VIRGINIA ADVANTAGES

Aerospace

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BEST STATE FOR BUSINESS

VIRGINIA ECONOMIC
DEVELOPMENT PARTNERSHIP

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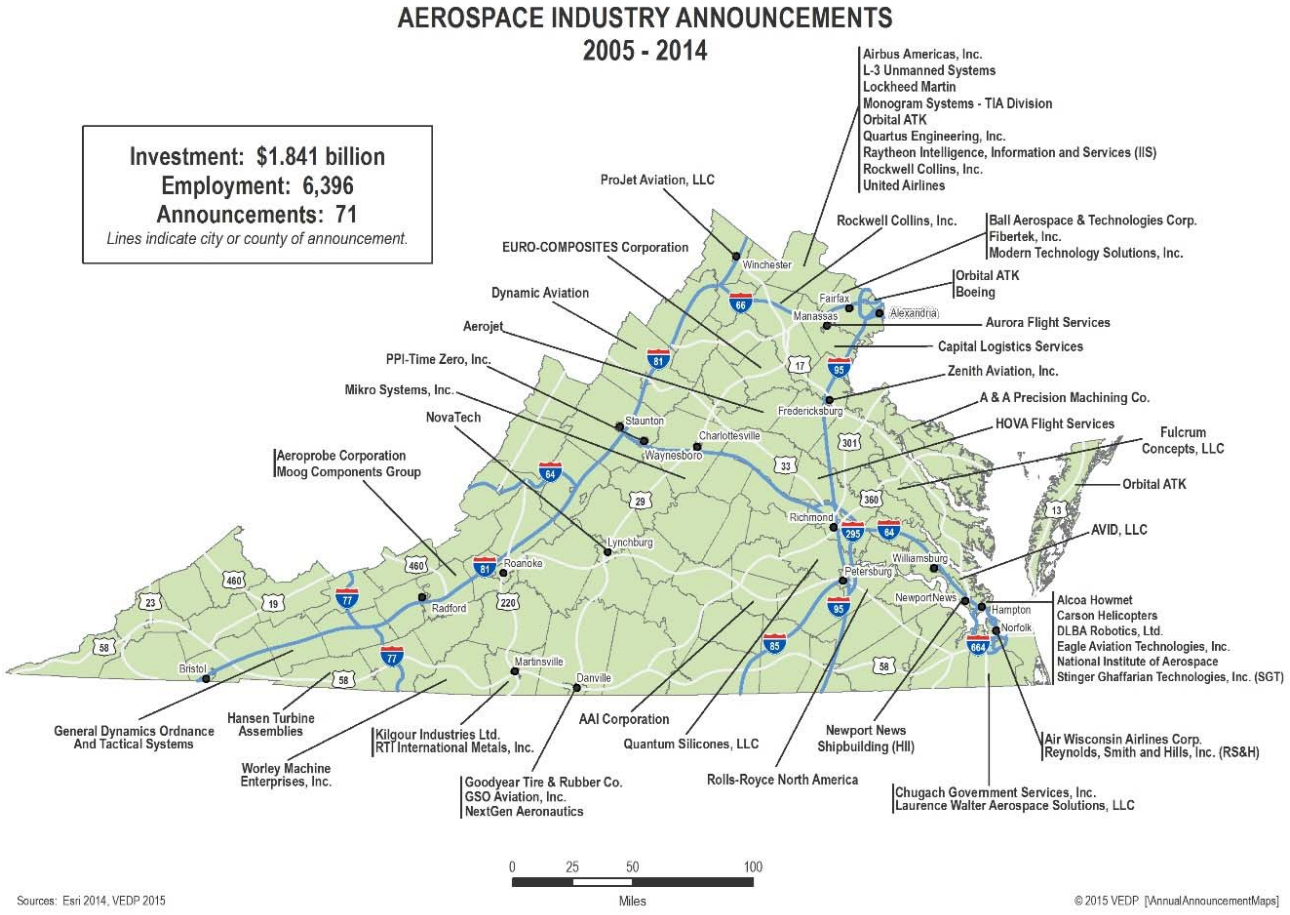
The New Base for Your Aerospace Business

More than 270 aerospace firms call Virginia home, drawn here by our skilled workforce, strong economic growth, pro-business environment and excellent quality of life. Virginia's role in the aerospace industry dates back to 1917, when the nation's first civil aeronautics laboratory was established in Hampton—it is now known as the NASA Langley Research Center.

