

LIFT WWA

March 2017



Gaining Altitude

Symbiotic Relationships and Diversification
Help Washington Aerospace Suppliers, Sub-sectors,
and Boeing Remain Competitive.

Inside this issue

Washington's Hometown Airline | In the "People Business"

Supplier Diversification and Boeing

Powering the Future of Space Transportation

Meet Kevin McAllister | Boeing Commercial Airplanes president and CEO

AFA Member Spotlight

The Washington Aerospace Partnership



WELCOME

Welcome to the inaugural issue of LIFT WA, the only print and digital magazine in the State of Washington for and about the aerospace industry!

LIFT WA is a publication of the Aerospace Futures Alliance. AFA was founded in 2006 on the principles of promoting and advocating for aerospace in Washington. Our work helps shape the aerospace industry to grow and strengthen aerospace and related businesses, which allows them to increase job opportunities and continue to invest in the state's economy.

We are excited to announce our merger with the Washington Aerospace Partnership. WAP has been a force in aerospace in Washington, forging long-standing relationships with the Department of Commerce, Office of Financial Management, and many other state operations. WAP's work has resulted in new businesses locating in the state, and has provided the state's Economic Impact Study, conducted by Community Attributes. WAP has been at the forefront of the "big issues" for aerospace, and has worked collaboratively with a host of entities to advance the industry in Washington.

Under the name Aerospace Futures Alliance, the merged organization is *The Washington Aerospace Partnership*, and will continue providing the programs and services WAP has long been known for.

Our inaugural cover image of an Alaska Airlines flight pays tribute not only to this iconic brand, Washington state's hometown airline, but also to the hundreds of companies and thousands of employees across the evergreen state in the aviation sector that make up an enormous part of the commercial aerospace industry. That single image represents the makeup of the industry, from manufacturing, tooling, robotics, and composites, all the way to Boeing, and design and engineering firms; and from all points of the map, aerospace is a significant driver of Washington's ever-evolving economic base.

Washington has a long history of innovation in commercial aerospace, which has propelled us to unimaginable heights in the US and across the globe. As the international hub of aerospace, we are home to more than an estimated 1450 aerospace and related companies representing the subsectors of aviation, space, and UAVs. The types of services, products, offerings, and activities of these companies is extremely diverse, ranging from OEMs, machine shops, design firms, MROs, fixed-base operators, and much more.

With hometown companies such as Boeing, which just celebrated its 100-year anniversary and continuously pushes the boundaries of innovation in flight; Alaska Airlines, which just finalized its acquisition of Virgin America and last year used aviation biofuels on a commercial flight; and Blue Origin, which has seen five successful

suborbital launches and touchdowns of its New Shepard rocket, there is no shortage of exciting and literally earth-shattering news on a daily basis.

Equally exciting is that all aerospace sectors utilize the Washington supply chain, and many utilize, collaborate with, or source from those aerospace businesses that help round out the industry, such as maintenance repair operators, after-market entities, high tech companies, to name a few.

But the benefit of aerospace doesn't stop within industry, it catalyzes job creation, revenue generation, and workforce development in other industries, as well. For example, agricultural impacts are significantly larger with aerospace, as are restaurant, retail, medical, high tech, and construction. Just about all other industries receive an economic benefit from aerospace.

The aerospace industry in Washington greatly influences and invests in workforce development. Whether internally providing training and education opportunities to current employees, or contributing financially, through equipment donations, or through the benefit of time, all levels of academia are better off with the investment of the aerospace industry.

AFA collaborates with academia, as well, working to ensure the workforce of tomorrow is being trained today. We support numerous initiatives across the state that aim to educate and train traditional and non-traditional students and incumbent workers with the skills and knowledge base needed for traditional careers as well as those using new technologies and innovations. This industry-driven path is essential to ensuring students from all walks of life are being trained to fill the good-paying jobs that are available in aerospace.

Across Washington, economic development councils work in tandem with the state, industry, and with AFA, to retain, grow and attract aerospace in Washington. This work has resulted in Washington being home to the world's most advanced and comprehensive aerospace cluster.

Many of the topics mentioned here are essential components of the industry. As such, each LIFT WA publication will have a unique editorial focus geared toward providing detailed information to help propel your company to greater heights.

Sincerely,

Kelly Maloney
LIFT WA editor
AFA president and CEO



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Photo courtesy of Boeing Commercial Airplanes



“Washington state is Alaska Airlines’ home, and we take great pride in keeping our hometown healthy and vibrant.”

- Brad Tilden, CEO Alaska Air Group

Alaska Airlines | Hometown Airline

Alaska Airlines flies to well over 100 destinations, with nearly 1,200 flights a day.

If you go out to our airports and see our planes in the sky, it’s pretty obvious we’re in the travel business. But, if you asked our employees, they’d actually say we’re in the people business.

Collectively, that spirit is indicative of the pride we have in calling Washington state home. It shows through in how we serve tens of millions of travelers every year and how we impact our communities. It's our commitment to the work we do and how our customers are treated: every flight, every day. Our 19,000 employees, 8,000 of which are based in Washington state, have an innate pride in the exceptional service they provide, in our safety ratings, and in our commitment to sustainability.


