Regional Aviation Baseline Study

Study Objectives

— Identify the roles of each airport and the aviation activities within the region based on existing planning efforts

— Provide a regional perspective on how aviation activities at airports in the region 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
Study Phases

Airport & Aviation Activity Analysis
(Summer/Fall 2019)

- Market trends
- Regional forecasts
- Existing conditions & constraints

Future Aviation Issues Analysis
(Fall/Winter 2019/2020)

- Airspace flow analysis
- Future regional landside and airside capacity needs
- Future needs by activity and by airport
- Major challenges
- Economic analysis

Scenario Definition and Evaluation
(Spring/Summer 2020)

- Identify and analyze scenarios
- Identify potential next steps
- Publish final report (Fall 2020)
Market Trends and Regional Forecasts

Commercial
Scheduled passenger service

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

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

Forecasts represent unconstrained regional demand in 2050
Commercial Enplanement Demand Forecast

Enplanements in the Central Puget Sound Region (millions)

- 24.0 (2018)
- 55.6 (high forecast, 2050)
- 49.3 (low forecast, 2050)

Source: WSP USA Analysis
Air Cargo Demand Forecast

Commercial Air Cargo Handled in the Central Puget Sound Region (metric tons)

- 2018: 552,000 tons
- 2050: 1,300,000 tons (Unconstrained)

Source: WSP USA Analysis
General Aviation Demand Forecast

General Aviation Operations in the Central Puget Sound Region

2017: 1,351,000
2050: 1,806,000

Unconstrained

Source: FAA ATADS, NFDC, FAA Aerospace Forecast, and WSP
Key Takeaways

- The region’s airspace is complex and constrained
- Even with planned investments, Sea-Tac Airport will not be able to meet the region’s 2050 demand for passenger air service
- Drive times to Sea-Tac will get substantially worse for most of the region’s residents
- Investments will be needed to meet air cargo demands
- Region has capacity to meet general aviation demand, but capacity constraints exist at individual airports
The FAA continuously modernizes the National Airspace System

— National Airspace System: the airspace, navigation facilities and airports of the US along with their associated information, services, rules, regulations, policies, procedures, personnel and equipment

— This study focuses on airspaces, flight procedures and surveillance within the Puget Sound Region

National Airspace System modernization is called NextGen

— NextGen makes flying safer, more efficient and more predictable

— It includes planning and implementation of new technologies and procedures
<table>
<thead>
<tr>
<th>Code</th>
<th>Airport Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>AWO</td>
<td>Arlington Municipal Airport</td>
</tr>
<tr>
<td>BFI</td>
<td>King County International/Boeing Field</td>
</tr>
<tr>
<td>BLI</td>
<td>Bellingham International Airport</td>
</tr>
<tr>
<td>BVS</td>
<td>Skagit Regional Airport</td>
</tr>
<tr>
<td>GRF</td>
<td>Gray Army Airfield</td>
</tr>
<tr>
<td></td>
<td>(Joint Base Lewis-McChord)</td>
</tr>
<tr>
<td>NUW</td>
<td>Whidbey Island Naval Airfield (Ault Field)</td>
</tr>
<tr>
<td>OKH</td>
<td>AJ Eisenberg Airport</td>
</tr>
<tr>
<td>OLM</td>
<td>Olympia Regional Airport</td>
</tr>
<tr>
<td>PAE</td>
<td>Paine Field/Snohomish County International</td>
</tr>
<tr>
<td>PLU</td>
<td>Pierce County Airport</td>
</tr>
<tr>
<td>PWT</td>
<td>Bremerton National Airport</td>
</tr>
<tr>
<td>RNT</td>
<td>Renton Municipal Airport</td>
</tr>
<tr>
<td>S43</td>
<td>Harvey Field Airport</td>
</tr>
<tr>
<td>S50</td>
<td>Auburn Municipal Airport</td>
</tr>
<tr>
<td>SEA</td>
<td>Seattle-Tacoma International</td>
</tr>
<tr>
<td>TCM</td>
<td>McChord Field Airport</td>
</tr>
<tr>
<td></td>
<td>(Joint Base Lewis-McChord)</td>
</tr>
<tr>
<td>TIW</td>
<td>Tacoma Narrows Airport</td>
</tr>
<tr>
<td>0S9</td>
<td>Jefferson County Airport</td>
</tr>
</tbody>
</table>
Regional Air Traffic