Global aerospace leader Rolls-Royce produces components in its Crosspointe campus in Prince George County, which also houses a world-class applied research collaborative – the Commonwealth Center for Advanced Manufacturing (CCAM). Other key aerospace companies in Virginia include Alcoa Howmet, Dynamic Aviation, Moog, Orbital ATK, and The Aerospace Corporation.

In the past ten years, 71 Aerospace Industry projects have announced 6,396 new jobs and investments of $1.8 billion. Discover what hundreds of companies already know: Aerospace takes flight in Virginia.



Virginia's Key Aerospace Sectors

A combination of strengths – manufacturing, workforce, education, and transportation – make Virginia a perfect fit for these important aerospace industry sectors:

- Engines and Components
- Unmanned Aerial Vehicles
- Composites
- Research & Development
- Maintenance, Repair and Overhaul

Engines and Components

With a bold industry champion and innovative, collaborative research opportunities, the future of aerospace is being developed in Virginia.

- Rolls-Royce produces aircraft engine components at its Crosspointe campus in Prince George County
- The Commonwealth Center for Advanced Manufacturing conducts applied research in its facility on the Rolls-Royce Crosspointe campus
- Virginia's southern counties are strategically located between the Rolls-Royce Crospointe campus and the North Carolina facilities of GE Aviation and Honda Aircraft
- Other key employers include:
    - Alcoa Howmet
    - Aerojet
    - Modern Machine & Tool
    - Marion Mold & Tool
- John Tyler Community College near Richmond offers machining training for aerospace products
- Virginia Tech is one of the nation's top universities for producing skilled aerospace employees
- Commonwealth Center for Aerospace Propulsion Systems – a collaborative research effort Rolls-Royce, Virginia Tech, and UVA

Unmanned Aerial Systems

Virginia is on the cutting edge of UAS research, testing, and production, thanks to its unique combination of government contractors, academic institutions, and industry supporters.

- Almost 2,000 people work at 38 UAS-related companies
- Aurora Flight Sciences develops and builds UAS in Manassas
- UAV Pro conducts UAS training and research in Blackstone at the Fort Pickett Army National Guard Maneuver Training Center
- Dominion Virginia Power supports the use of UAS to inspect its high-voltage power line
- Virginia Tech and the Mid-Atlantic Aviation Partnership were named as one of the FAA's six UAS test sites
- Liberty University in Lynchburg, Virginia offers classes in UAS at its School of Aeronautics

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Composites

Virginia's composite sector benefits from advanced research and strategic federal government allies.

- 4,700 people employed at 35 composites firms in Virginia
- Key employers include:
    - American GFM
    - BGF Industries
    - EURO-COMPOSITES
    - General Dynamics
    - Honeywell
    - Mitsubishi
- NASA Langley's Integrated Structural Assembly of Advanced Composites system produces carbon fiber aerospace structures and parts
- The National Institute of Aerospace in Hampton manages NASA's Advanced Composites Consortium, which improves composite materials research and certification
- Benefits from the presence of the U.S. Navy and Air Force in Virginia's Hampton Roads region
- Virginia Tech conducts advanced composites research in Blacksburg

MRO

Given its skilled workforce and strategic location, Virginia offers the ideal landing place for MRO companies.

