



Puget Sound Regional Council

PSRC Regional Aviation Baseline Study

Executive Summary



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Executive Summary May 2021

Prepared for



Puget Sound Regional Council

Prepared by



In association with



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Puget Sound Regional Council

Background

Introduction

Aviation plays a critical role for people and businesses in the growing central Puget Sound region, which is currently home to 29 airports of varied sizes and functions. Continued, coordinated planning is essential for ensuring that the regional airport system can support existing and future demand. As part of these efforts, PSRC launched the Regional Aviation Baseline Study, funded by a \$1.6 million grant from the Federal Aviation Administration (FAA).

In a separate effort, in 2019 the Washington State Legislature created the Commercial Aviation Coordinating Commission (CACC), tasked with recommending a new primary commercial aviation facility and additional ways to add capacity to accommodate future demand at other facilities. PSRC has shared the results of this study with the CACC as they undertake their planning efforts.

The COVID-19 pandemic emerged in the central Puget Sound region in March 2020, while this study was in progress. Passenger travel in the region has slowed over the past year, but the forecast in this study remains relevant. Aviation has experienced dips in growth at various points over the past 40 years, particularly during recessions, but long-term growth has been consistent and is expected to remain so.



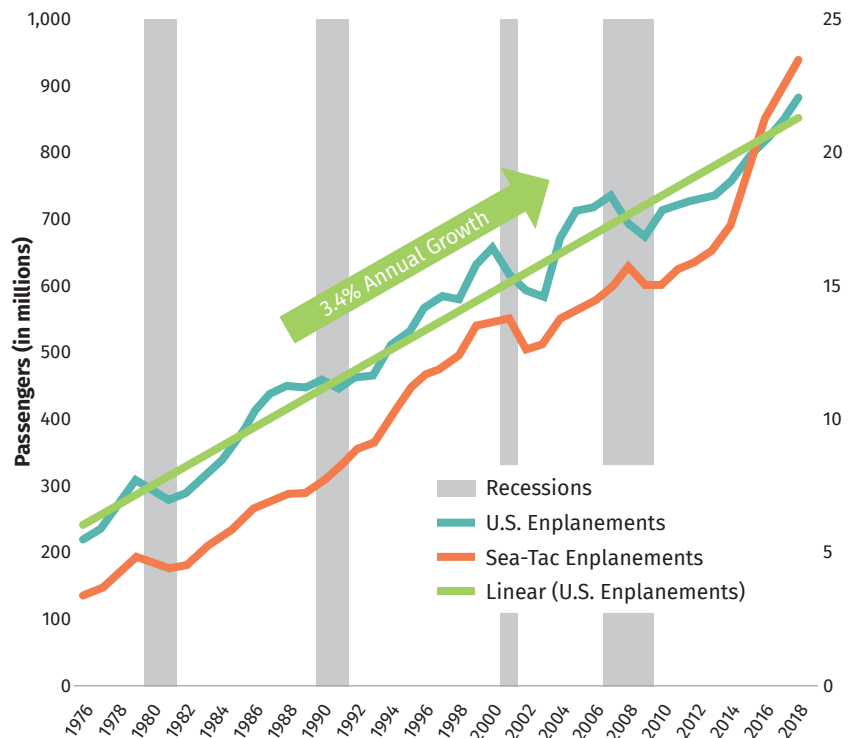
The Puget Sound Regional Council (PSRC) conducted a study to provide a clear picture of the aviation needs in the region and set the stage for future planning efforts.

Study overview

The Regional Aviation Baseline Study was designed to provide an understanding of the regional aviation system and forecast future needs. The desired outcomes of the study were to:

- Identify the roles of each airport and the aviation activities within the region
- Provide a regional perspective on how aviation activities in the study area interact with each other, the community, and the broader economy
- Obtain input from stakeholders about their needs and build a common understanding about aviation and airspace constraints
- Identify future aviation needs within the central Puget Sound region and set the stage for future planning

Annual Growth In Passenger Enplanements



Study scope

The study will support future planning with information about existing conditions and recent trends, economic contributions of regional aviation sectors, airspace flows and constraints, relationships between regional airports, access to the region's airports, and community input.

The study considers the existing condition of the regional aviation system; it is not a siting study or a master plan.

