
MAY 2023

REGIONAL COLLABORATION DRIVES ECONOMIC DEVELOPMENT: TULSA AND NORTHWEST ARKANSAS' FLAME PROPOSAL

HEARTLANDFORWARD.ORG



**HEARTLAND
FORWARD**

AN INSTITUTE FOR ECONOMIC RENEWAL

AUTHOR BIOS



Dave Shideler

David Shideler serves as the chief research officer for Heartland Forward's research team which includes visiting senior fellows Richard Florida and Maryann Feldman. With a mission to help improve the economic performance in the heartland and change the narrative of the middle of the country, the original research efforts focus on four key pillars: innovation and entrepreneurship, human capital, health and wellness and regional competitiveness.

Shideler joined Heartland Forward after more than a decade at Oklahoma State University, serving as a professor and Community and Economic Development Specialist in the Department of Agricultural Economics. In these roles, he oversaw projects in community and rural development and small business development, and published peer-reviewed research articles on the economic impacts of internet access, incentive programs, and local food production.

Shideler holds a Ph.D. in Agricultural, Environmental and Development Economics and an M.A. in Economics from the Ohio State University, an M.S. in Agricultural Economics from the Pennsylvania State University, and a B.S. in Community and Rural Development from Clemson University.



Ross DeVol

Since joining Heartland Forward in 2019, DeVol has raised the profile of Heartland Forward through media engagement with quotes in the New York Times, Wall Street Journal, the Economist and Axios, op-eds in the Dallas Morning News, Milwaukee Journal Sentinel, Chicago Tribune and Des Moines Register as well as TV appearances throughout the heartland. DeVol is a former chief research officer for the Milken Institute, an economic think tank headquartered in California, where he spent nearly 20 years. He oversaw research on international, national and comparative regional growth performance, access to capital and its role in economic growth, job creation and health-related topics. He has been ranked among the "Superstars of Think Tank Scholars" by International Economy magazine.

HEARTLAND FORWARD

AN INSTITUTE FOR ECONOMIC RENEWAL

ABOUT HEARTLAND FORWARD

Heartland Forward's mission is to improve economic performance in the center of the United States by advocating for fact-based solutions to foster job creation, knowledge-based and inclusive growth and improved health outcomes. We conduct independent, data-driven research to facilitate action-oriented discussion and impactful policy recommendations.

The views expressed in this report are solely those of Heartland Forward.