- 47 FAA Certificated Repair Stations operate in all regions of Virginia and employ over 1,300 people
- Key employers include
    - Dynamic Engineering
    - L-3 Flight International
    - Landmark Aviation
    - Orion Air Group
- 9 commercial airports, including Washington Dulles International Airport and Regan National Airport
- Workforce benefits from thousands people exiting the military annually from bases in Virginia
- Blue Ridge Community College offers an Associate of Applied Science in Aviation Maintenance Technology
- Averett University and Liberty University offer degrees in Aviation Maintenance
- The furniture industry cluster in southern Virginia offers skilled workers for producing and installing aircraft interiors

R&D

Virginia's top-notch R&D ecosystem involves collaboration among public, private, and academic institutions. Many industry-recognized R&D centers call Virginia home. Federal research and development activities in Virginia include 11 Federally Funded R&D Centers and 23 FLC Laboratories such as the Homeland Security Institute, NASA Langley Research Center, and the Thomas Jefferson National Accelerator Facility.

Defense Advanced Research Projects Agency (DARPA) – directs and conducts military research

NASA conducts aeronautics and space research at its Langley Research Center (LaRC) and Wallops Flight Facility (Wallops)

The Naval Surface Warfare Center Dahlgren Division (Dahlgren) – the premier research and development center for advanced weapons system integration

National Institute of Aerospace (NIA) – conducts research and awards advanced degrees in aerospace engineering through a partnership with nine universities

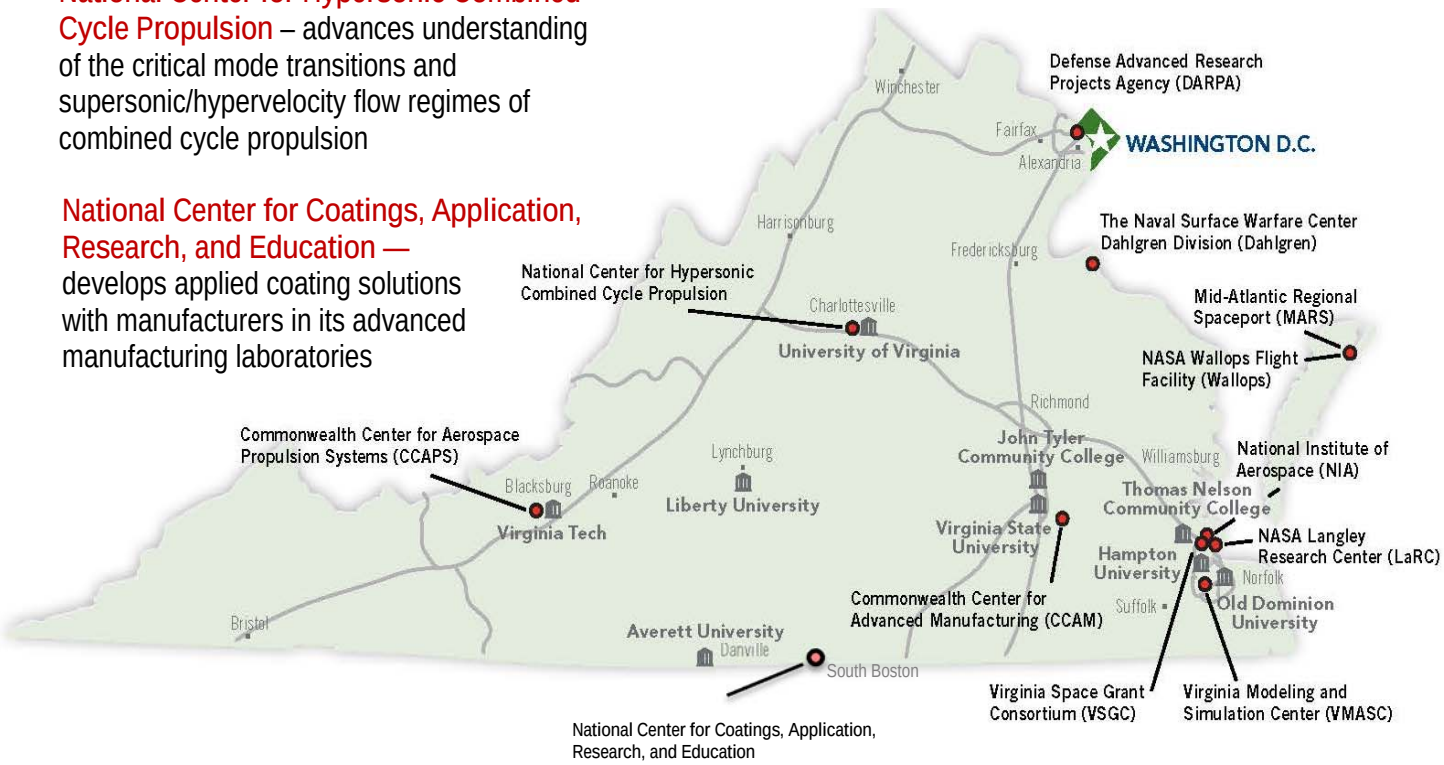
National Center for Hypersonic Combined Cycle Propulsion – advances understanding of the critical mode transitions and supersonic/hypervelocity flow regimes of combined cycle propulsion