There's something unique about Alaska Airlines that runs deep. It's a spirit and heartfelt commitment to our people that means something to each of our employees individually as well as to all of us collectively. And it permeates everything we do from safety, to caring for our guests, to flying great airplanes and taking care of our communities.

And nowhere else in the world does our focus on people shine more brightly than in our hometown. Washington state is Alaska Airlines' home, and we take great pride in keeping our hometown healthy and vibrant.

One way we're doing that is by giving back through programs focused on youth and education. Among the local programs we support is CHOICES, through the Highline School District. One of the best parts of my job is going into the classroom in Burien (where I attended school) and talking to kids, encouraging them to pursue careers in STEM—science, technology, engineering and math. I tell them they are in a great state for careers in the STEM field, especially with our rich infrastructure in aviation and aerospace. Alaska Airlines works to inspire students at the Museum of Flight, Raisbeck Aviation High School, the University of Washington and Washington State University.

We're also making progress in reducing environmental impacts by working with important partners like the Port of Seattle and Boeing to make the regular use of aviation biofuels at Sea-Tac a reality as soon as possible. Another way we are reducing our impact on the environment is by flying an incredibly fuel-efficient fleet using the latest satellite-based technology.

Supporting local business is equally important to us. With Alaska Airlines' home base located a mere five miles from where our airplanes are built, we enjoy a unique friendship with the great folks at Boeing. This incredible company just celebrated 100 years, and Alaska Airlines commemorated their century of innovation and dedication to our state with a special livery airplane. We work with smaller businesses too—Beechers Cheese, Chateau Ste. Michelle wines and Sun Liquor, to name a few.

So, while Alaska Airlines does fly to some pretty great places on the planet—from Costa Rica, to Glacier Bay to Kauai—it's flying home that really makes us smile. 

Brad Tilden, CEO Alaska Airlines



Chief Executive Officer of Alaska Air Group

Brad Tilden serves as the chairman and CEO of Alaska Air Group and Alaska Airlines. He is a 25-year veteran of Alaska Air Group, previously serving as executive vice president of finance and planning, chief financial officer, and corporate controller.

SNAP SHOT | BRAD TILDEN

- Chairman and CEO
Alaska Air Group and Alaska Airlines
- BA in business administration
Pacific Lutheran University
- Executive MBA | University of Washington
- Ranked #22 among the Top 50 Corporate Leaders in America | Fortune magazine | 2015
- Executive of the Year | Puget Sound Business Journal | 2016
- Distinguished Eagle Scout | Boy Scouts of America





SNAP SHOT | ALASKA AIRLINES

- Based in Sea-Tac, WA, Alaska Airlines, Horizon Air and Virgin America are wholly-owned subsidiaries of Alaska Air Group
- Alaska Airlines and Virgin America recently merged, making Alaska Airlines the 5th largest US airline
- Total employees: 18,800
- Washington state employees: 8,000
- Economic impact in Washington: \$5.6 billion

Recent Awards and Distinctions

- Named the **Number 1 US Carrier** by the *Wall Street Journal* (4 years)
- Named *J.D. Powers* choice for “**highest customer satisfaction among traditional carriers in North America**” (9 years)
- Named “**Most fuel efficient US airline**” by the *International Council on Clean Transportation* (5 years)
- Received the “**Diamond Award of Excellence**” from the *Federal Aviation Administration* (15 years)

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Aero-Plastics Remains Competitive with Boeing Work Statements and Customer Diversification

Reinvesting in Company and Workers

Aero-Plastics has been in business for 58 years, evolving with the fluctuations inherent in the aerospace industry. Over the years, the company has made strong efforts to diversify its customer base as a way to remain strong and competitive.

“We’ve been in aerospace manufacturing since inception, so we understand the ups and downs of the industry,” said Mike Brown, CEO of Aero-Plastics. “Because of this, it is a strategic necessity to grow segments of our business in the medical and other technical arenas. But we are—and will remain—heavily invested in aerospace, which generally revolves around the Boeing supply chain.”