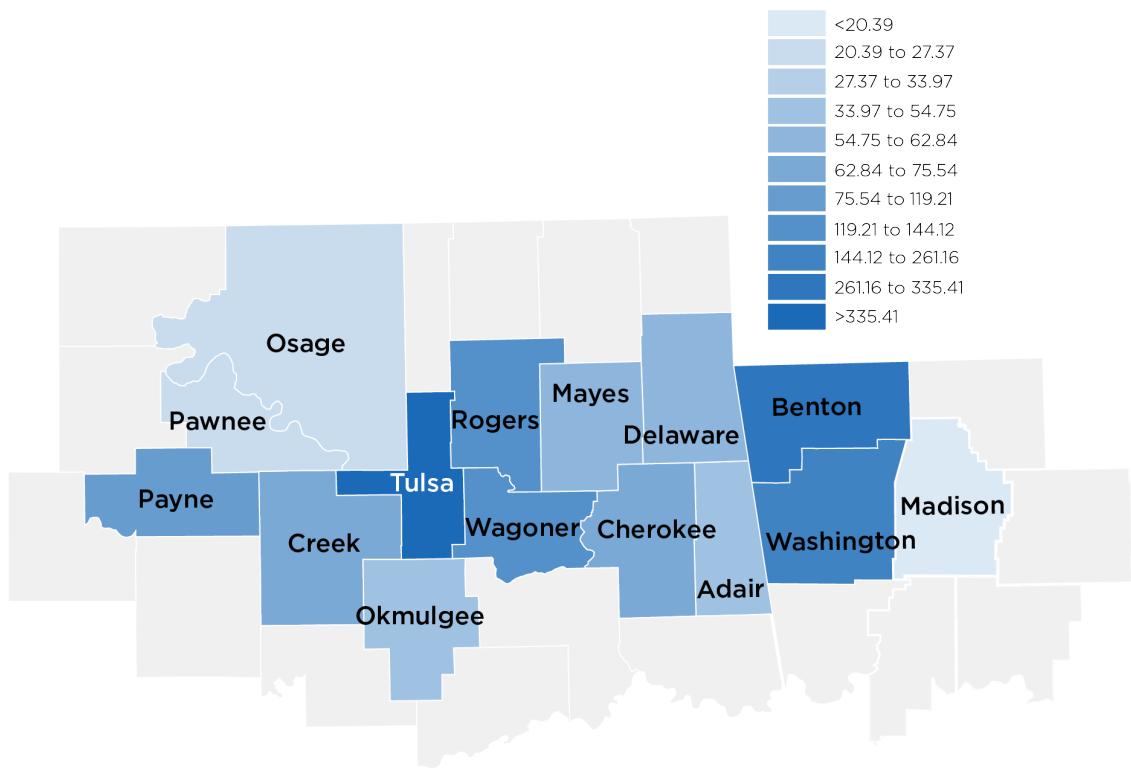


EXECUTIVE SUMMARY

Tulsa and Northwest Arkansas are embarking upon a novel cross-state, superregional economic development collaboration to create greater density of assets in order to build a logistics and advanced mobility cluster. In the past, jurisdictional geography boundaries have restricted attempts and success in forming broader asset pools to fill gaps in competency and compete against larger metropolitan areas in new cluster development. The Federal government’s renewed interest in place-based technology-focused economic development strategies through several [major pieces of legislation and policy](#) have fostered new attempts to overcome geographic challenges of cooperation.

Although their economic structures are dissimilar in many respects, serendipity was found in the technological advantages of drone use for surveying and reconnaissance in the oil and gas (Tulsa) industry and delivery of consumer packages (Northwest Arkansas). [Drone utilization](#), combined with other corporate investments in new technologies approaching \$1 billion in [fleet electrification](#) and [driverless trucking](#), hold the promise of building a bridge between Tulsa and Northwest Arkansas. This 412 Corridor superregional innovative cluster approach seems poised to capture a large portion of the future growth in this evolving sector and establish it as world leader.

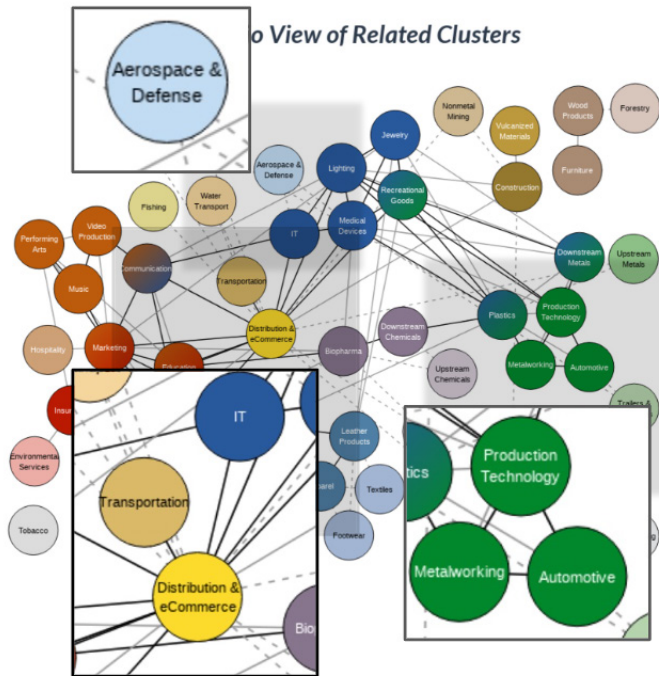
FIGURE 1: POPULATION DENSITY (PER SQ. MI.) 2020 CENSUS.