National Center for Coatings, Application, Research, and Education — develops applied coating solutions with manufacturers in its advanced manufacturing laboratories

Commonwealth Center for Advanced Manufacturing (CCAM) – an applied research center to accelerate the transition of research from the laboratory to commercial use; CCAM and its member companies own all CCAM funded IP developed at CCAM or its member universities

Commonwealth Center for Aerospace Propulsion Systems (CCAPS) – a joint UVA – Virginia Tech – Rolls-Royce research effort

Virginia Modeling and Simulation Center (VMASC) – applies simulation techniques to solve problems and provide training for industry, military and governments



Home to an Advanced Workforce

Virginia is creating tomorrow's skilled workers today. Virginia's workforce is growing, available, productive, and cost-effective. With a population of over 8.3 million and a workforce of more than 4.2 million growing at an average annual rate of 1.2%, Virginia successfully supports the state's existing businesses.

Virginia Has One of the Most Well-Educated Workforces

- More than 36% of Virginians have at least a bachelor's degree, the 7th highest rate in the country
- Over 1,500 doctorate degrees in science and engineering are awarded annually from Virginia universities
- More than 15,000 science and engineering graduate students pursue advanced degrees in Virginia
- Thousands of people leave the US military from Virginia bases each year and enter the civilian workforce
- The Aviation Academy in Newport News prepares high school students for aerospace careers

Virginia's Universities Are Highly Regarded and Innovative

- Virginia Tech is one of the nation's top universities for producing skilled aerospace employees
- Virginia Tech, the University of Virginia, and Old Dominion University perform advanced aerospace research
- The National Institute of Aerospace (NIA) is a nine-university partnership that provides graduate education and conducts leading-edge research
- Virginia Commonwealth University, Liberty University, Hampton University and Averett University also help build tomorrow's advanced aerospace workforce

Virginia's Community Colleges Prepare Skilled Workers

The Virginia Community College System develops workforce training programs to fit the needs of employers and provide top-notch educational opportunities. Aerospace-related degree programs include:

- Aviation Maintenance Technology
- CAD/CAM
- Industrial Production
- Mechanical Engineering Technologies
- Precision Machining Technology
- Welding

Workforce Training Partnership

John Tyler Community College and Rolls-Royce have partnered to provide students access to state-of-the-art equipment, guaranteeing a robust pipeline of manufacturing technicians with cutting-edge skills:

- 5-axis horizontal machining center
- Coordinate measuring machine
- Electrical discharge machine
- Non-destructive testing equipment

Building an Innovative Aerospace Industry

Manufacturing remains an essential component of the aerospace industry. Virginia's workforce is over 4.2 million strong, highly trained, and productive. Armed with the skills the industry requires, Virginia's workforce is uniquely prepared for aerospace companies.