There are specific environmental studies, including noise and air quality studies, that would accompany a siting study or master plan that were not part of this study. This study was also not designed to make recommendations for addressing current and future capacity needs. The information analyzed in this study will help inform policy makers, but ultimately any changes to the regional aviation system would be market driven. For an airport to expand or a new airport to be built, an airport owner would need to work with the FAA and the Washington State Department of Transportation (WSDOT) to drive that process. In addition, airlines would need to be willing to serve that new airport—airlines are private businesses and will choose to service the markets that fit their financial models.

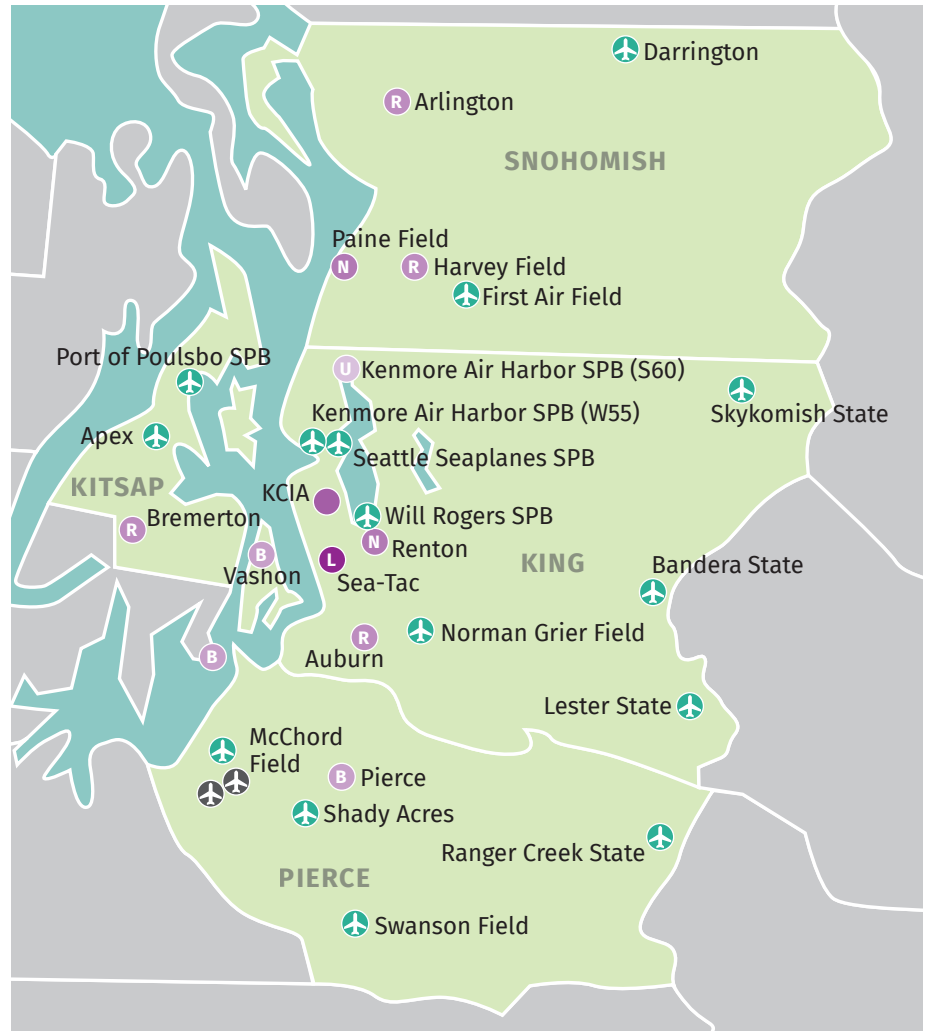
Existing conditions and aviation demand forecast

Overview of regional aviation system

There are 27 public-use airports and two military-operated airports within the study area of King, Pierce, Snohomish, and Kitsap counties. The region is also home to multiple Boeing facilities as well as suppliers and related companies. Most of the aviation activity in the central Puget Sound region is concentrated in King and Snohomish counties.

Within the study area, there are three commercial service airports:

1. Seattle-Tacoma International Airport (Sea-Tac) typically serves 50 million passengers annually with an economic impact of \$22.5 billion in 2017.
2. Paine Field began commercial service in 2019 and hosts large aircraft manufacturing; the airport has an estimated economic impact of \$20 billion annually.
3. King County International Airport (KCIA) is one of the nation's busiest non-hub commercial service airports and contributes \$3.5 billion in annual economic impact; King County International also hosts large aircraft manufacturing.



