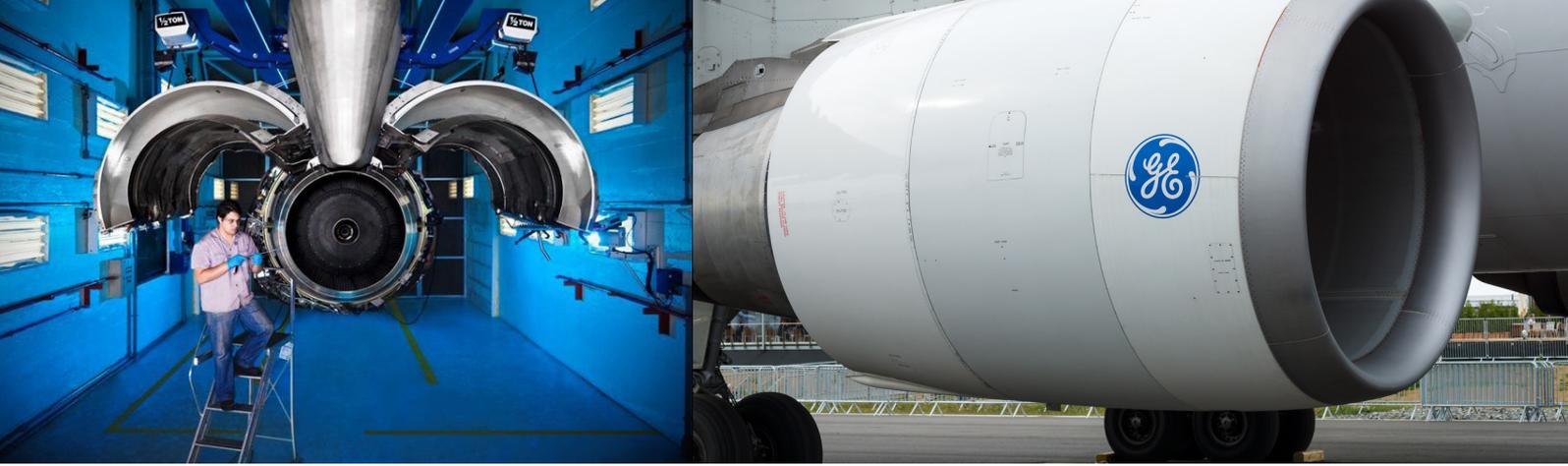


Aerospace and Defense in Kentucky



TEAM 
KENTUCKY
CABINET FOR ECONOMIC DEVELOPMENT



Industries on the Rise

Kentucky's reputation for bourbon, horses and even automotive production is well known. What you may not know is that Kentucky has greatly expanded its aerospace and defense presence in recent years, and aerospace products and parts are the commonwealth's top export.

Defense spending supports
50,000+ JOBS

\$7.7 B
in aerospace
products and
parts exports

119%
increase in aerospace
exports since 2011

Kentucky is home to over
**100 AEROSPACE &
DEFENSE-RELATED
FACILITIES**

Kentucky's aerospace
and defense facilities
employ over
20,000

Aerospace products
are Kentucky's
#1 EXPORT

Kentucky Aerospace and Defense Spotlight

Aerospace-related companies have invested roughly \$2.7 billion in Kentucky since 2014. Located throughout the commonwealth, more than 100 aerospace-related companies employ over 20,000 Kentuckians and provide products and services used globally. Examples include:

- Aviation Safety Systems in Nicholasville designs, tests and produces emergency recovery systems (parachutes) for aircraft and Urban Air Mobility (UAM) vehicles
- Ensign-Bickford Aerospace & Defense Company in Graham produces explosives and energetic systems
- HDT Global in Florence manufactures military air conditioning, heaters, decontamination units, trailers and ground support equipment.
- Commonwealth Rolled Products in Lewisport manufactures aluminum products for aerospace

Companies such as Safran Landing Systems, GE Aviation, Lockheed Martin and Mazak, plus worldwide shippers DHL and UPS, have found a home here due in large part to Kentucky's expertise, which includes:

- Aircraft brakes and brake components
- Jet engine manufacturing
- Satellite production
- Control systems
- Composites manufacturing
- Aerospace engineering
- Starting systems
- Aerospace composite manufacturing
- Plastics manufacturing
- Powder coatings
- Blades
- Defense systems
- Kinetic mesh communication networks
- Maintenance and ground support
- Aerostructure components
- Engineered thermal spray coating
- Turbines
- Weapons systems
- GPS systems
- Helicopter repair
- Systems wire harnesses
- Drone video and mapping support
- Nuclear material-scanning units
- Camouflage net systems

GLOBALY
CONNECTED



Belcan



Raytheon



MEGGITT



Mazak
MACHINE TOOLS

Humana



BECHTEL PARSONS
BLUE GRASS

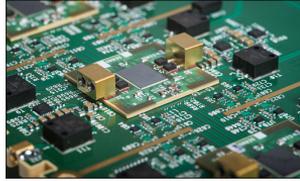
Made in Kentucky

Located throughout the commonwealth, over 100 aerospace and defense companies provide products and services used globally and employ over 20,000 Kentuckians.



Aircraft brakes

Made by Meggitt in Danville



Defense systems

Made by BAE Systems in Louisville



Aircraft engines & components

Made by GE Aviation in Madisonville



Kinetic mesh networks

Made by Rajant in Morehead



Turbines parts

Made by Meyer Tool in Erlanger



Control systems

Made by Aventics in Lexington



Aircraft maintenance & repair

Serviced by FEAM Aero in Erlanger



Aluminum products for aerospace

Made by Aleris in Lewisport



Ultra-Lightweight Comouflage net systems

Made by Fibrotex USA in Stearns



Naval defense weapons

Made by Raytheon in Louisville



Aircraft landing systems

Made by Safran in Walton



Nuclear material-scanning units

Made by Dropbox Inc. in Worthington



Precision-machined components

Made by Whitworth Tool in Hardinsburg

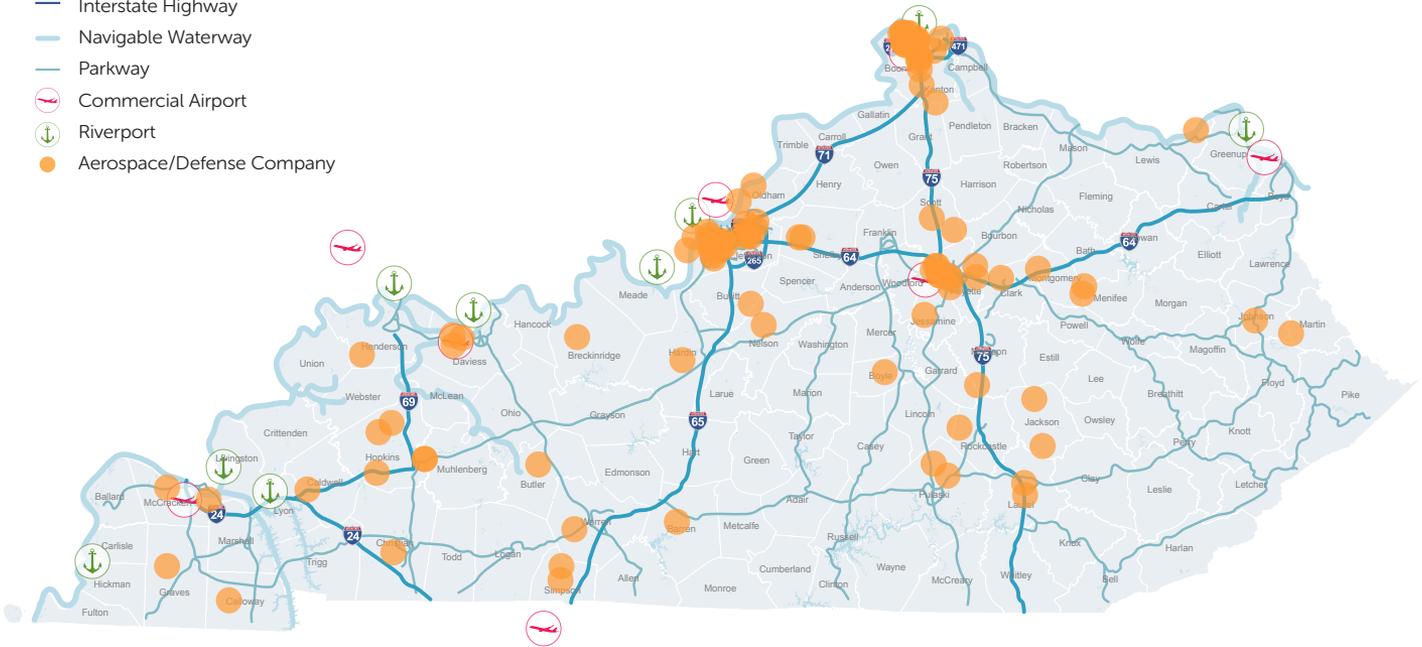
NEARLY \$2.7 BILLION

invested by aerospace and defense companies in Kentucky over the past seven years.

