Regional Aviation Baseline Study

October 24, 2019

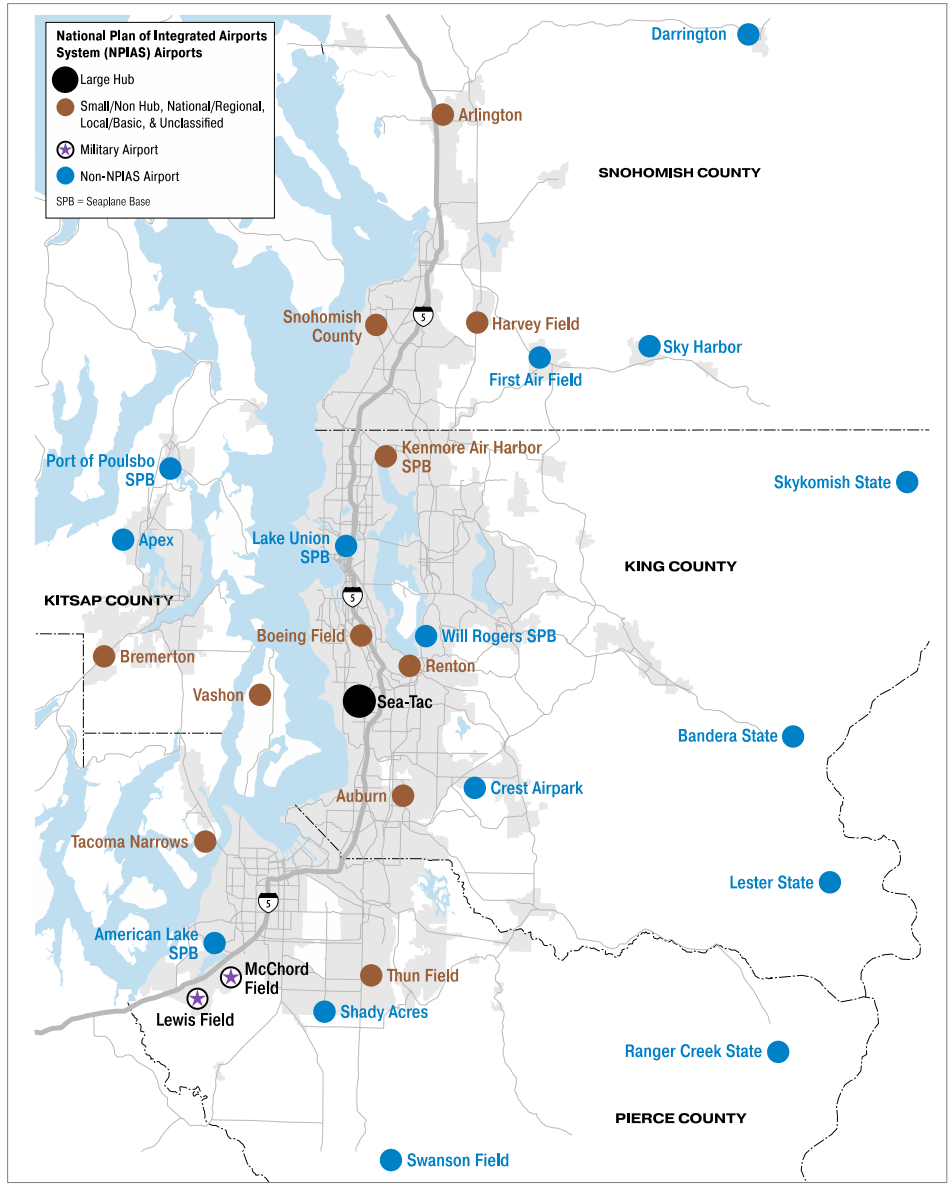
Puget Sound Regional Council

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

29 Regional Airports



Study Phases

Airport & Aviation Activity Analysis
(Summer/Fall 2019)

- Market trends
- Regional forecasts
- Existing conditions & constraints

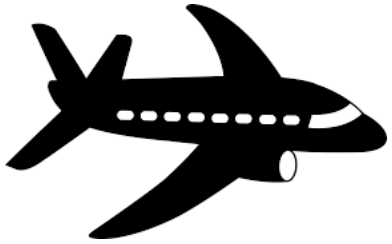
Future Aviation Issues Analysis
(Fall/Winter 2019/2020)

