employment in the region. While there is a solid foundation of existing engineering talent in the region, further growth is needed to truly retain a more significant portion of the talent that comes out of Tennessee Tech University.

The local economic developer has the unique role of overseeing the implementation of bringing ideas like this to life through the concepts explored within the Tennessee Certified Economic Developer Program. First, the local economic developer must ensure that the existing economic ecosystem is thriving through business retention and expansion strategies aimed at solutions to common problems and supporting existing businesses through ensuring a high quality of place and comprehensive community amenities.

Next, it is the economic developer's role to ensure that partnerships between public, private, and educational entities like Tennessee Tech are in place so they can understand what each other's role is and work together, playing to each other's strengths ensuring entrepreneurial startups or industries looking to relocate to the community have the resources, information, and assistance they need to execute a project. The economic developer also serves as the bridge between local stakeholders and state recruitment efforts. This means communicating local readiness and capabilities to state partners as well as ensuring a comprehensive inventory of sites—from greenfields to existing buildings for end users of all sectors—are available and competitive.

The local economic developer must also understand the necessary financial incentives commonly used in recruitment efforts and closing deals with prospects such as PILOTs, TIFs and other infrastructure agreements enacted by local Industrial Development Boards. Insight to and ability to execute these financial programs is a primary tool in the public sector's role in collaborative efforts aimed at economic development. From a workforce perspective, the

economic developer should play a role in understanding the workforce base and what types of projects it can handle, as well as what types of industry and scale of projects to pursue when opportunities arise. The economic developer should have a working relationship with educational institutions from secondary ed through vocational education and at the university level, understanding how to best align the programs available locally with a vocational and research pipeline for incoming industries.

Finally, the economic developer's role ultimately hinges on relationships. Economic development, as highlighted in this paper, is a vast network of many people and moving parts that each play a crucial role in implementing projects. From local elected leaders to state and regional partners, employers, educators, and ultimately the citizens whose livelihoods are affected, the economic developer must possess a comprehensive overview of all local assets they can leverage and act on with the goal of ensuring the long-term economic success of their community.

Conclusion:

Putnam County and Upper Cumberland have a strong foundation from an economic and community development standpoint. The area is poised for growth due to its attractive quality of life, an educated and capable workforce, and strategic location near Nashville, one of the fastest growing cities in the country. A unique advantage is Tennessee Tech University in Cookeville which serves as the pipeline for many industry sectors such as healthcare, education, and business. The field of study with the most students and graduates year over year is engineering, where there is a gap in available roles and jobs in the region. By harnessing collaboration between public, private, and educational institutions, Putnam County and the Upper Cumberland Region can continue to work with Tennessee Tech to foster cluster development and talent

retention in the area by recruiting projects that employ engineers en masse, promoting a stronger workforce pipeline and increased median household income. The local economic developer plays a pivotal role in facilitating and overseeing the collaboration across disciplines and relationships necessary to implement this strategy to reality, ensuring long term growth and economic sustainability in the region.

Resources:

ATC Automation. *Material handling capabilities.*

<https://atcautomation.com/capabilities/material-handling/>

Applied Research Laboratories, The University of Texas at Austin. *Applied Research Laboratories.* <https://ati.utexas.edu/>

Data USA. *Putnam County, TN profile.* <https://datausa.io/profile/geo/putnam-county-tn>

Federal Reserve Bank of St. Louis. *FRED county-level population data (vintage series).*
<https://fred.stlouisfed.org/>

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Tennessee Department of Labor & Workforce Development. *Labor force participation analysis.*
<https://www.tn.gov/workforce/tennessee-economic-data-/labor-force-participation-analysis.html>

Tennessee Technological University. *Center for Rural Innovation.*
<https://www.tntech.edu/research/economic-development/ruralinnovation/index.php>

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<https://www.tntech.edu/majors/index.php>

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U.S. Army Redstone Arsenal. *Homepage*. <https://home.army.mil/redstone/>

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<https://data.census.gov/all?q=S1501+Putnam+County+Tennessee>

Personal Communications

Aikens, Michael. *Director, Center for Rural Innovation, Tennessee Technological University*.

Personal communication.

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