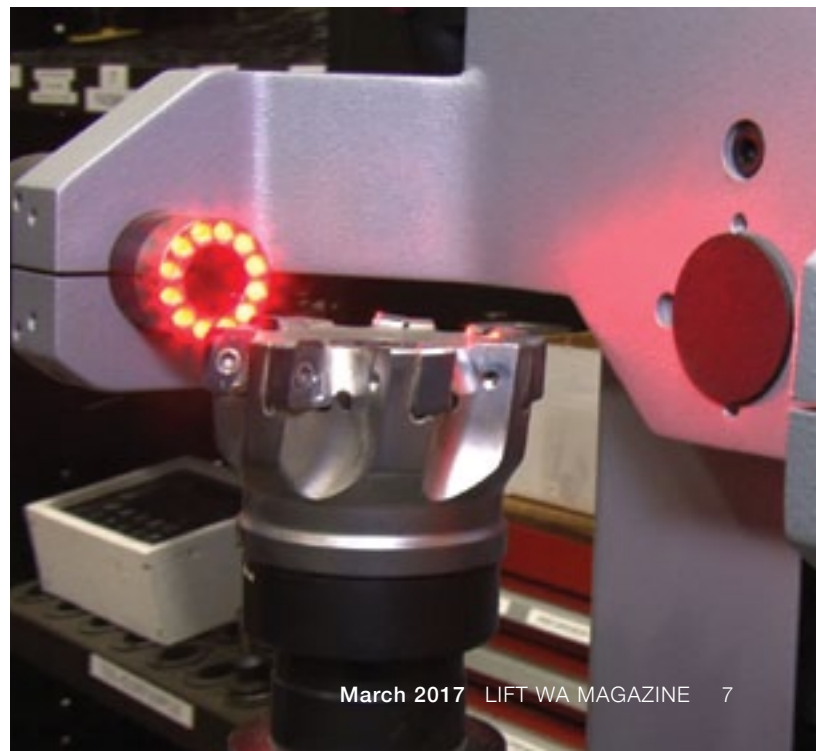
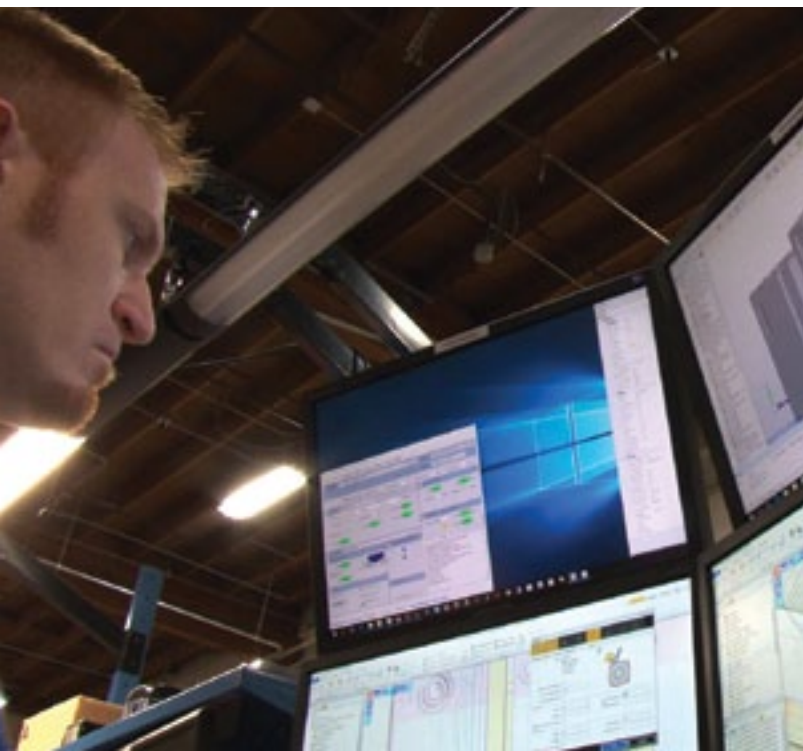
Aero-Plastics provides family wage jobs to more than 40 families, an investment in the local economy of more than \$1.75 million. “Recently we have made more than \$1 million in capital expenditures and more than \$3.5 million in our vendor spend. None of that would have happened without our Boeing work statements,” said Brown.

The company, which provides injection molding, machining and assembly, has kept one thing consistent: their commitment to quality, service and delivery. Aero-Plastics has been a Boeing Supplier of the Year three times and earned the Boeing Performance Excellence Award for ten consecutive years. “It’s nice to be recognized for our work. We value that because it shows our abilities, but also because it can result in our ability to hire more workers,” said Brown.

In fact, Aero-Plastics is hiring. Like many other aerospace manufacturing companies around the state, they have several openings for CNC operators and other technical positions. “One reason is we are preparing for new work statements from the 777X. Much of our success revolves directly and indirectly around Boeing’s success,” said Brown.

“Aerospace tax incentives have helped to supplement the training of our team members at Aero-Plastics,” said Brown. For more company information, visit aero-plastics.com

To view a video about Aero-Plastics, go to afa-wa.com/aerospace-in-washington 





Family-Owned Bergstrom Aircraft has Worldwide View of Aerospace

This is a story about a small company in a small town. This is the kind of story we like to tell.

Bergstrom Aircraft didn't set about to do big things. In fact, its founders, Karl and Elenor Bergstrom, were first-generation Swedish immigrants who, in 1971, found a niche in the wide open expanses of the Tri-Cities area of Washington.

The company started as an aircraft maintenance shop, and to this day is a full-service aviation center providing maintenance, fuel service, and a flight school. "The flight school is a whole lot of fun," said Malin Bergstrom, president of Bergstrom Aircraft.

It's about much more than fun, though. It's about family pride, creating jobs in a rural community where jobs—especially aviation jobs—are scarce, and offering a needed service.

"We provide maintenance operations for many commercial airlines, and we fuel corporate aircraft, airlines, and private flights," said Bergstrom. "We've had numerous dignitaries come through Bergstrom Aircraft, including Governor Inslee. You just never know who's going to be in the area."

Bergstrom's ties to the larger aviation industry in the state and worldwide may not be evident given its small size, but their impact is significant in their community. Bergstrom supports more than 34 families through more than 40 jobs.

"Aerospace is a global industry and Bergstrom Aircraft is a small piece of that. It is important to us that the health of the industry continues in the State of Washington."

-Malin Bergstrom, president

"We are very much dependent on the health and welfare of the aerospace industry. Aerospace is a global industry and Bergstrom Aircraft is a small piece of that. It is important to us that the health of the industry continues in the State of Washington," said Bergstrom.