National Plan of Integrated Airports System (NPIAS) Airports

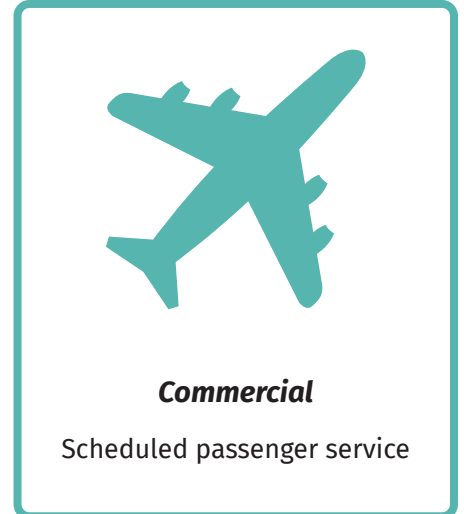
- Large hub
- Small/Non-hub
- National
- Regional
- Local/Basic
- Unclassified
- ✈ Non-NPIAS Airport
- ✈ Military Airport
- SPB=Seaplane Base

Trends, forecasts, and system requirements by aviation sector

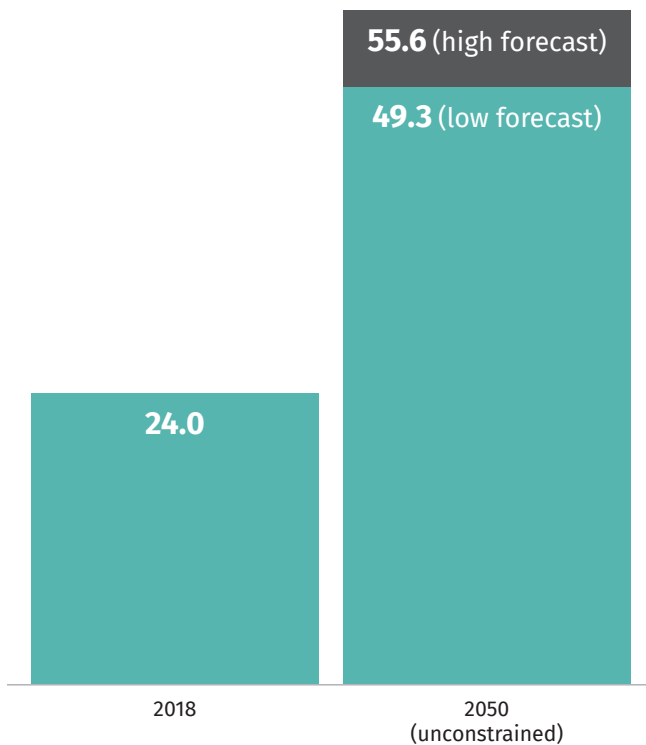
The aviation system includes commercial (passenger) service, general aviation, and air cargo. While all three parts of the system must work together, each is affected by unique trends and has a unique forecast.

Commercial

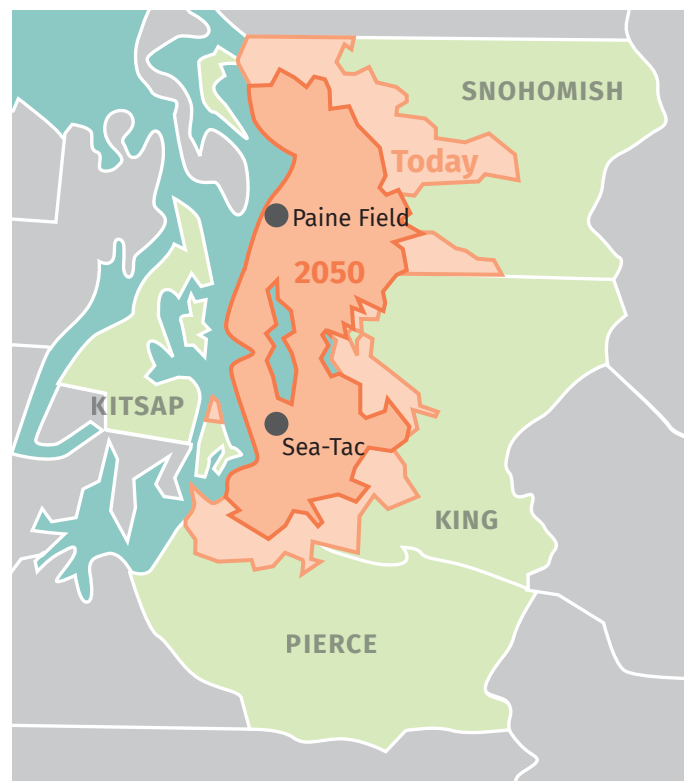
- Based on current capacity at Sea-Tac, increased capacity planned through Sea-Tac’s Sustainable Airport Master Plan, and current capacity at Paine Field, the region will be able to accommodate approximately 28,600,000 enplanements by 2027 (enplanements are a measure of aviation activity; one enplanement is one passenger boarding a plane).
- The projected demand for passenger enplanements is 55,600,000 by 2050—nearly double 2018 demand.
- **Based on the forecasted demand, there will be a gap of 27 million unmet enplanements (passenger boardings) each year by 2050.**
- As population and jobs continue to grow in the region, roads will become more crowded, so it will take longer to access existing passenger aviation facilities, with large parts of the region facing well over an hour drive to access Sea-Tac. As Sound Transit continues to expand the Link light rail system, this and other multimodal solutions may help increase access.
- Sea-Tac in particular faces airspace constraints, although new FAA navigation systems will help make better use of air space.