Aerospace and Defense Companies in Kentucky

KEY

- Class I Railway
- Interstate Highway
- Navigable Waterway
- Parkway
- ✈ Commercial Airport
- ⚓ Riverport
- Aerospace/Defense Company



INVESTMENT FACTS

Major aerospace investments in the last 5 years (2016-2020)

UPS WORLDPORT | \$750 Million

SAFRAN LANDING SYSTEMS | \$150.3 Million

MEGGITT | \$82.6 Million

State of Resources

KENTUCKY'S ABUNDANCE OF RAW MATERIALS

Aerospace and defense manufacturers alike need consistent access to primary metals, rubbers and plastics, and Kentucky has numerous suppliers to provide those resources. Kentucky's suppliers provide state-of-the-art technology to fit any company or contractor's requirements no matter how specialized.



Aluminum

- ✔ More than 180 aluminum-related facilities with more than 20,000 full-time employees.
- ✔ Kentucky exported \$232.6 million worth of aluminum in 2020.



Steel

- ✔ Steel in Kentucky is becoming lighter and stronger, expanding to include a lighter and high-strength variety.
- ✔ Kentucky has 42 steel and iron production companies, employing more than 5,000 full-time workers.
- ✔ Kentucky exported nearly \$308.3 million worth of iron and steel in 2020.



Rubber + Plastics

- ✔ Kentucky is home to 200 rubber and plastics manufacturers with nearly 30,000 full-time employees.
- ✔ Kentucky exported more than \$903.6 million in rubber and plastics in 2020.

Exports

In addition to Kentucky's central US location, part of our logistics success lies in our ability to ship products anywhere in the world virtually overnight. Kentucky hosts global shipping hubs for three logistics giants - DHL, UPS and Amazon Air – plus several FedEx ground facilities. In addition, our extensive shipping network of interstates, rail and waterways guarantee fast shipping anywhere in the US.