Source: U.S. Census Bureau, 2020 Decennial Census. Accessed via Lightcast.io, Q1 2023 Dataset, April 2023.

INTRODUCTION

FIGURE 2: RELATED CLUSTERS



Source: <https://clustermapping.us/cluster>

Collaboration between the Tulsa and Northwest Arkansas metropolitan areas is gaining momentum. Named for the highway that connects these two metro regions, the 412 Corridor formalized the relationship between regions with a [memorandum of understanding](#) signed by Governors Hutchinson and Stitt on August 17, 2022, to establish the “Silicon Valley of transportation and logistics,” building on the region’s expertise represented by major employers including American Airlines, Walmart and JB Hunt Transport Services. An application to the National Science Foundation’s (NSF) [Regional Innovation Engines \(RIE\) program](#), Future Logistics and Advanced Mobility Engine (FLAME) led by [Tulsa Innovation Labs](#) and [Northwest Arkansas Council](#) submitted earlier this year cemented partnerships across state boundaries and regulatory agencies to combine and enhance the workforce, research and commercialization infrastructures to actualize this dream.

NSF’s new Technology, Innovation, Partnership (TIP) Directorate established the Regional Innovation Engines program. The objective is to harness the nation’s vast and diverse talent pool to advance

critical and emerging technologies, address pressing societal and economic challenges, and accelerate the translation of research results from lab to market and society. TIP’s goal is to improve U.S. competitiveness, growing the U.S. economy and training a diverse workforce for future, high-wage jobs.

RIE aspires to catalyze and accelerate regional-scale, R&D-based innovation ecosystems (known as Engines) throughout the US that will:

- Advance critical technologies
- Address societal challenges
- Promote economic growth
- Enable job creation
- Cultivate regional talent

An Engine is a multi-sector coalition of regional partners working together to catalyze a regional innovation ecosystem in a topic area of regional relevance and national and societal significance. NSF will fund Engines with up to \$160M for up to 10 years.

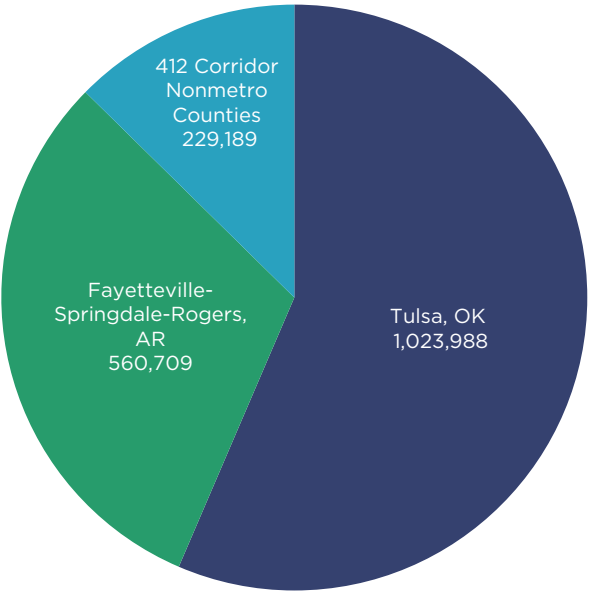
While Highway 412 has connected Tulsa with the Northwest Arkansas metropolitan area for years, with residents moving back and forth seeking retail and services, it wasn’t until recently the two regions recognized the potential for collaboration and economic growth. These regions are now closer than ever before, and the time is right for the regions to boldly collaborate in building the next iteration of the region’s economy.

Economic development strategies often rely upon concentrations of residents, industry and infrastructure. As of 2020, the Tulsa Metropolitan Statistical Area (MSA) had just over [1 million in population](#) across its seven counties, while the Fayetteville-Springdale-Rogers MSA had a [population of 547,000](#) in its three counties. Together, including the four Oklahoma counties separating the two MSAs (Adair, Cherokee, Delaware and Mayes) as well as Payne County, Oklahoma (adjacent to the Tulsa MSA on its western side, and home to Oklahoma State University, an

important asset in the growth of the region), the region boasts nearly 1.8 million people and generates \$98.5 billion in output. By collaborating, the 412 Corridor, as the region calls itself, creates a region of significant size capable of leveraging industry concentrations and infrastructure for economic growth.