Learn more about Bergstrom Aircraft at afa-wa.com/aerospace-in-washington



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Are your benefits 18% better than last year? Then, why are they 18% more expensive?

Your healthcare costs are outpacing inflation 3:1. Yet, there is no correlation between cost and quality. Further, in a recent survey, a vast majority of employees polled indicated they do not value their benefits. Why are you paying more for benefits that are not valued?

Jumbo employers have outlets to address escalating costs, but smaller companies continue to struggle. That's why Alliant Employee Benefits created the **Aerospace Supplier Accountable Care Coalition**. It offers a transformational care model for employers with 50 or more on their benefits program, including:

- high-touch concierge services for your employees,
- sharing of risk across a broader population,
- clinic-centric networks with same-day appointments,
- centers of excellence for specialty care,
- wellness programs that actually work.

Ask what the coalition could mean for you.

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Rob Meyerson, president of Blue Origin, has led the growth of this privately-held space company from 10 people in 2003 to almost 1000 people today.

Blue Origin and Washington: Powering the Future of Space Transportation

by Robert E. Meyerson, president Blue Origin

Blue Origin was founded on a powerful vision for the future of space exploration and the possibilities it brings. And we are well on our way to fulfilling our long-term goal of one day having millions of people living and working in space.

Based in Kent, WA, we are driven to invent technologies that will improve the state of space transportation and operations. Fueled by our company motto, Gradatim

“Choosing to house Blue Origin in Washington was easy...It is home to industry-leading companies, such as Boeing, as well as thousands of aerospace suppliers that play a key role in helping the industry thrive.”

Ferociter (or “step by step, ferociously”), we have followed an incremental development process in our mission to develop reusable space vehicles and the engines that power them. In 2003, we employed 10 professionals. Today, that number has grown to more than 900 scientists, engineers, and builders—all passionate about human spaceflight. This team made history in November 2015, becoming the first organization to launch a rocket booster to space and land it vertically back on the Earth. We then successfully flew that same rocket four more times.

But, we don’t just build rockets—we’ve built a unique culture around methodical innovation and exploration that allows us to steadily advance and grow. We’re honored to have our headquarters in Washington and we take great pride in our contributions to the state’s economy. We’ve created hundreds of lucrative, high-tech manufacturing jobs—aerospace engineers, software engineers, propulsion designers, robotic laser operators, simulation engineers, machinists, avionics engineers, welders, program managers and so many more. Our employees and their families spend their off hours contributing to our local and state economies through recreational activities, dining, shopping and medical care, to name a few.

Choosing to house Blue Origin in Washington was easy. Washington has one of the most dynamic aerospace environments in the nation. It is home to industry-leading companies, such as Boeing, as well as thousands of aerospace suppliers that play a key role in helping the industry thrive.

Currently, we work with more than 600 companies throughout Washington. About 80 percent of them provide

support and services in construction, facility services, tools, industrial equipment, software and more. The other 20 percent fall into commodity categories such as machine shops, aerospace inspection centers, chemical processing, testing facilities, electronic assembly shops, and fastener and raw metal producers. There is great value in being able to go directly to these local suppliers and interact with them in real time to resolve problems, discuss parts or brainstorm new design concepts. Having them in our backyard saves us immense time in transit, which is critical in a rapid research and development environment.

Our suppliers feel the same way. StagePlan, Inc., is an exhibit space and platform manufacturer located in Enumclaw, WA. The company has been a Blue supplier since 2006, providing many metal-fabricated products, including ground support equipment, rocket assembly and access platforms, launch stand ground equipment and more. We meet with the StagePlan team frequently to examine projects in work and discuss what's on the horizon.

"Blue is a huge part of what we do," said Phill Sumner, StagePlan's business manager. "During and after the 2008 recession, we had very slow periods of business. But, Blue gave us a consistent revenue stream that helped keep us afloat. In fact, partly because of Blue's business, StagePlan now operates a full-service facility that can build nearly any structure. If they were ever to move out of state, I don't think we'd be able to compete with their other suppliers due to shipping costs."

McNeeley MFG is another small business that has profited from its work with Blue Origin. A full-service machining and fabrication company in Auburn, WA, owner Josh McNeeley started the company in 2006 from his garage and now operates a 7,000-square-foot facility and retains 13 employees. For the past five years, McNeeley MFG has supplied machined parts and tooling to Blue Origin for projects including the BE-3 and BE-4 rocket engines, crew

Continued on page 22





Kevin McAllister, president and CEO, Boeing Commercial Airplanes

AFA welcomes Kevin McAllister in his new role as president and CEO of Boeing Commercial Airplanes. Kevin worked closely with Boeing while at GE Aviation Systems, most recently as president and CEO of GE Aviation Services.

Tell us about yourself and life before joining Boeing?

I grew up among the steel mills of Bethlehem, PA, where my mom and dad taught mathematics at local universities. I graduated from the University of Pittsburgh with a bachelor's degree in materials engineering and started my career at the Howmet Corporation. I then joined GE in 1989. During the course of my time at GE I held several leadership roles in operations, sales, services, and production support, in addition to working materials engineering in support of product design.