Passenger enplanements in the central Puget Sound region (millions)



Population that can access Sea-Tac or Paine Field by car in an hour or less today versus 2050





General Aviation

Business, flight instruction, medical, emergency, law enforcement, recreation, and tourism

General aviation

- General aviation includes recreational flights, tourism, private business travel, flight instruction, local transportation, medical and emergency management, law enforcement, and search and rescue operations.
- **There will be adequate runway capacity within the region's system to accommodate general aviation demand through 2050.**
- There has been a decrease in numbers of private pilots and aircraft maintenance technicians over the years.
- General aviation airports in the region generally face deteriorating runways and insufficient hangar space.

Air cargo

- Air cargo growth is driven by globalization and e-commerce as well as strong state exports.
- Air cargo is tied to commercial flights because a lot of air cargo travels in the bellies of passenger flights, but capacity constraints both at airports and off-site facilities can be limiting factors.
- In the central Puget Sound region, 85% of air cargo is served by Sea-Tac and King County International Airport.
- Demand for air cargo is expected to more than double by 2050, growing from 539,600 metric tons in 2017 to 1,319,300 tons in 2050.
- Air cargo demand is often seasonal, so air cargo handling capacity can be significantly stressed during harvest time for high value crops like cherries and winter holiday season, but facilities may be sufficient or even underutilized during other times of the year.
- **Based on current plans, the central Puget Sound region will fall short of on-airport warehouse space starting in 2027. The limiting factor for both Sea-Tac and King County International Airport is warehousing and landside access facilities.**
- There are opportunities to redesign existing on-airport facilities, develop new off-airport facilities, use Grant County Moses Lake International Airport as a cargo reliever during the harvest time for high value crops like cherries, and shift some traffic to Spokane International Airport to create additional capacity in the central Puget Sound region.



Air Cargo

Freight and mail carried in the lower hold of passenger aircraft and on dedicated freighters

Scenarios for addressing 2050 demand

While this study was not intended to provide solutions or make recommendations, the team did analyze the capability of the region to meet different levels of demand.

The team studied three scenarios to meet different levels of demand:

- Meet 50% to 60% of 2050 demand (baseline)
- Meet 80% of 2050 demand
- Meet 100% of 2050 demand

The **baseline scenario** includes current capacity as well as plans already in place for increased capacity at Sea-Tac through the airport’s Sustainable Airport Master Plan.

Meeting 80% of demand would require two commercial service runways, at one or two airports. This would require significant development at one or two airports, through expanding existing runways or constructing a new runway and developing terminal space to support passenger flights. This scenario also assumes that Sea-Tac would implement projects outlined in its Long-Term Vision.

Meeting 100% of demand would require three commercial service runways, at up to three airports. This would require significant development at up to three airports, through expanding existing runways or constructing new runways and developing terminal space to support passenger flights. This scenario also assumes that Sea-Tac would implement projects outlined in its Long-Term Vision.

Scenario 3: (Meet 100% of demand)	55 million
Scenario 2: (Meet 80% of demand)	44 million
Scenario 1: Baseline (50%-60% of demand)	33 million
	28 million



In analyzing the ability of existing airports in the region to meet different levels of demand, the study team looked at other places with multiple airports to learn from their experience. While the Puget Sound region has less population and enplanements today than other areas studied, characteristics of the region do indicate the high per-capita income and presence of two airlines with connecting hub operations at Sea-Tac indicate support for an additional airport in the future. This analysis also served as a reminder that airlines are private businesses, and they decide what airports they will serve to be most profitable. Just because an airport in a large metropolitan area has adequate facilities for this type of service does not mean an airline will provide service.