FIGURE 3: POPULATION CHART

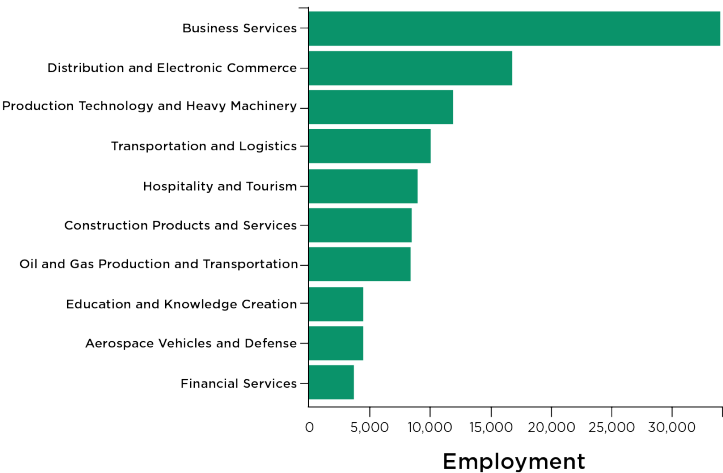
	TULSA, OK	FAYETTEVILLE-SPRINGDALE-ROGERS, AR	412 CORRIDOR NONMETRO COUNTIES
Regional Metrics Population (2021)	1,023,988	560,709	229,189



Source: U.S. Census Bureau, American Community Survey (ACS) 5-year Estimates, 2016-2021. Accessed via Lightcast.io, Q1 2023 Dataset, April 2023.

While Tulsa is associated historically with oil and gas extraction, the region developed supporting services to oil and gas that diversify its economy and contribute to its growth. Specifically, business services, distribution and electronic commerce, production technology and heavy machinery, transportation and logistics and hospitality and tourism comprise the five largest industry clusters and employ 1 in 5 workers. Tulsa’s selection for the Build Back Better Challenge focused on Advanced Mobility marks a unique opportunity to enhance existing transportation and aerospace assets while building infrastructure and training/upskilling its workforce.

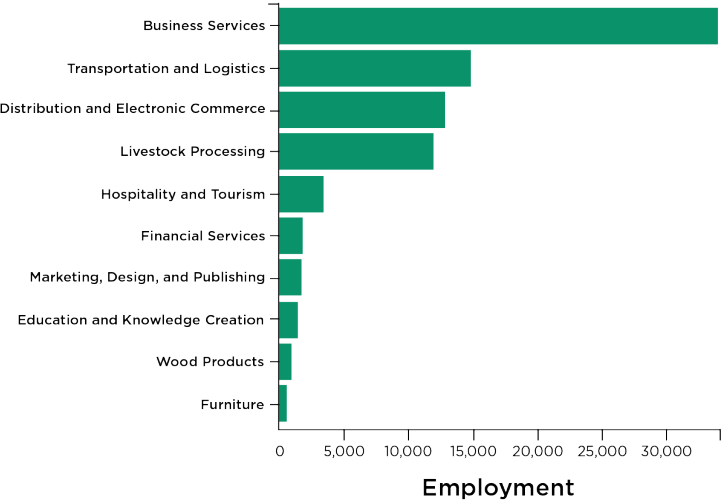
FIGURE 4: TULSA’S TOP CLUSTERS BY EMPLOYMENT



Source: U.S. Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School. [Data Sources](#)

Northwest Arkansas is often associated with its three Fortune 100 companies: Walmart, Tyson Foods and JB Hunt Transport Services. These firms drive the regional economy, as reflected in the top five industry clusters by employment: business services, transportation and logistics, distribution and electronic commerce, livestock processing and hospitality and tourism. These five industries employ 1 in 3 workers.