Top 10 export destinations

Kentucky-made aerospace products



1. UNITED KINGDOM | \$1.81 billion

2. FRANCE | \$1.37 billion

3. BRAZIL | \$1.35 billion

4. CHINA | \$672 million

5. SINGAPORE | \$337 million

6. MALAYSIA | \$304 million

7. GERMANY | \$303 million

8. UNITED ARAB EMIRATES | \$255 million

9. CANADA | \$242 million

10. NETHERLANDS | \$171 million

EXPORT FACTS

Aerospace products
are Kentucky's
#1 EXPORT

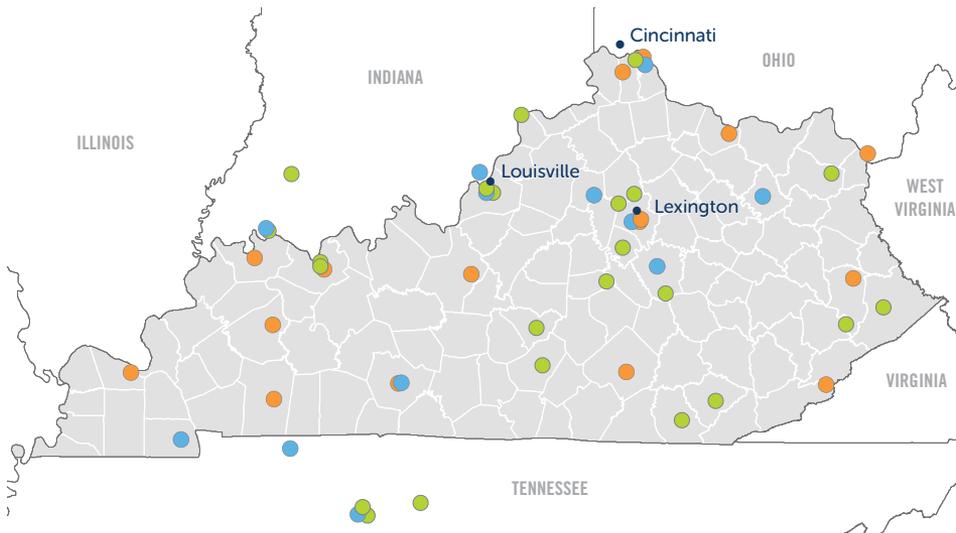
\$7.73 BILLION
in aerospace
exports

119%
increase in aerospace
exports since 2011

Revving up the Workforce

A highly skilled and available workforce is the engine that drives Kentucky's economy. Our statewide system of colleges and universities educates and trains our young people to enter the workforce more prepared than ever.

An abundance of engineering degree programs are available at Kentucky's colleges and universities, including specialized chemical, electrical, industrial, mechanical and materials engineering bachelor's and master's programs, as well as an engineering physics bachelor's program. Nine colleges and universities in Kentucky offer undergraduate engineering degrees and three also provide graduate programs, including an individualized engineering program. The University of Kentucky and University of Louisville also offer doctorate programs.



KEY

- Public University-College
- KY Community & Technical College System
- Private University-College

SKILLED WORKERS IN KENTUCKY

Title	Jobs
Industrial Machinery Mechanics	8,465
Computer Systems Analysts	5,326
Engineers	18,765
Aerospace Engineering & Operations Technologists & Technicians	100
Software Developers	13,038
Computer Programers	1,521
Architectural & Engineering Managers	1,868
Aircraft Cargo Handling Supervisors	524
Aircraft Mechanics & Service Technicians	1,930
Aircraft Assemblers	346
Avionics Technicians	101
Airfield Operations Specialists	238

Source: Chmura Economics & Analytics/
JobsEQ, 2020 (Q3)

In addition, the Kentucky Community and Technical College System (KCTCS) offers a variety of manufacturing-specific academic programs that combine classroom instruction with practical experience. These include:

- Advanced Manufacturing Technician
- Computerized Manufacturing Machining
- Welding Technology
- Industrial Maintenance Technology
- Manufacturing Industrial Technology
- Additive Manufacturing
- Manufacturing Electrical Technology

Kentucky Skills Network

Once students are educated, the Kentucky Skills Network allows employers to find and train the best and most qualified workers through a customized and streamlined approach.

The Kentucky Skills Network is an innovative statewide system of workforce professionals who help employers recruit, hire and train employees for the careers of today and tomorrow. Kentucky Skills Network services include:

- No-cost recruitment and job placement services
- Customized training at reduced or no cost
- Training incentives for internal training needs
- Workforce preparation initiatives such as job placement assistance, apprentice-style education and community readiness programs
- Last year, the Kentucky Skills Network provided training to 84,000 Kentucky workers and assisted 5,600 companies.

Certifying the Workforce

Kentucky's communities are stepping up to the plate when it comes to demonstrating the quality of their workforce. The state's Work Ready Communities program – the most rigorous workforce certification program in the nation – is inspiring meaningful dialogue and action by community, education, government and business leaders across the commonwealth.

A Kentucky Work Ready Community certification is a measure of a county's workforce quality. It is an assurance to business and industry that the community is committed to providing the highly skilled workforce required in today's competitive global economy. There are two levels of certification – counties can apply to be a Kentucky Work Ready Community or a Kentucky Work Ready Community in Progress.



KENTUCKY
Work Ready 
COMMUNITIES

43

Work Ready
Communities

52

Work Ready in
Progress

25

Communities with
letter of intent or in
formative stage



The certification measures high school graduation rates, National Career Readiness Certification completion, community commitment to workforce development, educational attainment, soft skills development, and internet accessibility. This initiative encourages counties to take a credible inventory of the current and future workforce, identify gaps and carry out strategies to achieve a more knowledgeable, trained workforce.

Three-fourths of Kentucky's counties already certified as either Work Ready or Work Ready in Progress, and the remainder of the state's counties in some stage of the journey, Kentucky is proving workforce preparedness is not just lip service.