- 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

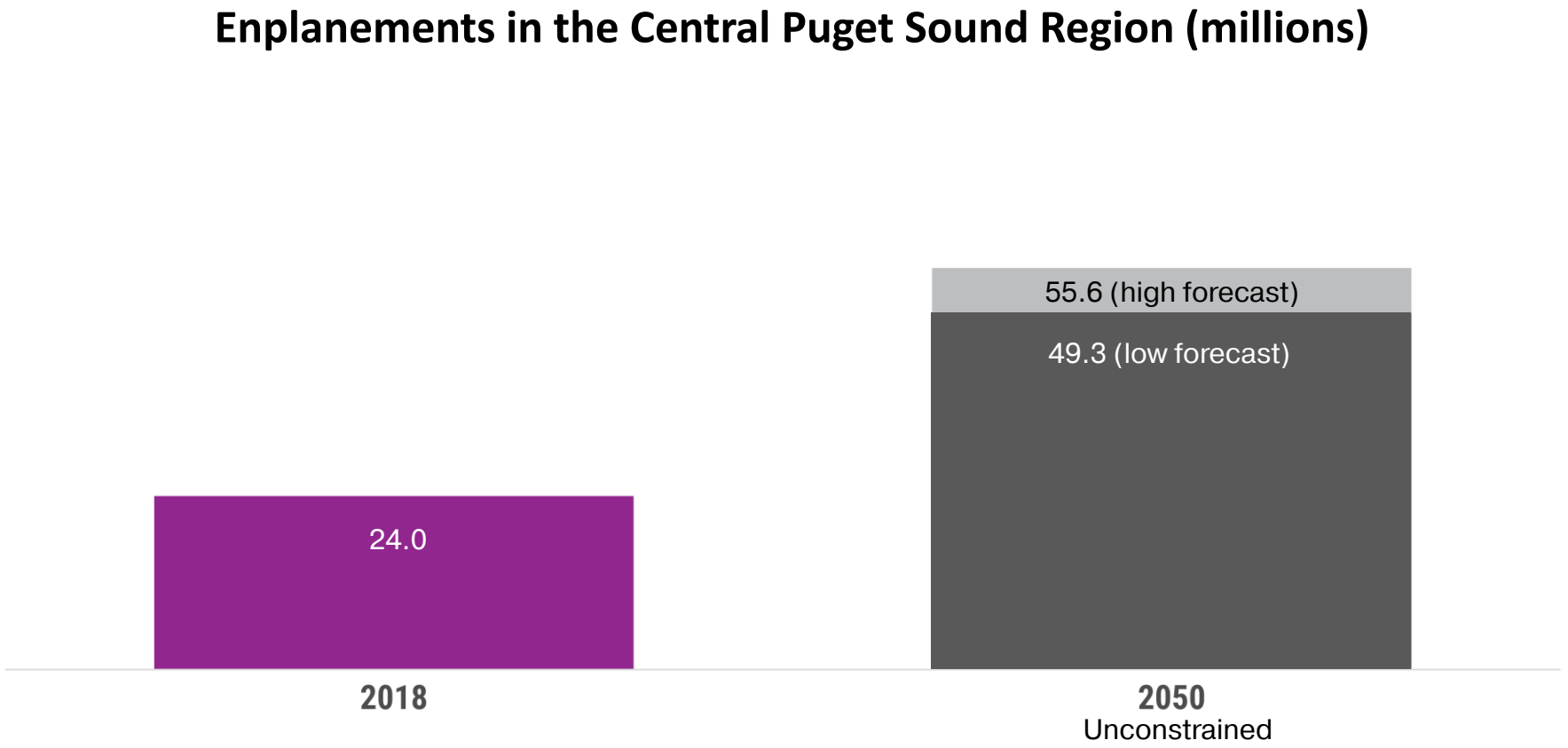
Freight and mail carried in the lower hold of passenger aircraft and on dedicated freighters