FIGURE 5: NORTHWEST ARKANSAS TOP CLUSTERS BY EMPLOYMENT



Source: U.S. Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School. [Data Sources](#)

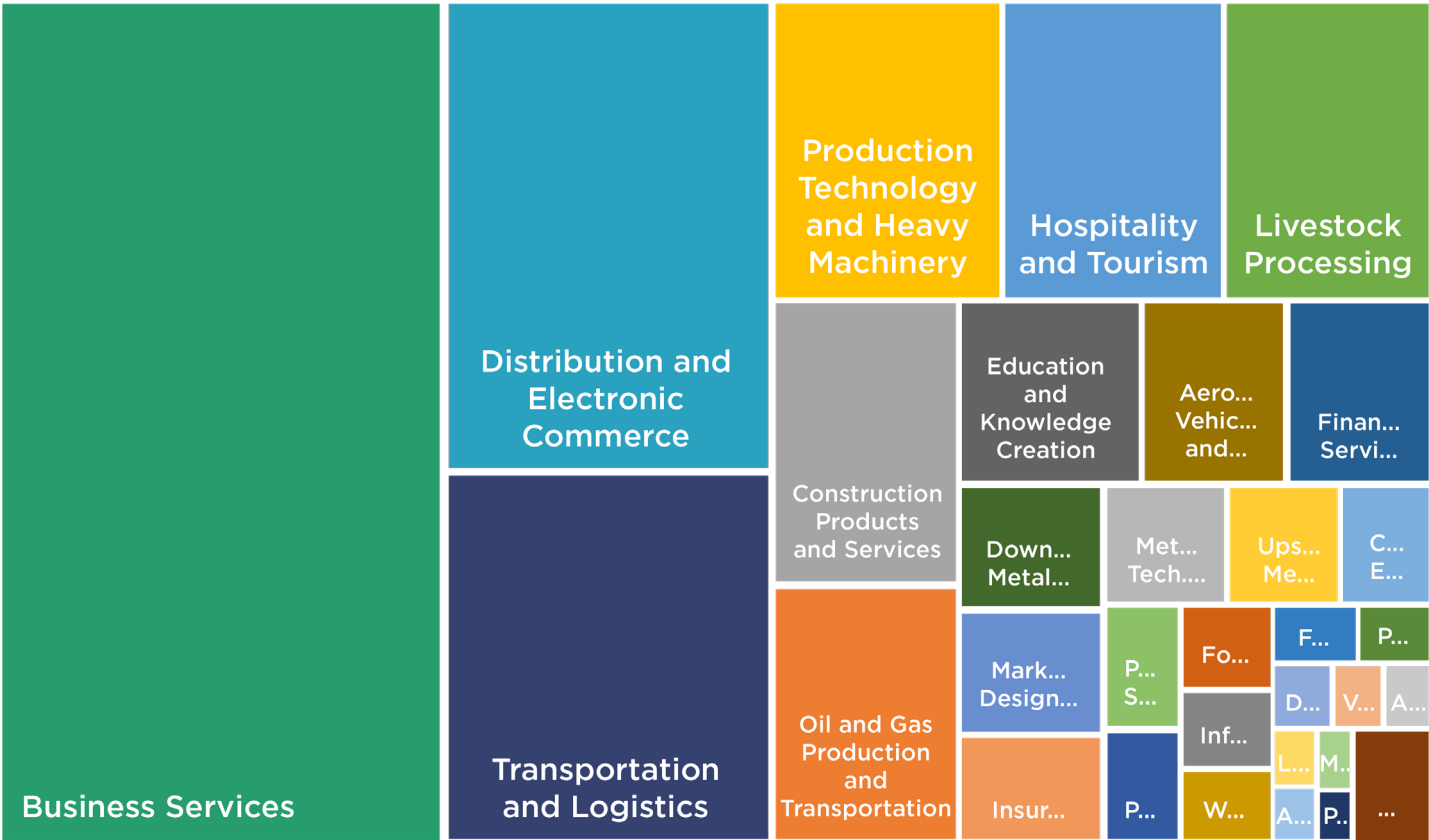
While the two regions appear similar, as four of the five top industry clusters are the same between the regions, there are significant differences worth explaining. Starting with the two different industry