Source: Kentucky Education & Workforce Development Cabinet

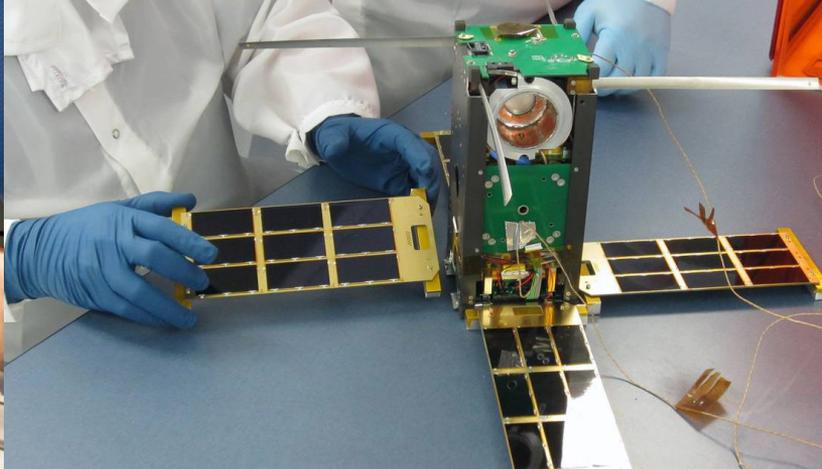
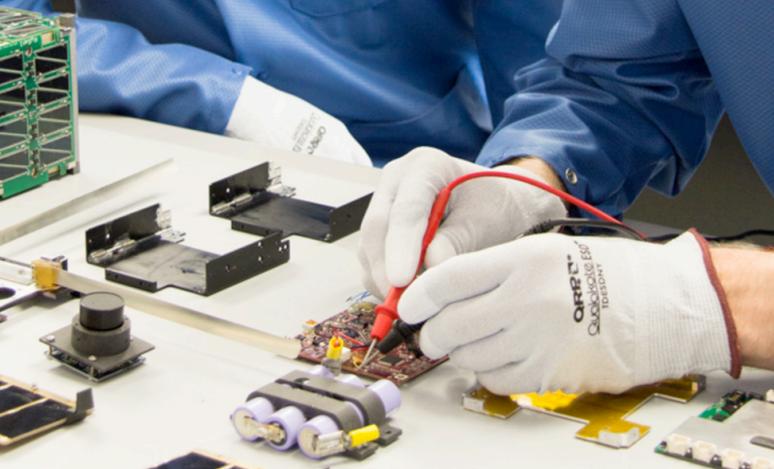
Workforce Training: A Program for Industry, by Industry

Imagine being able to train your future workforce while they're still in school. That's the KY FAME model.

The Kentucky Federation for Advanced Manufacturing Education (KY FAME) is an industry-led partnership that includes manufacturers, educational and workforce institutions and the Cabinet for Economic Development to create a pipeline of skilled workers.

KY FAME offers a dual-track, apprenticeship-style training program. Students attend classes two days per week at their local community and technical college and work three days a week for a sponsoring employer. Students completing the program receive an associate degree in applied science and real-world work experience. Armed with this unique skillset, they have the option of choosing to pursue a four-year degree, enter the workforce or continue down both paths.

KYFAME 



Conducting Research that is Out of this World

Kentucky's colleges and universities are conducting unprecedented research and training students on the latest advances in aerospace technology. This is leading to groundbreaking progress on products being used worldwide. Here are a few examples of their contributions to the aerospace and defense industry.

Morehead State University

Morehead State University is one of the leaders in CubeSat and other small satellite technologies, and is now part of the NASA Deep Space Network (DSN). Seven satellites have been launched to date.

Western Kentucky University

Western Kentucky University (WKU) and UofL are also conducting International Space Station (ISS) experiments to understand collid material behavior to enhance solar cell performance.

University of Kentucky

The University of Kentucky (UK) has led the development of Next-Generation Entry Thermal Protection. UK also runs NASA Kentucky and has done extensive research in UAVs and Drones.

Eastern Kentucky University

Eastern Kentucky University (EKU) is a national leader in pilot training through its aviation program.

University of Louisville

The University of Louisville (UofL) supports research in micro and nanotechnology and supports a nationally rocketry program.

Murray State University

Murray State University has developed an Aerospace Engineering track, focusing on the physics of the discipline.

Kentucky's Global Reach

Kentucky also provides an alternative for international shippers that have limited access to overly crowded ports on the east and west coasts. Bordered by three important commercially navigable rivers (the Ohio, Mississippi and Big Sandy), and providing access to nine public riverport facilities, Kentucky offers an expedient two-way route between the inland markets of America's heartland and major ports on the Gulf of Mexico.