Benefits and challenges of meeting demand

This study examined high-level regional benefits and challenges associated with each scenario developed. The aviation industry provides economic benefits to the region, with WSDOT’s 2020 Airport Economic Impact Study estimating that Sea-Tac contributed 151,400 jobs, \$7 billion in labor income, and \$22.5 billion in business revenue to the regional economy. Meeting the demand for aviation would increase the industry’s economic contribution to the region by adding up to \$31 billion in economic activity and 209,000 new jobs.

Expanding aviation service to meet demand also comes with environmental impacts. Aviation activity—both the planes themselves and support equipment – has a negative impact on air quality, and noise from airplanes impacts communities near airports and under flight paths. The aviation industry is moving rapidly toward improved navigation systems that will increase airspace efficiency, better fuel economy, use of electric aircraft, and quieter engines. While we don’t have the information to quantify how much these systems will improve over the next 30 years, we do know that the environmental impact of aviation in 2050 will be different than it is today.

This study examined region-level benefits and challenges for the scenarios. If an airport owner in the region chose to expand or offer new service, or a new airport were to be constructed, that process would involve detailed environmental analysis specific to that airport location.

Benefits and challenges to meeting passenger demand compared to baseline

	Benefits	Challenges
Scenario 1: <i>Baseline, Meet 50%-60% of demand</i>	No additional increase in potential 2050-level noise and greenhouse gas (GHG) impacts, single-occupancy vehicle trips to airports	Lowest increase in airport economic impact and jobs by 2050, with approximately \$4 billion to \$9 billion in added economic activity and 27,000 to 61,000 added jobs as a result of Sea-Tac Sustainable Airport Master Plan project implementation
Scenario 2: <i>Meet 80% of demand</i>	Would increase 2050 airport economic impact and jobs by nearly 60%, or roughly \$20 billion in added economic activity and 135,000 added jobs; would increase business and consumer travel choices more than scenario 1	Would increase 2050-level noise and GHG impacts, single-occupancy vehicle trips to airports by nearly 60% over baseline, assuming no improvement in current aircraft efficiency, noise emissions, and fuel types
Scenario 3: <i>Meet 100% of demand</i>	Would increase 2050 airport economic impact and jobs by almost 100%, or roughly \$31 billion in added economic activity and 209,000 added jobs; provides the most business and consumer travel choice compared to other scenarios	Would increase potential 2050-level noise and GHG impacts, single-occupancy vehicle trips to airports by almost 100% over baseline, assuming no improvement in current aircraft efficiency, noise emissions, and fuel types

Evaluating airports against scenarios

The study team completed a technical assessment of each airport in the region to determine its potential for expansion. As stated above, this is not a recommendation for expansion at these airports, but an analysis designed to show the degree to which the region might accommodate forecasted demand using existing airport facilities. Building a new airport was not assessed as part of this study.

Of the 29 airports analyzed, most were eliminated from the list of airports with technical capabilities for expansion because they could not meet critical criteria like runway length; conflicts with existing flight paths; impact to Sea-Tac operations; likelihood of flooding; roadway and transit access; impacts to residential areas, schools, or churches; ability to accommodate additional aircraft operations; or impact to aerospace manufacturing.

The five remaining airports were analyzed further, with the following findings:

- Arlington Municipal Airport has potential for expansion but because of its proximity to Paine Field does not significantly increase population or employment access to service
- Bremerton National Airport has potential for expansion
- Paine Field has potential to accommodate additional service
- McChord Air Force Base was eliminated due to federal ownership and U.S. military needs
- Tacoma Narrows Airport has potential for expansion, but the ability to extend the runway is limited

Changing or expanding service: If an existing airport in the region was interested in expanding existing passenger service or adding new passenger service, that airport owner would work closely with WSDOT and the FAA to move through many required processes. The WSDOT Statewide Airport System Plan would need to be updated and recommend the change in role, and the airport would conduct an FAA Airport Master Plan, environmental processes, and an FAA Benefit-Cost Analysis. Planning, designing, and constructing a new airport is very costly, and the airport owner would likely need to obtain funding from the state or federal government, private sector, or others.