How does it feel to lead one of Puget Sound's most iconic companies with a 100 year history?

I can't tell you how humbled and honored I am to join this incredible Boeing team. My wife told me she has not seen me light up like I do when I talk about Boeing. From my heart, this is a great opportunity for me and I look forward to working with everybody.

What's your experience working with Boeing?

I've had the opportunity to work with many folks from Boeing, so in a sense I am not new to Boeing. Over the past 15 years I've helped support Boeing products out in the field, working with customers and in the trenches of campaigns to win in the market around the globe.

How are you getting up-to-speed on everything going on at Boeing?

Ray Conner has not only been a great friend to me, he's also been a great mentor. It's not lost on me how incredibly important it is to follow in the footsteps of great leaders like him. He is a giant of commercial aerospace. In the year ahead I am going to lean hard on Ray, and I also plan to learn from people on our factory floors who do the hard work each day building the world's best commercial airplanes.


How will you approach your new role?

I bring a few things with me that ground how I think about the world. First is an incredible commitment to our customers and to deliver on our commitments because fundamentally they are why we come to work every day. Second, I believe customers are also a great opportunity to be a learning channel about what they value and how we can continue to lead with the best technology and best products in the marketplace. Third, a commitment to winning. It's core to me. It's also a part of the culture at Boeing that brings commercial excellence to want to get customers around the globe to fly our airplanes. And finally, always deliver on results both operationally and financially. Because if we build the best product at the lowest cost we will be better able to fund our future. I want to attack those things that slow us down and hold us back. If we do that then we will be in a good position to fund and build the next great Boeing products for our customers.

What should the Puget Sound community know about you?

I bring a strong commitment to our people. They are the life blood of this company. We are great when we are great together. They can count on me to be a part of their team. I will bring the same work ethic they bring every day; the same spirit, camaraderie and competitiveness going forward that they have enjoyed for the last 100 years.

I have fallen in love with the Puget Sound region and look forward to settling in and being an active member of the community. I believe that leaders need to be good to be great and that means being strong and active members of the community. It is part of who I am.

I am truly excited to be a part of this dynamic region and the many ways Boeing works to improve the lives of people every day. When the community is strong, Boeing is strong. 

Aerospace

continues to fuel Washington state economy

BY THE NUMBERS

The Washington aerospace industry as a whole continues to grow and remains a driving force in the Washington state economy according to a study released in October 2016 by the Washington Aerospace Partnership. The report was prepared by the Seattle-based economic development consulting firm, Community Attributes, Inc., and found that:

- In 2015, the industry had a total economic impact on the Washington state economy of 252,800 jobs and \$94.7 billion in business revenues. This represents a 9.4% increase in business revenues from 2014 (\$86.6 billion) and 19.7% since 2012 (\$79.1 billion).
- From 2012 to 2015, direct aerospace industry employment held relatively steady. Employment in aerospace and related industries increased to 136,100 jobs in 2015 from 132,500 in 2012. Considering indirect and induced impacts, Boeing Commercial Airplanes supported 192,200 jobs across the state and \$81.6 billion in total business revenues.
- Boeing and many other aerospace companies pay significantly higher wages on average compared to the state overall. In 2015, aerospace employees earned an average wage of \$107,000 (not including associated benefits, e.g. healthcare), compared to the state average wage of \$54,000.



Boeing Highlights

- Boeing's rich history in Washington state is evident through Bill Boeing's first flight in 1906 to the Centennial celebrations held all last year. The company punctuated this milestone with an end-of-the-year announcement that its stalwart commercial airplanes division President and CEO, Ray Conner, was stepping down, to be replaced by Kevin McAllister. Conner will remain at the company as vice chairman until the end of 2017.
- Boeing recently held a groundbreaking for a new facility at Boeing Auburn for improving the skills of existing employees and training new ones. This is the first construction project for Boeing Auburn in nearly 25 years. It is a multi-use facility dedicated to enhancing the skills of more than 5,000 employees. The Workforce Readiness Center represents a critical piece supporting Boeing Auburn's central role in fabricating parts for Boeing Commercial Airplanes production now and into the future.
- In 2016, Boeing made good on terms agreed to in 2013 that extended aerospace tax incentives by investing more than \$1 billion in the construction of the 777X Composite Wing Center in Everett. Once production is in full swing, there will be tens of thousands of employees working at the site in a variety of traditional maintenance positions alongside those working in jobs that move Washington to the next level of technology and production, such as mechatronics.
- Many in Washington's multi-tiered supply chain of approximately 1450 aerospace and related companies will supply materials, tooling, parts, components, and expertise in design and engineering, among other products and services for production of the 777X.
- Companies in the Washington aerospace supply chain are responsive and innovative partners, understanding the exacting requirements of Boeing work. The Washington supply chain is one of the most extensive

Economic Alliance Snohomish County exists to be a catalyst for economic vitality resulting in stronger communities, increased job creation, expanded educational opportunities, and improved infrastructure.

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RESERVE YOUR AD SPACE in the LIFT WA
magazine and on our LIFT WA web pages!

in the world, producing an incredible range of parts, components, and services, and undertaking just-in-time deliveries 24x7 for all Boeing airplanes built in Washington. This is possible due to the large number of suppliers in the state that are in close proximity to one or more Boeing facilities.