**Sea-Tac**
- Arrivals
- Departures

**Other**
- Arrivals
- Departures
Classes of Airspace Within Project Study
Enroute Procedures
Enroute Procedures

Existing standard arrival routes for airports within airspace study
Existing standard departure routes for airports within airspace study
Enroute Procedures

Existing instrument approaches for airports within study area
Military Airspace
Combined Airspace and Flight Procedures
Regional Airspace Analysis

South flow

North flow

Arrivals

Departures
Airspace Constraints

- Terrain, such as Cascade Range
- Proximity of airports to each other
- Historic noise abatement
- Poor weather conditions
- Airfield limitations
- Existing traffic flow patterns
- Restricted use areas
- Traffic origin/destinations
- Volume of air traffic in and out of Sea-Tac
- Air traffic procedures and complexities
- Military
Airports in Close Proximity

Sea-Tac, Renton and Boeing Field are home to the region’s most challenging airspace
Shared use of standard arrival route procedures
Paine Field north flow, Sea-Tac south flow
North flow access in poor weather conditions
Key Benchmark Metrics
Sea-Tac Enplanement Demand and Sea-Tac Planned Terminal Gate Capacity

SAMP Long-Term Vision could provide 113 Gates in the future, subject to further study and financial analysis.
Potential for Growing Delay at Sea-Tac

Annual airfield demand/delay comparison (Sea-Tac)

Source: SAMP, Note: PAL = “Planning Activity Levels.” Sea-Tac had 438,391 total aircraft operations in 2018.
## Assessment of commercial service passenger needs through 2050

<table>
<thead>
<tr>
<th>Puget Sound Central Region</th>
<th>Forecast of passenger enplanements</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2017</td>
<td>2022</td>
<td>2027</td>
<td>2050</td>
</tr>
<tr>
<td>Passenger enplanements (high forecast)</td>
<td>22,450,500</td>
<td>25,400,000</td>
<td>31,100,000</td>
<td>55,600,000</td>
</tr>
</tbody>
</table>

Source: WP #1, WSP

Note: Low forecast for 2050 is 49,300,000 enplanements based on unconstrained forecast

<table>
<thead>
<tr>
<th>PAE + Sea-Tac</th>
<th>Potential passengers accommodated</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2017</td>
<td>2022</td>
<td>2027</td>
<td>2050</td>
</tr>
<tr>
<td>1-Constrained 2027 SAMP Near Term Projects Scenario(^1,2)</td>
<td>23,050,000</td>
<td>25,655,000</td>
<td>28,600,000</td>
<td>28,600,000</td>
</tr>
<tr>
<td>2-Constrained SAMP Long Term Vision Scenario(^1,3)</td>
<td>23,050,000</td>
<td>25,655,000</td>
<td>28,600,000</td>
<td>33,600,000</td>
</tr>
</tbody>
</table>

Source: SAMP 2016, PAE Supplemental EA, 2018

<table>
<thead>
<tr>
<th>Puget Sound Central Region</th>
<th>Gap (demand-supply)</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2017</td>
<td>2022</td>
<td>2027</td>
<td>2050</td>
</tr>
<tr>
<td>1-Constrained 2027 SAMP Near Term Projects Scenario(^1,2)</td>
<td>559,500</td>
<td>255,000</td>
<td>-2,500,000</td>
<td>-27,000,000</td>
</tr>
<tr>
<td>2-Constrained SAMP Long Term Vision Scenario(^1,3)</td>
<td>599,500</td>
<td>255,000</td>
<td>-2,500,000</td>
<td>-22,000,000</td>
</tr>
</tbody>
</table>

Note:

\(^1\) Assumes PAE accommodates 600,000 annual enplanements, per Supplemental EA
\(^2\) Based on Sea-Tac SAMP Near-Term Projects, accommodating up to 28 million annual enplaned passengers
\(^3\) Based on Sea-Tac SAMP Long-Term Vision, possibly accommodating up to 33 million annual enplaned passengers
60 Minute Drive Time to Commercial Airports