General Aviation

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

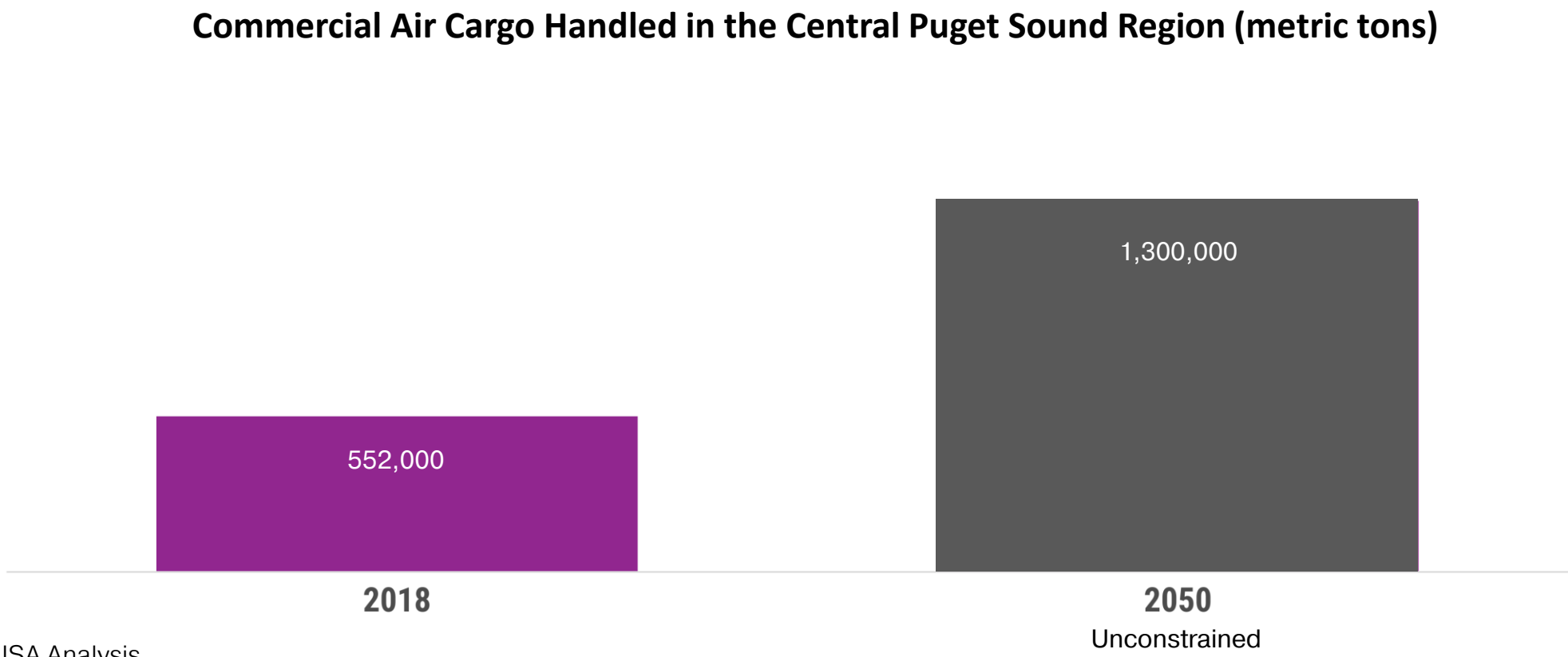
Forecasts represent unconstrained regional demand in 2050