- Boeing has forged strong relationships with academia. Boeing collaborates with the University of Washington exploring additive manufacturing to increase production and reduce material waste. And last month they announced the results of a study in conjunction with Washington State University, Alaska Airlines and the Port of Seattle on aviation biofuels that could potentially be used by all airlines to dramatically cut carbon emissions by up to 80 percent. They also support programs such as STEM, FIRST Robotics, and CORE Plus in elementary, middle school and high school.
- Boeing's employees are able to attend supplemental training outside of work hours through an agreement with the WATR Center (Washington Aerospace Training and Research Center), which has short-term certificated online and onsite programs for new and incumbent workers. Boeing machinists, for example, can go to a 12-week course at WATR outside of work to qualify for a higher level position at Boeing. WATR customizes training to fit Boeing's workforce needs, meaning workers are training on their jobs of the future. WATR and AMTEC (Advanced Manufacturing Training and Education Center) both offer industry-driven training programs that help propel new workers and incumbent workers toward the good-paying jobs the aerospace industry provides. 

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Symbiotic sectors nurture new frontiers for Washington aerospace industry

By Brian Bonlender, director Washington State Department of Commerce

Washington state's second century of innovation in aviation and aerospace is poised once again to move the world forward in new areas of this dynamic industry.

Those first 100 years are studded with the names of global industry leaders: Boeing, Aerojet Rocketdyne and Heath Tecna, to name only a few. As the knowledge-based economy grows, a new generation of business pioneers—Microsoft, Amazon, Blue Origin—flourish side-by-side on a family tree deeply rooted in the same visionary values that propelled their predecessors.

Today, the proximity of deep expertise in cloud computing, data analytics, advanced manufacturing, composite materials, clean tech, information and communications technology is igniting new opportunities to change the way we all live, work and play.

This is especially true in Washington's aerospace industry, where symbiotic business relationships thrive and drive some of the most exciting developments anywhere in commercial and defense aerospace. Healthy collaboration is a unique competitive advantage for our state in new sub-sectors of unmanned vehicles and commercial space.

What binds this all together is our deep well of talent. Washington's world-class workforce is our greatest asset for business attraction, retention and growth. Inspired, motivated people design and build the best products, and they are also the risk-takers who branch out and build new companies.

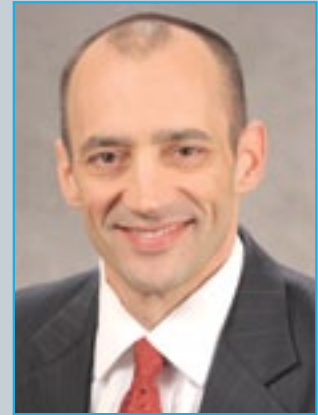
In the first 100 years of this industry, processes for standard aerospace manufacturing (think welding and press brakes) advanced to precision tooling and machining to automation and robotics, requiring more high-tech job skills. Computing power revolutionized every aspect of the aerospace supply chain, from design, analysis and certification to structures, avionics, controls, and even entertainment systems and logistics.

From fixed wings and helicopters to NASA rockets and unmanned aerial systems, pioneering Washington businesses—and their workers—have made their mark on the industry at every turn.

Another great strength of our state's economy is diversity, and now as converging technologies transform every key sector, companies and entrepreneurs can find incredible ecosystems here.

Washington can support businesses eyeing a full range of new opportunities in aerospace. Some will evolve from our desire to work and travel in space. Others will take advantage of the relatively low-cost barrier to entry for drones and unmanned systems. Still more will thrive as we move to a low-carbon future.

Continued on page 22



Brian Bonlender is director of the Washington State Department of Commerce. Under his leadership, the department has revitalized and increased the state's economic development capabilities, expanded and linked its economic and community development programs, and refocused around the shared purpose of strengthening communities. Brian holds a bachelor of science from Washington State University.

“A massive, highly skilled tech and advanced manufacturing workforce built upon our aerospace tradition is the proud, shared resource that strengthens communities all over the state.”

What does the future hold for aerospace in Washington?



If you want to predict the future, look to Washington among the top five bellwether states, as described by John Naisbitt in his hit 1982 book *Megatrends*. This prediction was driven by Washington state's history of social invention, technology innovation and start-up culture, creating iconic brands by many companies in several sectors, recognized around the world, many of which were not even known when he wrote the book 35 years ago. It arguably started with the manufacturing of aircraft early in the twentieth century requiring product innovators, highly skilled engineers and craftsmen and the ecosystem that supported them.

This gave rise to the foremost global aerospace cluster, the world's epicenter of aerospace, which now directly employs 124,575 skilled and highly paid workers, with another 294,000 indirect jobs supporting them.¹ Our long aerospace innovation history is both a competitive advantage as well as a challenge.

Washington has a world class, highly skilled workforce and possesses operational incumbency that is very difficult to replace and compete with. Our aerospace innovation culture gave birth to the engineering sciences that created the environment of software innovation in life sciences, gaming, personal

computing, internet shopping and related industries that have often made Washington the go-to place for next-generation industry talent. Our state government has provided support to aerospace companies that must work in an increasingly competitive market through business and occupation tax relief, better vocational and higher education support, more business friendly unemployment and workers' compensation taxes, and highway infrastructure improvements.