The bottom line is this: a product made in Kentucky can get anywhere in the world in a matter of hours.



Kentucky is located within a
**DAY'S DRIVE OF
2/3 OF THE
U.S. POPULATION**



Some of the nation's
LARGEST CITIES
are located within a
TWO-HOUR FLIGHT
of Kentucky



Kentucky is located at the
**CENTER OF A
34-STATE
DISTRIBUTION AREA**
in the Eastern U.S.



LOGISTICS FACTS

HIGHWAYS & BYWAYS

10 interstates + 10
state parkways

GLOBAL SHIPPING HUBS

UPS, DHL and
Amazon Air

AIRPORTS

5 commercial, including
2 international and 60+
general aviation

WATERWAYS

Over 1,000 miles
of commercially
navigable waterways
11 active/developing
riverports

RAILROADS

Over 2,600
miles of freight rail

PUBLIC ROADS

80,000 miles
of public roads



Logistics Leads the Way

In addition to Kentucky's central U.S. location, part of our logistics success lies in our ability to ship products anywhere in the world virtually overnight. Kentucky hosts global shipping hubs for three logistics giants – DHL, UPS and Amazon Air – plus several FedEx ground facilities. In addition, our extensive shipping network of interstates, rail and waterways guarantees fast shipping anywhere in the U.S.

Amazon



64

planned
daily flights



1.5M

packages
delivered daily

DHL



438

flights arrive &
land daily



95K

packages
processed daily

UPS



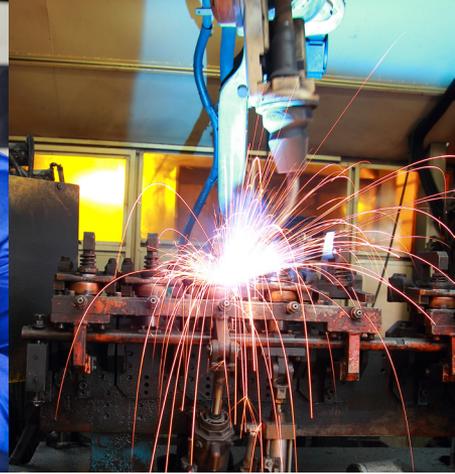
380+

flights arrive &
land daily



5M+

packages
processed daily



Manufacturing Strengths

Kentucky's expertise, workforce and personalized service are major factors in our ability to maintain and grow a prominent position in the manufacturing industry. In addition, our business costs can help a company's profits skyrocket.

Global companies have discovered the value of locating in Kentucky. Currently, more than 500 Kentucky manufacturing, service and technology-related businesses are internationally owned, representing 32 countries.

Kentucky ranks among the leading manufacturing states with 13% of its workforce in manufacturing, versus 8.5% nationally. A recent nationwide state-by-state comparison by Ball State University gives Kentucky an "A" ranking for both manufacturing and logistics industry health.



4,500
Manufacturing
facilities in Kentucky



\$1.57 BILLION
Manufacturing
projects announced
in 2020



260,000
Kentuckians
employed in
manufacturing



13%
Of Kentucky's
workforce employed
in manufacturing



67%
Of 2020 projects in
manufacturing



3,952
Manufacturing jobs
announced in 2020

Lowering the Cost of Doing Business

The commonwealth has consistently offered one of the lowest overall costs of doing business in the Eastern United States.

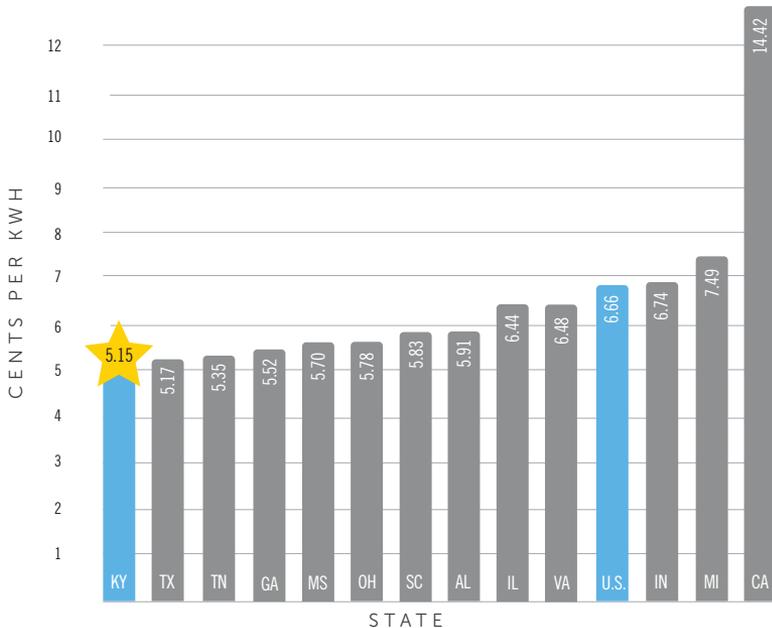
- Ranked first in the U.S. in cost of doing business (CNBC)
- Kentucky's 1,000-plus miles of navigable waterways provide cost-effective shipping of bulk goods
- Labor costs are 20% below the U.S. average (Source: JobsEQ, 2020 (Q3))