Supported by the ready supply of highly-skilled labor, numerous aerospace manufacturers, including Rolls-Royce and Orbital ATK, have established and grown facilities in Virginia.

Virginia's Manufacturing Industry

8,800 Virginians making aerospace products

4,700 Virginians producing composite products

5,100 Virginians working in machine shops

Virginia's Manufacturing Advantages

- Virginia is a right-to-work state and has the sixth-lowest unionization rate in the country
- The Port of Virginia allows companies to export and import through a facility capable of handling post-Panamax ships and has no overhead obstructions between it and the Atlantic Ocean
- The interstate and rail networks in Virginia provide access to the Northeast, Southeast and Midwest
- Virginia's low electricity and natural gas rates help manufacturers control their costs

"Our vision for Crosspointe is to create a hub of advanced manufacturing innovation, one that is based on partnerships with major universities, government and business—partnerships critical to the future of American jobs and the economy.... We are investing in Virginia because it's an environment that allows us to be globally competitive."
James M. Guyette, President and CEO, Rolls-Royce North America

Defense — A Strategic Partnership

Businesses in Virginia benefit from the many U.S. military bases and commands located here. Virginia is home to more than 25,000 active registered federal vendors. In fact, Virginia is the country's No. 1 state for Department of Defense contracts, with more than $33.7 billion in FY 2014.

Defense Contractors Headquartered in Virginia

- Aurora Flight Sciences
- Atlantic Diving Supply
- Booz Allen Hamilton
- CACI
- CSC
- DynCorp
- General Dynamics
- Huntington Ingalls
- ITT Exelis
- Leidos
- ManTech
- Northrop Grumman

The military presence in Virginia also provides companies with skilled workers. Each year, thousands of people exit the US military from military bases in Virginia and enter the civilian workforce.

Virginia is Home to the Pentagon and 19 Defense Installations, Including:

- Fort A.P. Hill
- Fort Belvoir
- Fort Lee
- Fort Pickett
- Joint Base Langley-Eustis
- Marine Corps Base Quantico
- Naval Station Norfolk
- Naval Air Station Oceana
- Naval Surface Warfare Center, Dahlgren

"Lockheed Martin selected the Northern Virginia location because of its proximity to FAA headquarters in Washington, D.C., the critical airspace covered by the Flight Service Station, the density of pilots and general aviation aircraft, and the quality of life provided within the Dulles Airport corridor."
Dan Courain, Former Lockheed Martin Vice-President for Flight Services

Your Launch Pad for Success

The Mid-Atlantic Regional Spaceport, NASA Wallops Flight Facility, NASA Langley Research Center, and Virginia Space Flight Consortium exemplify the space sector in Virginia. The success of these operations is based, in large part, on the long-standing relationship between the public and private sectors in Virginia.

Mid-Atlantic Regional Spaceport (MARS)

MARS is one of ten sites authorized by the FAA for space launches. Located at the NASA Wallops Flight Facility, MARS is supported by the Virginia Commercial Space Flight Authority and Old Dominion University.

NASA Wallops Flight Facility (Wallops)

Located on Virginia's Eastern Shore, Wallops is NASA's principal facility for management and implementation of suborbital research programs. NASA Wallops serves as the key facility for operational test, integration and certification of NASA and commercial next-generation, low-cost orbital launch technologies.

NASA Langley Research Center (LaRC)

LaRC has supported America's space program since its inception and today excels in testing and systems integration. Located in Hampton, LaRC provides research and technical support for NASA's manned and unmanned space exploration programs.

Virginia Space Grant Consortium (VSGC)

The VSGC promotes and develops aerospace education and research through the support of Virginia universities, NASA, Virginia's Center for Innovative Technology, and other institutions.