clusters, production technology and heavy machinery industry cluster in Tulsa, as well as the other large clusters, primarily supports the extraction, storage and distribution of oil and gas and other commodities in and out of the region. Livestock processing in Northwest Arkansas traces its beginnings back to the early 1930s, when John Tyson relocated his family and began an egg and hatchery business that grew to become Tyson Foods; in addition to Tyson Foods, the region is home to a number of other significant poultry producers and processors including Simmons Foods, George's, Inc. and Cobb-Vantress, Inc.

Northwest Arkansas provides world-class clusters in corporate management and logistics, both which are expected to be significant growth industries for the

future. Supply chain management is also an area of research focus for the University of Arkansas. Further, the University of Arkansas' Sam M. Walton College of Business [boasts the top undergraduate program in supply chain management](#) in the U.S. Plug and Play's program in Northwest Arkansas is improve the connectivity in the innovation space. Originally, the Plug and Play program was initiated in Silicon Valley. The Plug and Play Tech Center is an entrepreneurial accelerator that serves as a matchmaker between selected startups in the logistics, supply chain and technical support sectors. It could bring a new breed of technology-focused logistics talent, one with intensive entrepreneurial acumen, into the superregion.

FIGURE 6: HAPPENING NOW BOX CHART



Source: Generated from data provided by Lightcast.io. Q1 2023 Dataset, April 2023.

THE OPPORTUNITY

Both regions depend upon transportation and logistics to export their goods and services to the rest of the world. However, the modes of transportation in each location are vastly different. The Port of Catoosa serves Tulsa, and surrounding regions, as an intermodal transportation hub linking barge and rail transportation and providing commodity transport to the Gulf of Mexico via the McClellan-Kerr Arkansas River Navigation System and the Mississippi River; additionally, the Tulsa International Airport is home to American Airline's largest aircraft maintenance facility. Northwest Arkansas' transportation infrastructure is focused almost exclusively on truck transport and distribution services, though the Northwest Arkansas National Airport provides substantial commercial passenger air transport services, as well. These differences largely reflect the historic differences in the nature of the products originating in each region.

TRANSPORTATION & LOGISTICS



Port of Catoosa
Year-round service (ice free), Foreign Trade Zone 53 exempt.



TUL & XNA Airports
Providing cargo and passenger transport throughout the U.S.



JB Hunt x U of Arkansas
The collab creates the #1 college to study supply management.

Similarly, the corporate infrastructure of the two regions reflects the industries upon which the regions grew. Being built upon oil and gas extraction, which is inherently a decentralized industry involving individual mineral rights owners, equipment owners, distribution channels and refining, Tulsa developed corporate support and financial services businesses to facilitate coordination and financing across the agents and need for large amounts of capital. Conversely, the success of Walmart, Tyson Foods and JB Hunt Transport Services has spurred growth in the region through the corporate headquarter functions in the region; the vertical integration of these firms reflects competitive forces and differential skills required in these industries to maintain a competitive advantage. For example,

trucking's share of employment in Northwest Arkansas is more than [seven times the national average](#).

AAM



Skyway 36
Offering a 3000 ft drone runway and a unique urban/rural environ for testing



OSU USRI
Nurtures unique ideas and reserach in autonomous systems technology.



DroneUp & Zipline
Leaders in commercial innnovation partnering with Walmart across 6 states.

However, technology and innovation are creating opportunities that benefit the economic evolution of both regions, making now an exciting time for collaboration and alignment between the two regions. Oil and gas and financial services in Tulsa, and agriculture, retail and transportation and logistics in Northwest Arkansas are utilizing similar technologies, leading to similar workforces and supply chains across these sectors and regions. For example, drones are being used for oil and gas pipeline surveillance and retail product delivery, and autonomous vehicles rely on artificial intelligence advances also being used in financial analysis and agriculture. These technologies also hold promise of future innovations supporting new forms of transportation, particularly between cities. It's not surprising, then, that Governors Hutchison and Stitt signed a memorandum of understanding to create an advanced mobility cluster that will make the region the "Silicon Valley of transportation and logistics" (Cyrus Sigari, August 18, 2022).