A Powerful Comparison

Kentucky's power costs also play a significant role in corporate growth. Our industrial electricity rates are the lowest east of the Mississippi River and among the lowest in the country.

INDUSTRIAL ELECTRICITY AVERAGE PRICE

Energy Information Admin., average price by state, released 2020



BUSINESS CLIMATE FACTS

"A" GRADE

Kentucky gets an "A" grade in manufacturing and logistics health
Center for Business and Economic Research

18.9% GROWTH

Kentucky's manufacturing share of total GDP (18.9%) has grown nearly twice the national average (11.7%) since 2010

U.S. Bureau of Economic Analysis

10.3% LOWER

Kentucky's cost of living is 10.3% lower than the U.S. average

JobsEQ

Kentucky has the
4TH HIGHEST
number of active duty
Army personnel



Kentucky Provides Your Support System

Not only do we pledge in Kentucky to be your support system, we pledge support from a variety of other sources as well.

Kentucky has invested nearly \$800 million in supporting infrastructure, transportation and local incentives to support aerospace and defense industries.

The Kentucky Commission on Military Affairs (KCMA) is strengthening the defense industry in Kentucky by working with the state and private sector to increase military and defense industries' presence in Kentucky. In addition, the Kentucky Aerospace Industry Consortium (KAIC) unifies members of the aerospace and defense companies, working alongside companies and in collaboration with state government.



Fort Kentucky

Together, the two organizations cater to the needs of the aerospace and defense industries considering Kentucky as a new location as well as those already here. KCMA has recently joined with local military community groups to build "Fort Kentucky" campaign. This initiative is tasked with promoting growth in both defense mission and industry.

Kentucky has a strong history of support for national defense, and this is still true today. Both Fort Knox and Fort Campbell have won dozens of Department of Defense community awards, and the local communities have won national awards for installation support in 2017 and 2018.

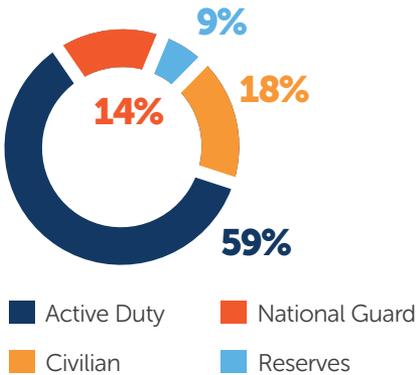


Defense Spending in Kentucky

Kentucky plays a considerable role in the nation's defense spending, which totaled \$12.6 billion in the state in 2019. At 5.7%, Kentucky ranks eighth nationally in defense as a percentage of GDP. The state is also home to many of the nation's top defense contractors, as well 55,000 defense-related personnel.

Defense Personnel

ALLOCATIONS BY TYPE



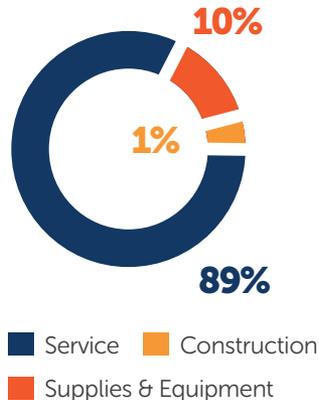
TOP DEFENSE PERSONNEL LOCATIONS

County	Active Duty	Civilian	National Guard	Reserve	Total
Christian	26,803	2,574	40	111	29,528
Hardin	5,031	4,338	126	2,543	12,038
Jefferson	135	1,198	1,897	725	3,955
Madison	ND*	1,025	736	27	ND*
Franklin	19	284	1,125	0	1,428
Fayette	75	114	255	553	997
Boone	ND*	25	415	ND*	ND*
Campbell	ND*	31	0	409	ND*
Muhlenberg	0	76	222	0	298
McCracken	ND*	13	80	174	ND*

