



King County

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enterpriseSeattle
King County Aerospace Study

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The King County Aerospace Context

King County sits at the center of a global and local aerospace industry.



Themes

- King County's and Washington's regional competitive advantage in aerospace is built upon workforce productivity and the efficiency of its current aerospace supply chain
- Global aircraft production capacity is increasing at unprecedented levels due to production rate increases by existing manufacturers and the entrance of new manufacturers into the market
- The rapid need for additional capacity and looming pressures on the aerospace workforce will challenge the extended aerospace supply chain to meet delivery expectations



Observations

- The scale of King County's established workforce and supply chain requires an ongoing, focused effort to build the skills, technology, and capacity the region needs to retain its competitiveness
- While the Puget Sound region has long been at the heart of the global aerospace industry, mechanisms to support public-private aerospace collaboration lag other regions globally
- King County's improvement of aerospace skills and infrastructure must reinforce productivity advantages in today's technologies, while supporting the emergence of the next generation of technologies in aerospace design, fabrication, and assembly

Recommendation Summary

King County can reinforce its existing aerospace advantage while aligning its aerospace cluster and support structure to meet the industry's evolving needs.

Advance: *build new sources of competitiveness for King County*

1. **Extend the aerospace core into new processes and technologies** that build upon King County's experience in aerospace design, aerospace manufacturing, software development, and technology integration through business development and recruitment.
2. **Collaborate with industry, other local governments governments, and the State to maximize regional competitive advantages** in key industry areas through an ongoing effort to understand how other areas of the state can help lower King County's cost profile, augment its workforce, and increase the County's and Washington's overall competitiveness.
3. **Reduce barriers to speed the process of new investment** through a review and streamlining of permitting, land use approvals, and key regulatory and structural issues that may influence future investments in the County.

Reinforce: *extend King County's advantages in workforce productivity and supply chain network efficiency*

4. **Develop coordinated King County preschool to graduate school (P-20) pathways** that reflect industry needs, help generate interest in aerospace, build STEM and problem solving skills at the secondary level, define paths to certification in manufacturing skills, and support additional engineering students and aerospace research at universities
5. **Make coordinated investments in freight and personal mobility** to support the growing flow of material and workers that support in-state aerospace activity and the export of goods to suppliers and manufacturers outside of Washington.
6. **Maintain an ongoing focus to solidify the aerospace core** to retain existing strengths in structures, components, metalworking, and supporting skills that will support the increased production of current aircraft and speed King County firms' transition to new design and production technologies

Advance

1. Extend the aerospace core into new processes and technologies

Extending King County's aerospace advantage will depend upon establishing early leadership in emerging processes and technologies.

Because King County's future aerospace advantage depends on its ability to be productive, efficient, and of the highest quality, its companies must extend their existing base of experience into new and emerging aviation and space processes and technologies. This effort will require both research and development in existing companies, the nurturing of new companies, and the select recruitment of companies currently not in the County. Areas such as advanced materials, avionics, and software development can augment the region's existing strengths in components, structures, and assembly.

Recommendation Rationale

- The retention of King County's productivity, workforce, and quality advantages requires early investment in the next generation of aerospace design and technologies
- Washington is a world leader in many high technology areas, particularly software, yet even as software, data, and avionics gain in importance in aviation, the firms that develop these technologies are relatively under-represented in Washington
- King County firms working in components, consumables, fabrication, and structures have the opportunity to develop an early competitive advantage in new materials and technologies

Specific Actions

- Work with the State and industry to support skill development and investment within the current industrial base targeted at new material and production technologies
- Work through enterpriseSeattle to target and attract new firms in areas currently outside of the County's aerospace core, e.g. advanced materials, avionics, aerospace software development, and systems (e.g. brake, power, etc.)
- Use King County Aerospace Alliance (KCAA) to engage the aerospace, software, and venture capital sectors to spot new opportunities, fund investment in local companies, and support the recruitment of new companies to Washington and King County

Advance

2. Collaborate with industry, other local governments, and the State

Aerospace companies across Washington can compliment and strengthen the King County aerospace industrial base.