Moving people and goods cleaner, faster, safer, and at lower-cost will benefit everyone, everywhere," Sigari said. "What is happening here is special: intentional collaboration, meaningful investments, and strategic partnerships like this position the Oklahoma-Arkansas region to become the Silicon Valley of transportation and logistics."

A VISION FOR THE FUTURE

To accomplish this aspiration, the combined assets, talents and leadership across both regions is needed. Tulsa's aviation focus and heavy transportation manufacturing complement the logistics capacities found in Northwest Arkansas, such that the 412 Corridor provides a vertically integrated cluster around advanced mobility. The region took a significant step forward formalizing this cluster and collaboration with its recently submitted Future Logistics and Advanced Mobility Engine (FLAME) proposal to the National Science Foundation's Regional Innovation Engines Program.

FLAME's efforts will lay the necessary scientific, industrial, and regulatory groundwork to move people and goods at scale, create equitable economic opportunity, mitigate emissions, and create an innovation ecosystem that serves as a national model for multistate economic development. These efforts will focus on use-inspired challenges in five technology areas: 1) new modes of transportation, 2) sustainable power sources, 3) integration of future transportation into existing infrastructure, 4) enhanced monitoring and navigation capabilities, and 5) proven safety and security technology.

To address these **technology challenges**, a new organization will be established to oversee the Engine's activities, explicitly focused on being super-regional and ecosystem oriented, and ensuring **diverse, equitable, inclusive and accessible (DEIA)** participation. This organization will be responsible for four key tasks associated with the development and promotion of the **Logistics and Advanced Mobility industries**:



Establish the **Advanced Mobility Research Consortium** to coordinate research across the region's universities. The Consortium will administer **three grant programs** to support research and development at regional institutions and to expand access for diverse groups of researchers at non-R1 institutions. Further, FLAME will engage with industry in driving use-inspired research.



Establish a **Workforce Center of Excellence (COE)** to support superregional workforce development capacity, integrate research into programs, and expand wraparound services. The COE will also support the establishment of **Skillways for Future Logistics and Advanced Mobility**, an online platform to help workers navigate training and education opportunities, and support Skillways with a wraparound services strategy targeted at ensuring access and support for underserved communities. FLAME will conduct regular data analysis to ensure the super-region's programs align with industry needs. Diversity, equity and inclusion must be at the center. This workforce development approach will allow Hispanics, tribal members, Blacks and other minority populations to obtain middle-class skills and jobs.



Establish a **Technology Integration Hub**. The Hub will work hand in hand with the Consortium to drive translation activities across the super-region. It will also administer grant programs to support technology transfer offices at regional universities and support diverse groups of entrepreneurs and founders representative of the population. Additionally, FLAME will directly support expansion of superregional incubator and accelerator capacity.



Establish an Industry Council to engage industry partners in all of the Engine's activities; within the Council, a partnership team will expand local partnerships, especially with nontraditional partners such as minority-serving institutions and Historically Black Colleges and Universities (HBCUs); conduct a critical infrastructure assessment and develop a strategic roadmap for infrastructure investments; and conduct traditional ecosystem development activities, such as conferences, convenings, and promotional campaigns.



The superregion has unique end-user-demand and aerial-testing assets which serve to differentiate it from other regions. Walmart launched a major [consumer drone delivery initiative](#) in 2022. With over [90% of Americans living within 10 miles of a Walmart or Sam's Club store](#), its influence on the evolution of the technological pathway of drone development will be enormous. Walmart began operating drone delivery in 7 states supplied by DroneUp, Flytrex and Zipline. Walmart sees goods delivery facilitated by drones as a necessity in its competition with Amazon. Walmart could be the largest private-sector purchaser of drones and package delivery electric vehicles through companies such as Canoo, also based in the region.