Commercial Enplanement Demand Forecast



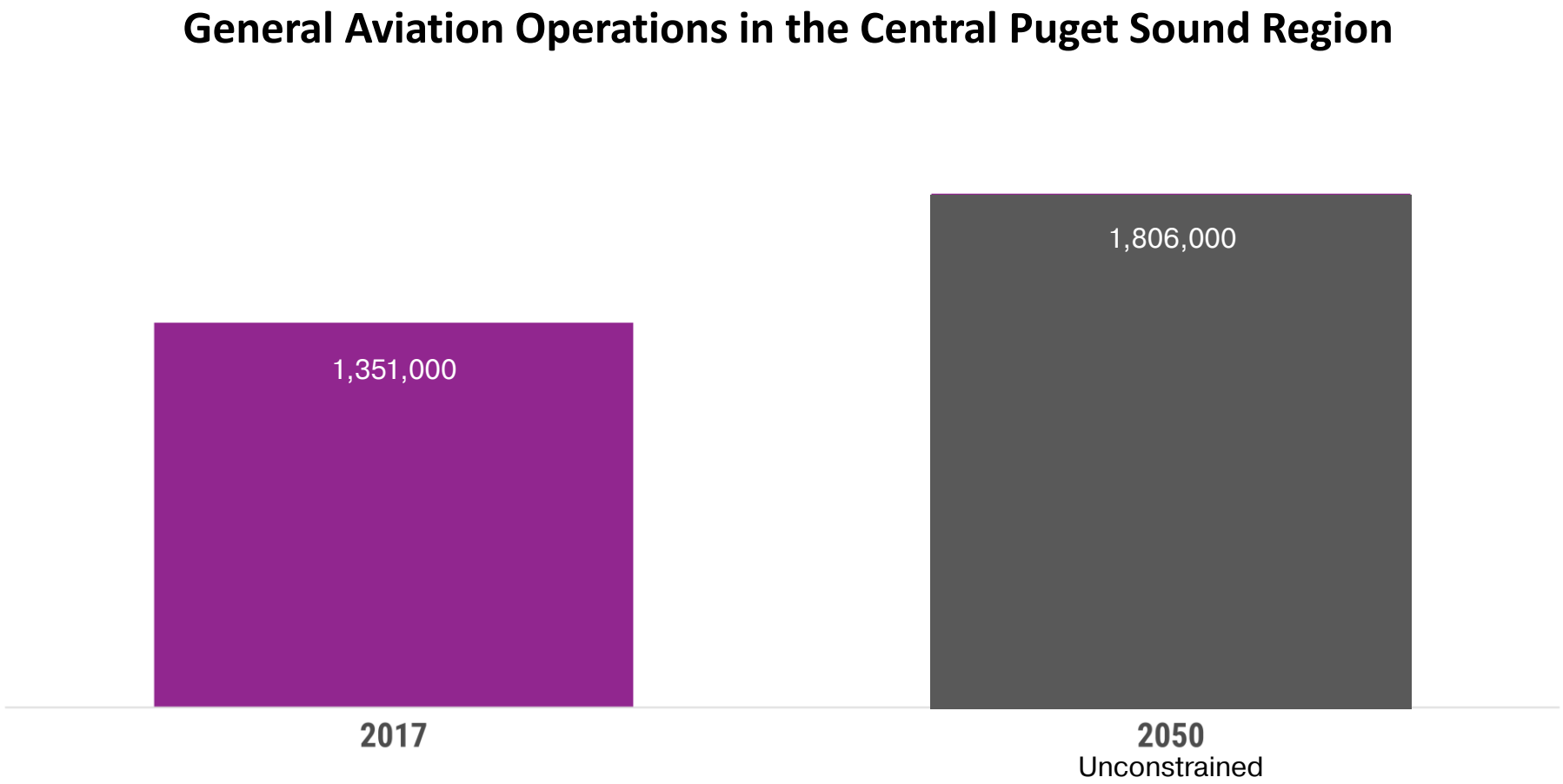
Source: WSP USA Analysis

Air Cargo Demand Forecast



Source: WSP USA Analysis

General Aviation Demand Forecast



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

Regional Airspace

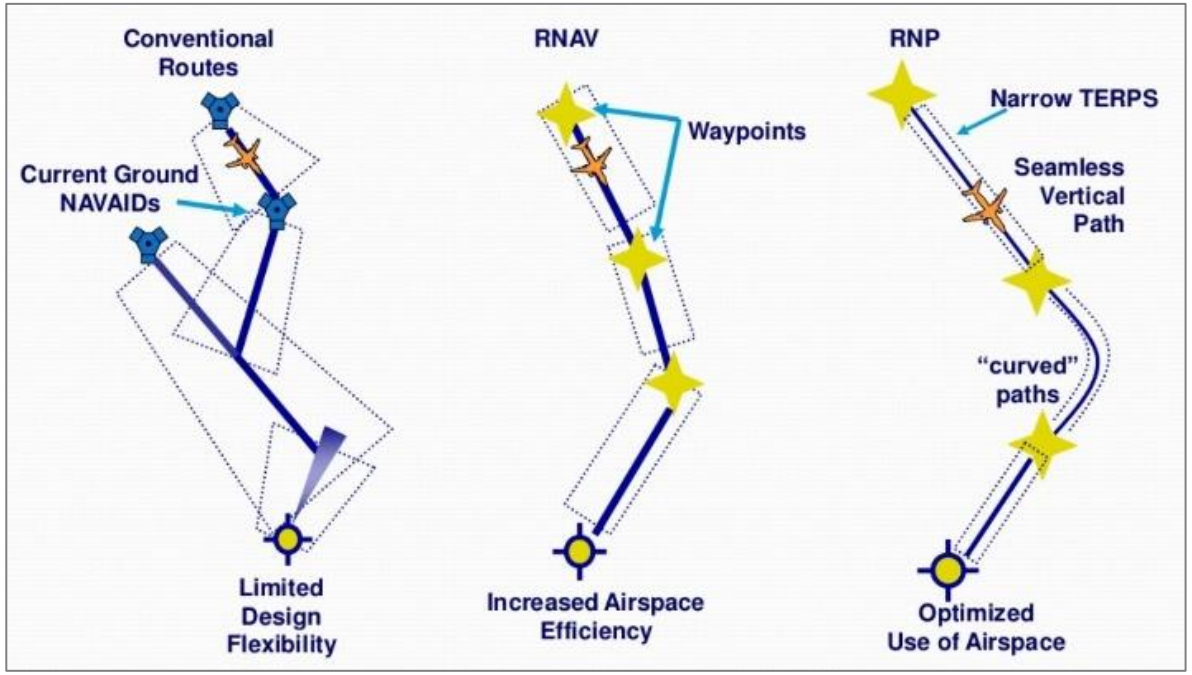
Background on National Airspace System and NextGen