King County can collaborate with industry and other jurisdictions across Washington to support King County's aerospace core by identifying how other areas of the state can help lower King County's cost profile, augment its workforce, and increase the County's and the State's overall competitiveness. In addition to identifying potential partnerships to support joint design and manufacturing opportunities that can reduce cost and risk to companies in King County, such collaboration can also help influence policy on questions such as freight and workforce mobility and pertinent regulations.

Recommendation Rationale

- King County's aerospace industry concerns, from workforce development, to transit, to infrastructure, to freight mobility are shared not only by its immediate neighbors in Snohomish and Pierce Counties, but impact aerospace suppliers across Washington
- With state and federal funds constrained for the foreseeable future, coordinated lobbying and pooling of resources may be required to pursue needed projects
- Other parts of Washington present lower cost to build and operate large scale manufacturing sites and can serve King County at minimal cost, but can benefit from the design, development, and specialized manufacturing expertise of King County

Specific Actions

- Engage with public and private sector leaders and aerospace affiliations such as the WAP to identify, lobby for, and implement shared priorities across aerospace workforce development, infrastructure, and specific state and federal policies and funding that impact the industry
- Engage with industry groups to facilitate the development of relationships between King County businesses, particularly small and medium businesses, and those in other portions of the state to support skill development, capacity growth, new business development, and other emerging topics

Advance

3. Reduce barriers to help speed the process of new investment

Local jurisdictions in King County can work with the State and industry to reduce the time and cost to approve and complete industrial projects.

While maintaining the essential character of the Puget Sound region, local jurisdictions in King County can work with the State and industry to implement measures to speed and provide greater certainty regarding the process for siting, approving, completing and operating industrial projects. Together, they can work to develop more streamlined and consistent land use and permitting processes, seek water quality standards, increase the predictability and transparency of land use approval, increase certainty of investments needed to clean-up historic contamination, convene comprehensive discussion of flood risk and risk tolerance, and identify key regulatory and structural issues that may influence future investments in the County.

Recommendation Rationale

- Interviews with industry, municipalities, and the County demonstrate a shared recognition that the permitting process for new construction and existing sites can be made more efficient to reduce time and cost for both applicants and administrative agencies
- Storm water permitting and uncertainty about scope and cost of cleaning up historic contamination in some areas remain significant topics of focus for industry as it makes decisions regarding investment in existing or new facilities in the County
- Flood control on the Green River has improved, but uncertainty persists between business, government, and insurance industry as to how to appropriate cost any remaining flood risk

Specific Actions

- Work with industry, other counties, the state, and federal representatives to reduce permitting redundancies and inefficiencies and create a roadmap for permitting across jurisdictions
- Engage with industry and Ecology on industrial storm water standards focused on water quality at a watershed scale, particularly in industrial areas with high background contamination
- Convene cities, industry representatives, FEMA, and insurers to develop a more comprehensive framework for flood risk assessment and tolerance; share approaches for meeting new FEMA standards for flood hazard regulations under ESA
- Continue to lead efforts that improve total cost competitiveness, e.g. measuring the cost and effectiveness of health care delivery in the Puget Sound.
- Continue to work with the Lower Duwamish Work Group on river clean-up alternatives that achieve outcomes quickly and with least disruption to community, economy, and health.

Reinforce

4. Develop a coordinated King County P-20 workforce pipeline

King County's aerospace advantage primarily rests in the productivity and innovative thinking of its workforce.

The Workforce Development Council, Seattle-King County, school districts, and higher education can work with industry to develop a coordinated P-20 aerospace workforce pathway to generate interest in aerospace careers, develop STEM and problem solving skills at the secondary level, defining pathways to certification in aerospace skills, and support capacity at four year institutions for engineering talent and aerospace research. Such a pipeline should also consider the growing diversity of King County and how the public schools and training programs can best serve these populations and ignite interest in aerospace.