Tulsa contains one of the leading air testing assets in the nation (Skyway 36)—its visual line of sight flight corridor used by fixed-wing planes, drones and next-generations passenger craft. The 114-nautical mile corridor is the second largest in the nation, eclipsed only by one in North Dakota. This facility, in addition to drones, will test larger electric vertical takeoff and landing (eVTOL) craft. University R&D resident in the region will be scaled to aid in this collaborative effort. The region's unique strengths are supported by Oklahoma and Arkansas being [ranked first and second](#), respectively, in preparedness for drone commerce.

These strengths and strategies aim to build regional capacity and critical mass in the Logistics and Advanced Mobility industries. As a result, the 412 Corridor will possess the skilled workforce, research and innovation centers, core industry and specialized support businesses and regulatory environment incentivized to promote the cluster across states. Such a combination of organizations should stimulate innovation, upward mobility and position the region as a world leader in this emerging field.

Collaboration is not just warranted by the economic motivations. Both regions benefit from philanthropic institutions with strong commitments to the communities in which they operate. These philanthropic organizations not only provide funding and leadership to enhance the quality of life in both regions, but they are also actively engaged to ensure that all residents share in regional successes.

The [George Kaiser Family Foundation](#) (GKFF) provides funding to support many of the talent, entrepreneurial and early-stage risk investment initiatives in the Tulsa region. The [Walton Family Foundation](#) (WFF) provides funding for its Home Region—three Mississippi River Delta counties and Northwest Arkansas—the environment and K-12 education initiatives along many dimensions. Another key link in the 412 Corridor is Helen (Robson) Walton, wife of Sam Walton. Helen was from the Tulsa area, and she was the catalyst for the formation of WFF. GKFF and WFF are partnering to bring affordable, high-speed internet to Oklahoma and Arkansas for low income and rural residents. Efforts by these philanthropic organizations and others in the 412 Corridor span from investments in early childhood education, affordable housing, talent attraction and outdoor recreation (including programs to provide free or low-cost equipment for youth and limited-resource individuals).

Additionally, the 412 Corridor is in a natural wonderland consisting of the Ozark Plateau (consisting of the Ozark and Boston Mountains), Grand, Beaver and numerous smaller lakes and numerous streams and rivers that provide endless opportunities for hiking, biking, fishing and other outdoor recreation. Northwest Arkansas possesses over 400 miles of multipurpose trails, which has not only attracted enthusiasts and competitions to the region, but it is now seeing specialized manufacturing of outdoor equipment and apparel catering to them, resulting in additional economic growth.

Momentum is building upon Tulsa and Northwest Arkansas' existing and emerging industries, natural amenities and quality of life and philanthropic support to lead the development of next generation logistics, distribution and transportation. This collection of high-tech transportation and logistics assets make the superregional approach a good bet. The 412 Corridor collaboration provides the concentration of workforce, industry, academic and other institutions necessary to catalyze the region's cluster development, maintain its desirability as a place to live and lead the nation in advance mobility technologies.

CONCLUSION

Economic developers would be wise to take note of the synergies developing between Tulsa and Northwest Arkansas. The 412 Corridor is slated to benefit from private investments in new technologies, particularly in logistics and mobility that could lead the country in technological advancements and regional cooperation. In addition, the 412 Corridor has a resilient employment ecosystem with the anchors of major corporations headquartered in both Tulsa and Northwest Arkansas, strong philanthropic ties and natural amenities that make the area appealing for businesses and residents.

With the opportunity for a cross-sector group of local organizations known as the Future Logistics and Advanced Mobility Engine (FLAME) to potentially receive the National Science Foundation's (NSF) Regional Innovation Engines (RIE) program award, the region will enhance its workforce, research and commercialization infrastructures into the future.



**HEARTLAND
FORWARD**

AN INSTITUTE FOR ECONOMIC RENEWAL

HEARTLANDFORWARD.ORG