Key Players

- Aerojet
- Comtech AeroAstro
- International Launch Services
- NASA
- Orbital ATK

"We appreciate the significant contributions that the Commonwealth of Virginia, MARS and other interested parties are making to improve the Wallops space launch infrastructure. These improvements will allow Taurus II launches and resupply flights to the International Space Station to be conducted from the Eastern Shore."
Dr. Antonio Elias, Orbital's Executive Vice President and General Manager of its Advanced Programs Group

Businesses Take Off in Virginia

Virginia's air transportation sector employs more than 19,200 people and features nine commercial airports, including Washington Dulles International (IAD) and Reagan National (DCA). All major commercial carriers serve Virginia, providing non-stop flights to 158 destinations around the world. Virginia is home to 47 FAA Repair Stations across the state, and the MRO sector in Virginia employs over 1,300 people.

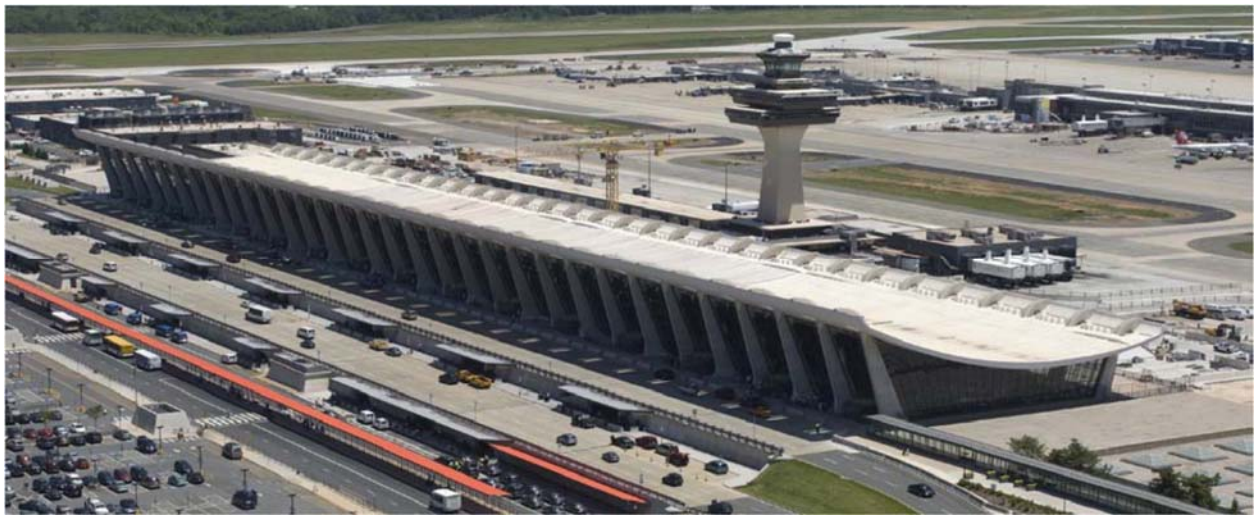
Airport Opportunities

Dulles is Virginia's largest airport and provides international and domestic services for passengers and cargo. The cargo sector offers great growth potential as Dulles continues to expand its facilities. Dulles' unique features include:

- An undeveloped 827-acre parcel with runway access that can be secured from both landside and airside
- 4 runways: 11,480 feet (two), 10,500 feet, and 9,500 feet
- 34% lower operational cost for cargo-handling than JFK Airport in New York
- An International Air Cargo Catchment Area covering 25 states and Canada with next-day service
- Metrorail extension to provide easy access to D.C.

Other Virginia airports actively involved in attracting MRO, manufacturing and technology companies include:

- Newport News-Williamsburg International Airport (PHF) – 8,000-foot and 6,500-foot runways
- Richmond International Airport (RIC) – 9,000-foot, 6,000-foot, and 5,300-foot runways
- Danville Regional Airport (DAN) – 6,500-foot and 4,000-foot runways
- Lynchburg Regional Airport (LYH) – 7,100-foot and 3,300-foot runways
- Shenandoah Valley Regional Airport (SHD) – 6,000-foot runway