Recommendation Rationale

- The efficiency and productivity of Washington's workforce are critical to Washington's and King County's ongoing competitiveness, but a large portion of its workforce will retire over the next five years, even while production rates increase across the industry
- Washington's universities do not produce enough engineers and research to meet aerospace industry needs; Washington is a significant importer of engineers
- King County's community and technical colleges are primary providers of technical training in advanced manufacturing and aeronautics for the region's diverse population, including many who require training in both basic and technical skills

Specific Actions

- Workforce Development Council, Seattle-King County (WDC) can work with K-12, community and technical colleges, state universities, and industry to define standard pathways, curricula, and training for specific aerospace careers
- The KCAA can work with state universities on programs and advocacy for funding industry-relevant engineering teaching and research capacity (e.g. materials, production, biofuels)
- School districts and WDC can support and implement K-12 programs that build STEM skills, engage diverse communities in career pathways, and secure high school aerospace grants
- WDC can work with community and technical colleges to identify centers of excellence for specific manufacturing skills and align funding to those centers

Reinforce

5. Make coordinated investments in freight and personal mobility

The efficiency of Boeing facilities and global suppliers in King County depends on the efficient movement of material and people.

KCAA can advocate with the State and municipalities to prioritize and fund investments in freight and personal mobility to support the flow of material and workers for in-state aerospace activity and the export of goods to companies outside of Washington. The top priority for roads infrastructure is improvements to the I-405/SR 167 corridor, but SR 509 also helps port mobility. Transit plays an equally important role in managing congestion during peak hours. Extension of the F-line Rapid Ride to Renton is critical, but stable funding for transit in general is important to keeping the region moving and serving workers.

Recommendation Rationale

- Higher aerospace production rates will lead to the greater flow of material and workers across the Puget Sound region, especially in King County
- Industry and municipalities are focused on freight mobility, but particularly in the context of managing increased freight movement alongside the use of mass transit to support a growing volume of workers working and travelling across the County
- The Port of Seattle plays a central role in the movement of goods into manufacturing facilities, both through SeaTac and also in the distribution of spare parts to support global aerospace operators

Specific Actions

- Pursue funding for infrastructure investments that impact movement through King County such as I-405, SR-167, SR-509
- Support stable funding for transit to relieve congestion and allow for improvements that will serve aerospace workers better. Extending the F-line Rapid Ride corridor to Renton is a top priority.
- Coordinate with other areas of the state to support projects that will improve freight mobility through the Pierce to Snohomish County “aerospace highway” and across I-90 from key locations in eastern Washington to the Puget Sound

Reinforce

6. Solidify the existing aerospace core

King County must continue to support the skills and structure that support its existing manufacturing strengths.

The KCAA can work on an ongoing basis with industry, workforce development agencies, and economic development agencies to solidify its existing strengths in structures, components, aluminum metalworking, logistics, and final assembly that will be essential to support rate increases across all commercial airplane programs including the 737 NG, 737 MAX, A320, and Boeing widebodies. Maintaining these skills will also help King County companies to quickly make the transition to the use of new materials and the blending of materials – carbon fiber, aluminum, titanium, etc. – as they grow in importance in aircraft fabrication and assembly.

Recommendation Rationale

- Rate increases on the 737NG and the decision to produce the 737 MAX rather than a “New Small Airplane” ensures that current manufacturing, component, and structural technologies will continue for at least the next decade
- Advances in aluminum technologies may make aluminum a viable alternative and competitor to carbon fiber for next-generation, single-aisle narrowbody aircraft
- Materials technology, particularly the blending of metallic and non-metallic material, is of increasingly important value across many aerospace components and structures

Specific Actions

- Coordinate through the Workforce Development Council, Seattle-King County (WDC) to identify potential skill gaps in the existing manufacturing core of structures, components, etc. and address those gaps
- Collaborate with industry, the WDC, and workforce training entities to ensure that training meets industry’s skill needs as it balances incorporating emerging technologies (e.g. carbon fiber, systems) with maintaining a solid foundation in existing fabrication technologies
- Collaborate with other areas of the state to build an aerospace network that takes advantage of differing cost structures and technologies across the state