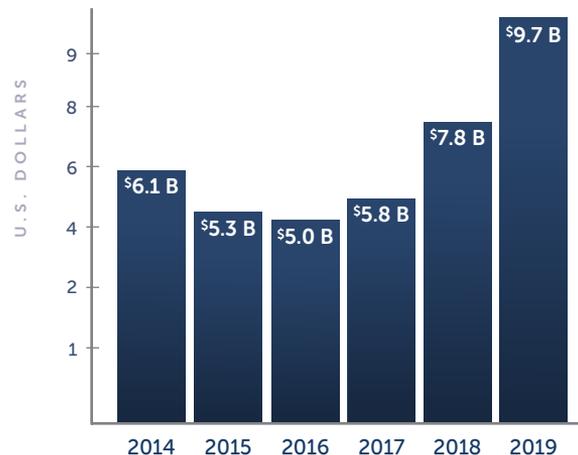
*Not Disclosed

Defense Contracts

BY TYPE



CONTRACT AWARDS PERFORMED



TOP DEFENSE CONTRACTORS

Humana	\$6.7 B
Lockheed Martin	\$691.0 M
Raytheon	\$323.8 M
UPS	\$194.8 M
BAE Systems	\$178.1 M
Bechtel Parsons Blue Grass JV	\$159.9 M
Boeing	\$115.5 M
Inverness Technologies Inc.	\$58.9 M
SAIC	\$56.3 M
SourceAmerica	\$49.8 M



Site Options

Finding the perfect location in Kentucky to start, relocate or grow a business is easy. From existing buildings to greenfield sites to megasites, we can accommodate companies of all shapes and sizes—and on any timetable. Need a pad, spec building or an existing facility? Kentucky has plenty of options all across the state from which to choose. Here are a few of Kentucky's special features:

Build-Ready

When a site is certified Build-Ready, it guarantees construction can bypass the red tape and break ground almost immediately. Communities that participate in the program already have a pad prepared and have taken care of such details as zoning, road surveys, geotechnical studies, permitting and cost and time estimates. Build-Ready drastically reduces the time it takes for a company to be operational and also allows communities to incorporate the specific needs of the company. For the latest list of Build-Ready sites, visit BuildReadyKY.com

Kentucky Opportunity Zones - KY OZ

Kentucky is one of the first states to adopt the federal government's Opportunity Zone program. In Kentucky, 144 sites have been certified, meaning companies interested in locating or expanding in those specific areas have access to federal tax breaks.



Kentucky Will Help You Succeed

SUPPORT FOR GROWING BUSINESSES

Here in the commonwealth, we offer all of the resources a business needs to get started and to thrive for years to come. Any company looking to locate or expand in Kentucky is sure to find the facilities, suppliers and partnerships needed to ensure long-term success. As the aerospace and defense industries continue to evolve, so too will Kentucky. That evolution will ensure Kentucky remains a national leader in the aerospace and defense industries well into the future.

SPEEDY APPROVAL

As your partner, here are some of the services we will provide:

- Speedy approval processes

SITE & LOCATION ASSISTANCE

- Site evaluation assistance
- Detailed location data
- Assistance with site visits

FINANCIAL INCENTIVES

- Financial incentives and training inducements
- Talent recruitment and training
- Assistance obtaining required permits and licenses

WORKFORCE ASSISTANCE

- Serving as your advocate with all involved agencies
- Growing our ecosystem around your business with connecting suppliers

ADVOCATE ON YOUR BEHALF

We are happy to support you through the entire decision-making process, and we continue that service even after you choose Kentucky.

Consider Kentucky as your partner in your growth plans.
We stand ready to assist in any way to make your next venture a profitable one.

Please feel free to reach out to us at any time:

Old Capitol Annex • 300 W. Broadway • Frankfort, Kentucky 40601
(800) 626-2930 • CED.ky.gov

Email inquiries to econdev@ky.gov

TEAM 
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