Sea-Tac in 2017

<table>
<thead>
<tr>
<th>People within an hour</th>
<th>People outside an hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,500,835</td>
<td>1,565,165</td>
</tr>
<tr>
<td>62%</td>
<td>38%</td>
</tr>
</tbody>
</table>

Sea-Tac in 2050

<table>
<thead>
<tr>
<th>People within an hour</th>
<th>People outside an hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,472,531</td>
<td>3,351,469</td>
</tr>
<tr>
<td>42%</td>
<td>58%</td>
</tr>
</tbody>
</table>
60 Minute Drive Time to Commercial Airports

Sea-Tac & Paine Field in 2017

- People within an hour: 3,355,813 (83%)
- People outside an hour: 710,187 (17%)

Sea-Tac & Paine Field in 2050

- People within an hour: 4,090,318 (70%)
- People outside an hour: 1,733,682 (30%)
## Air Cargo Gap Analysis Summary

### Assessment of air cargo needs through 2050

<table>
<thead>
<tr>
<th>PS Central Region</th>
<th>Air Cargo Projections</th>
<th>2017</th>
<th>2022</th>
<th>2027</th>
<th>2037</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forecasted Air Cargo Volumes (Metric Tonnes)</td>
<td></td>
<td>539,600</td>
<td>650,000</td>
<td>750,000</td>
<td>963,000</td>
<td>1,319,000</td>
</tr>
<tr>
<td>Facility Requirements for Air Cargo Warehousing (SF)</td>
<td></td>
<td>640,467</td>
<td>847,300</td>
<td>983,500</td>
<td>1,263,700</td>
<td>1,731,200</td>
</tr>
</tbody>
</table>

Source: WP#1 and #2, WSP
Based on unconstrained forecast

<table>
<thead>
<tr>
<th>Sea-Tac</th>
<th>Air Cargo Accommodated</th>
<th>2017</th>
<th>2022</th>
<th>2027</th>
<th>2037</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-Constrained SAMP Near Term Projects Scenario¹</td>
<td></td>
<td>354,660</td>
<td>354,660</td>
<td>809,700</td>
<td>809,700</td>
<td>809,700</td>
</tr>
<tr>
<td>2-Constrained SAMP Long Term Vision Scenario²</td>
<td></td>
<td>354,660</td>
<td>354,660</td>
<td>809,700</td>
<td>1,083,000</td>
<td>1,083,000</td>
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Source: SAMP 2016

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</tr>
</thead>
<tbody>
<tr>
<td>1-Constrained SAMP Near Term Projects Scenario¹</td>
<td></td>
<td>-285,807</td>
<td>-492,640</td>
<td>-173,800</td>
<td>-454,000</td>
<td>-921,500</td>
</tr>
</tbody>
</table>

Note:
¹Based on Sea-Tac SAMP Near-Term Project, includes redevelopment of the existing north cargo area, with two additional off-warehouses and redevelopment of the south cargo warehouse. KCIA has no cargo warehousing nor proposed in the future.
²Based on Sea-Tac SAMP Long-Term Vision, includes the redevelopment of the existing north cargo area, the South Aviation Support Area (SASA), and the three off-airport warehouses. KCIA has no cargo warehousing nor proposed in the future.
Challenges
Challenges

Commercial service

— Less reliable access to commercial air service for all of Pierce and Kitsap counties
— Sea-Tac does not have capacity to meet the regional unconstrained 2050 forecast of 55 million enplanements (SAMP’s Near-Term Projects could accommodate about 28 million enplanements)
— Due to airspace and landside constraints, Boeing Field (KClA) has limited ability to accommodate more passengers or expand
— Paine Field is currently limited to 600,000 annual enplanements (2018 Sup. EA)
Challenges

Air cargo

— Limited on-airport cargo facilities at Sea-Tac (Near-Term Projects would add 420,000 SF of off-airport cargo warehousing)

— UPS serves Boeing Field (KClA), with limited ramp and landside space
Challenges

General Aviation

Airports approaching 80% airfield capacity by 2050:

— Arlington Municipal
— Harvey Field
— Renton Municipal
Study Phases

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(Spring/Summer 2020)
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- Publish final report (Fall 2020)

Upcoming
Statewide Commercial Aviation Coordinating Commission: Charged with selecting site(s) by 2022
Thank you

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