"Our goal was to find a location that was close to our hub of activity, with ready access to airports. In terms of the facility, we needed one that would encourage teaming and fulfill our requirements for virtual connectivity with our co-workers and partners, and we found it here in Fairfax County, one of the nation's premier high tech hubs."
John Hayhurst, Former Boeing Air Traffic Management President

Virginia is Cost-Competitive

	Virginia	California	Connecticut	New York
Right-to-Work	Yes	No	No	No
State Corporate Income Tax	6.00%	8.84%	7.50%	7.10%
State and Average Local Sales Tax	5.30%	8.44%	6.35%	8.48%
Workers' Compensation Employer Insurance Costs per $100 of Payroll	$0.81	$1.95	$1.24	$1.50
Unemployment Insurance Tax per employee	$209	$357	$577	$430
Average Annual Cost Paid by Employers for Health Premiums for Family Coverage	$ 11,312	$ 12,489	$ 14,096	$ 13,237
Average Industrial Electric Rate (cents per kilowatt hour)	6.65	11.00	14.54	9.69
Average Price of Natural Gas Delivered to Industrial Customers (dollars per thousand cubic feet)	6.02	6.57	6.85	7.44

Economic Development Incentives

The Virginia Department of Business Assistance's Virginia Jobs Investment Program (VJIP) provides customized recruiting and training services to companies creating new jobs or experiencing technological change.

The Virginia Investment Partnership (VIP) Grant is a discretionary performance incentive designed to encourage continued capital investment by Virginia companies, resulting in added capacity, modernization, increased productivity, or the creation, development and utilization of advanced technology.

The Commonwealth Opportunity Fund (COF) is designed as a "deal closing" fund to be employed at the Governor's discretion when necessary to secure a company location or expansion in Virginia. The GOF serves as a final resource for Virginia in the face of serious competition from other states or countries.

Aerospace Policies

Aircraft Sales and Use Exemption is for companies headquartered in Virginia which make a minimum of a $4 million capital investment in Virginia, create at least 50 new jobs in Virginia, and enter into a memorandum of agreement with the Virginia Economic Development Partnership.

Zero G Zero Tax provides an exemption from state income taxes to any space transportation company doing business in Virginia with the intent to either launch payloads from MARS or conduct spaceflight training.

Space Liability and Immunity Act makes Virginia the most progressive state in the country in addressing the challenge that existing tort law poses to emerging human spaceflight transportation companies.

"We chose to expand at our current facility in Vesta due to the business friendly climate, excellent workforce and the assistance we received from local and state agencies. The products that we make sometimes mean the difference between life and death; and the quality and commitment of our employees make it easy for us to continue to reinvest in both our future and theirs." John Marcaccio, President, AERIAL Machine and Tool Corp

Say Yes to Aerospace in Virginia

The Aerospace Industry in Virginia benefits from our unique combination of resources. Central location, a skilled workforce and a pro-business environment are just a few reasons so many companies have said "Yes" to Virginia. See what companies like Rolls-Royce and Boeing already know – Virginia is the best state for Aerospace.

Learn More About Opportunities for the Aerospace Industry:

Tracy Tynan
Business Expansion Manager, Aerospace

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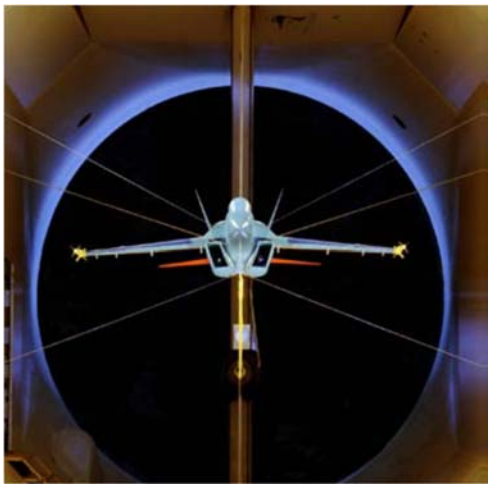
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