Public engagement

During the course of the study, PSRC designed an engagement plan to directly reach affected communities; a variety of stakeholders, including PSRC members, representatives of the aviation industry, and airport communities; people interested in aviation issues; and residents of the region. The study team conducted a statistically representative public opinion survey of the four-county region and a series of in-depth interviews; hosted an online open house and series of three virtual public meetings held over Zoom; conducted briefings for interest groups; and promoted the project and associated outreach through emails, social media advertising, and direct mail.

Most of the project's public engagement took place during the COVID-19 pandemic. To follow safety guidelines while also making sure that people interested in the project had an opportunity to participate, the team held meetings virtually, built an online open house and ran the online open house longer than planned due to ongoing interest, held a series of public meetings over Zoom with a dial-in participation option, and mailed a project postcard to more than 200,000 households in airport communities in the central Puget Sound region. The online open house had 14,253 page views and 390 users left a comment; 176 people participated in the virtual public meetings.

Most people who participated expressed that the region should prioritize meeting the demand for aviation and also expressed significant concern about noise and environmental impacts. Survey participants were generally more supportive of expanding aviation capacity and less concerned about noise and environmental impacts than people who participated in public meetings and the online open house. In general, most people said they preferred spreading capacity and aviation impacts throughout the region rather than concentrating it at one airport (although a new airport at a greenfield site was not presented as an option).

Even before the COVID-19 pandemic began, PSRC focused on an inclusive public engagement strategy to reduce barriers to participation for people living near airports in particular. Some of the strategies used to accomplish this included:

- *Offering the survey (and associated recruitment materials) in English as well as Chinese (simplified and traditional), Somali, and Spanish to collect input from people who use these languages*
- *Mailing a postcard promoting the online open house and virtual public meetings to 209,692 addresses near airports in the region to directly invite affected community members to participate*
- *Offering the virtual public meetings at a range of times and days to provide options to accommodate different schedules and availability*
- *Posting the virtual public meeting video on the project website so people could watch at a time that works for them and to view multiple times if the content was new to them; people who watched the video rather than attend the virtual meetings in real time could provide comment through the online open house*
- *Extending the online open house end date by several weeks to allow for more participation*
- *Conducting direct outreach to jurisdictions that are home to an airport, tribes, and community-based organizations focused on issues related to aviation (such as noise and pollution) or that serve communities who live near airports to hear directly and more robustly from these groups*

Next steps

The study forecasts that the demand for commercial aviation service will double by 2050, meaning the region will be unable to meet demand for around 27 million enplanements by 2050. Based on current plans, the region will also fall short of on-airport warehouse space for air cargo in just six years, by 2027. It is important to note, though, that adding capacity would also add noise and environmental impacts.

PSRC's intent is that this study provide a foundation for regional decision makers as they consider if the region should accommodate the growing demand for aviation, and how to do so. PSRC has released study findings to the public throughout the project, and directly shared with people who expressed interest through community engagement opportunities as well as with PSRC members and state and local elected officials. The study team has also provided findings to the Commercial Aviation Coordinating Commission (CACC). The CACC was created by the state Legislature and tasked with evaluating near-term measures that would extend the capacity of existing airports in Washington state while also examining long-term solutions, including recommending a new primary commercial aviation facility.

Many entities are studying aviation issues; these studies may help inform next steps in the region.

- *Mobile Observations of Ultrafine Particulates Study, University of Washington*
- *Aviation Economic Impact Study, Washington State Department of Transportation*
- *Aviation Biofuels Infrastructure Feasibility Study, Port of Seattle*
- *Washington State Air Cargo Movement Study, Washington State Legislature*
- *Ultra-High-Speed Ground Transportation Study, Washington State Department of Transportation*

“ The two year Regional Aviation Baseline Study conducted by PSRC has provided the Commercial Aviation Coordinating Commission with an exceptional understanding of the current status of the airports within the region as well as the future capacity needs as communities and businesses continue to grow. The projections for aviation demand reinforce the necessity for the Commission to complete its work and make informed recommendations as to what could be done to meet the demand for air passenger service, air cargo operations, and general aviation. The information derived from the PSRC study has and will continue to inform Commission members as the work continues. Speaking for the Commission, we greatly appreciate the work completed by the PSRC team. ”

— David Fleckenstein, WSDOT Director of Aviation

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For the full report, background papers, public engagement summaries, and supporting documentation, visit psrc.org/aviation-baseline-study