Along with this concentration of next-generation skills, the Pacific Northwest is often considered a desirable place to live and work, with cultural, civic, outdoor activities and other amenities that are cited among the many advantages Washington has.

On the other hand, a bit of history is worth examining. In the past, we faced the challenge of complacency with outdated tax policies that assessed our crown jewel aerospace companies with a tax burden that was heavy on manufacturing industries, as global competition was heating up. The reality of global competition wasn't fully appreciated by many at the time, resulting in a NIH (not invented here) syndrome by some in government and organized labor.

We could have faced the unintended consequence of a slow loss of our aerospace leadership in Washington had decisions gone the other way in 2003, when the final assembly site location was decided for the new aircraft program, or in 2014, when the labor

agreement was finalized and the new long range aircraft derivative program was established here.

Along came technology development which started to automate factory jobs, when at the same time there were calls for wage gains, resulting in labor strife and workforce tensions. In addition, we found that other states were willing to give away the farm in order to attract our aerospace operations to move to their locations, promising a "right to work" labor environment, low tax burdens, better infrastructure and lower cost of wages, housing and living.

Exhortations at the time from the popular press about Washington being among the "best places to do business" rang hollow for aerospace, as Alabama, Texas, Oklahoma, North Carolina and South Carolina captured aerospace site selection decisions, leaving Washington largely in the minus column.

¹ Deloitte estimates based on data from US Bureau of Labor Statistics, US Office of Personnel Management, and US Census Bureau



built, but in the design and manufacturing processes on the shop floor. Robots, driven by sophisticated software, are now doing riveting. Airplanes are now able to fly themselves and passengers are connected with inflight Wi-Fi for communications, business and entertainment. All of this takes a highly educated workforce, with skills and experience in product development and software engineering.

The key to Washington's aerospace future is to promote, develop and sustain

a highly skilled and competitive workforce that can create the innovations of tomorrow. The key skills for the future, among others, will likely be product and technology development, software design, product testing and certification, digital supply chain operations, and quality engineering.

We will be competing not only with other states, but with other industries in our own state such as life sciences, software and high technology for the engineering and software graduates from our higher education institutions.

Manufacturing jobs are needed for composites, subassembly, final assembly and testing, but many of these tasks are becoming automated with the increased use of 3D printing and additive manufacturing, automated riveting and robotic quality testing.

The future for aerospace in Washington will rely less on making parts cheaper, and more on making them better. For



Tom Captain is vice chairman, aerospace and defense at Deloitte and holds degrees from the University of Washington and Seattle University. He advised Governor Gary Locke in the landmark economic development package in 2003, resulting in success for the 787 final assembly site selection process.

With success comes challenges. As we have discovered, manufacturing is portable, with work packages able to relocate with relative ease. But skilled workers living in a highly desirable location are hard to move or incent to move to greener pastures. In addition, with such high demand for skilled workers, our region is experiencing an unprecedented influx of people driving up the cost of housing, wage rates and highway congestion.

The reality is that Washington is a magnet and highly attractive location for aerospace largely due to its workforce, creativity and talent. This is likely true not only for aerospace, but also for the new economy software engineering based industries that are increasingly driving our economies, especially in the Puget Sound region, more so than ever before.

This is just at a time when aerospace is becoming more software intensive, not only in the products that are

example, aircraft of tomorrow could rely partially or fully on electric propulsion, with higher comfort for passengers, on aircraft controlled more with software, from its navigation and health monitoring systems to next-generation inflight entertainment and communications.

Aircraft will likely be made with less labor content to reduce the purchase price by airline operators, with increased use of automation and robotics. Aircraft will likely need to be produced that require less maintenance and upkeep, with parts that last significantly longer on wing. All of this would require an experienced and highly skilled workforce in the disciplines of tomorrow as described, in design and software engineering and in related fields.

Thus, the future of aerospace in Washington should focus

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AFA
MEMBER
SPOTLIGHT

ALTEK Manufacturing

Liberty Lake, WA

Family-owned and operated ALTEK Manufacturing, located in Liberty Lake, WA, has been offering contract manufacturing since 1976.

“After moving to Spokane, working small-job shops and eventually partnering in a machining company, my dad, Al Marzetta, decided to leverage his entrepreneurial skills to establish a contract manufacturing services company in 1980. His vision was unique: offer a full-range of custom manufacturing services all under one roof,” said Mike Marzetta, president of ALTEK.

Today, ALTEK has expanded into a world-class manufacturing facility with a complete range of product realization services that include design, engineering, manufacturing and inventory management. They have been ISO9001 certified since 1999 and achieved AS9100 certification in 2010.

ALTEK is highly diversified, and custom manufactures products for the aerospace, medical, health and fitness, diagnostics, laser and optics industries, among others. “Our vision, coupled with our array of capabilities, has enabled us to sustain business for over 30 years,” said Rick Taylor, vice president of sales. ALTEK is one of the region’s premier contract manufacturers with core competencies in injection molding, mold tooling, machining, bonding, finishing, assembly and test.



INDUSTRY-DRIVEN TRAINING | CREATING THE NEXT GENERATION OF WORKERS

As a leader in the Eastern Washington manufacturing realm, ALTEK co-founded a Spokane-area association aimed at “strengthening and uniting our local manufacturing base to support medical and aerospace manufacturing in our region,” said Taylor.

ALTEK and other manufacturers collaborate with Spokane Community College providing industry feedback so they can customize their programs to industry needs. “The college is highly responsive to the needs of the community in all their programs and they adapt surprisingly fast for an educational institution,” said Marzetta.

“In response to industry feedback, the college shut down their out-of-date manual machinist program and upgraded and expanded their CNC program with all new state-of-the-art CNC equipment. They have a CNC day program that now accommodates up to 25 students, and they also run a CNC night program,” said Marzetta.

CASE IN POINT | CASEY BAILEY

Casey Bailey is probably a lot like other young people his age; he probably likes to hang out with his friends, dislikes getting up early for classes, and might even have a special someone in his life. But, what's different about Casey is that he is already working part-time for the company he'll get a full-time job with when he graduates: ALTEK Manufacturing. And, leading up to graduation, Casey will intern at ALTEK full-time starting next quarter.

"ALTEK has been very helpful working with my school schedule. They support me with my education and they are always asking how school is going," said Casey.

"We will be working closely with Casey (and other students in the future) to set learning objectives, and we will help him achieve them as part of his degree program. By the time he graduates, we'll have a really capable and loyal employee," said Marzetta.

"We are invested in our community, collaborating with other businesses and local schools to create an environment conducive to the next generation of workers. We want to see them succeed," said Marzetta. ▲

SNAPSHOT | ALTEK

- Company revenues \$30 Million
- Utilizes aerospace tax incentives (50% of ALTEK's work is in aerospace)
- Reinvests aerospace tax incentives by providing significant in-house training and career development to its current employees
- Works collaboratively with the Spokane Community College Machinist Program

altek-inc.com

To view a video about ALTEK, go to afa-wa.com/aerospace-in-washington



Casey Bailey, student and future ALTEK employee.




Blue Origin

Continued from page 11

capsule and propulsion module. These are usually small quantity orders that require fast-turnaround parts.

“More than half of our business comes from Blue, and more than half of our employees are dedicated to Blue projects,” McNeeley said. “We’ve been able to make several capital improvements because of Blue’s business. We work with them closely, and that close proximity and hands-on time is critical to our business and definitely impacts the bottom line.”

While Blue Origin operates facilities in multiple states, Washington is our home. It’s one of the most innovative states in the nation and a huge proponent of progress in the aerospace industry. We salute the state policymakers who also recognize this and have taken action over the years. Their business-friendly legislation has allowed us to stay here, and more importantly, supported the rapidly growing commercial space sector.

Now, we aim to expand the discussion. We look forward to engaging with our governor, state legislators and local government officials to show them first-hand how continued business-friendly legislation will help us carry on our mission to ensure America’s leadership in the technology and aerospace sectors. 


Symbiotic Sectors Nurture

Continued from page 17

Bloomberg recently ranked Washington #1 in the US for science, technology, engineering and math (STEM) education concentration. To meet the growing demand for skilled workers, we continue to forge strong public-private alliances to develop and maintain leadership in our most powerful competitive advantage—our people.

A massive, highly skilled tech and advanced manufacturing workforce built upon our aerospace tradition is the proud, shared resource that strengthens communities all over the state.

Raw carbon fiber is produced in Pierce County, precision crafted into composite parts in Sedro Wooley, and recycled in Port Angeles with the help of machines made in the Kent Valley. The largest composite aircraft wing in the world is produced in Everett, more new planes roll off Renton assembly lines than anywhere else in the world while commercial and military aircraft structures are designed, fabricated, maintained, repaired and overhauled in Spokane, and planes are flight tested for FAA certification in Moses Lake. Researchers in a state-of-the-art lab in Frederickson advance the world of composite materials, which may inspire a new unmanned aerial system from Bingen, that will aid a grower in Yakima County or a defense company near JBLM.


Our aerospace sector provides a historical model for collaborative innovation and leadership. It’s also a blueprint for future success. In this emerging era of the Internet of Things (IoT), machine learning, augmented/virtual reality (AR/VR) and so many intriguing possibilities, Washington is primed to grow existing and new businesses from all over the world, right here at home. 

AEROSPACE IN WASHINGTON

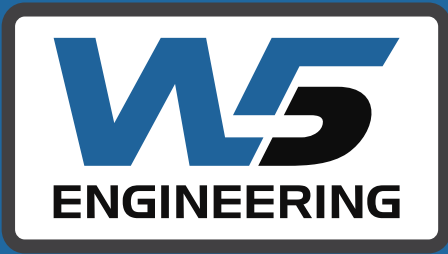
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on educating and nurturing the workforce of tomorrow, as well as re-skilling those that have been laid off. State government leaders should consider supporting expanded class sizes of our higher education and vocational institutions to deliver curriculum in systems integration, software design, coding, and testing, industrial and quality engineering.

Just as seen in the case of the automobile, personal computer or mobile phone manufacturing industries, aerospace is not immune to the inevitable march of commoditization.

Thus, success will be in building better products with more functionality at a lower price point—better before cheaper. In order to maintain our regional aerospace leadership for tomorrow, education matters. The world is watching us. John Naisbitt in his Megatrends book predicted as much. 

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