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

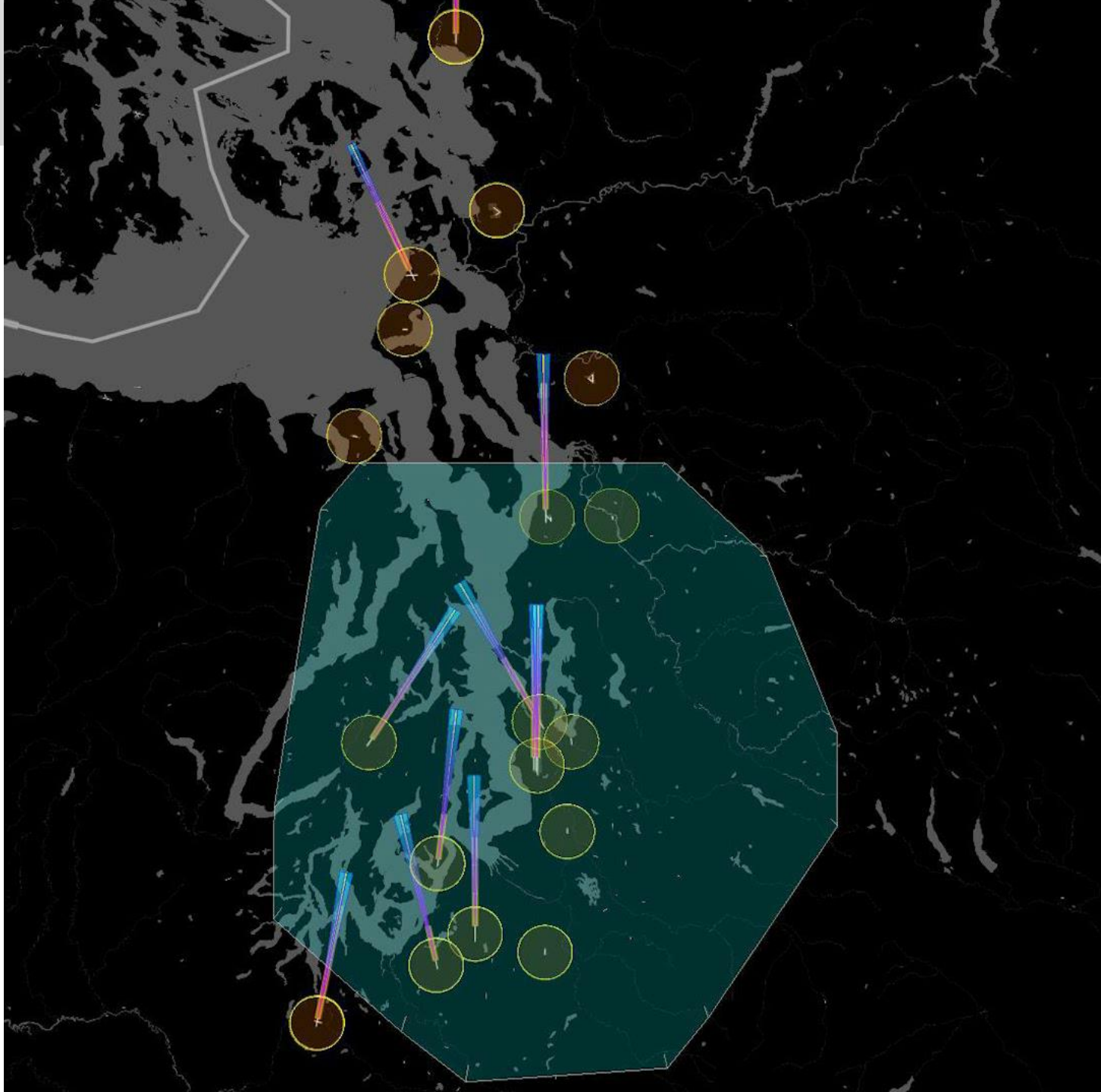


Airports Within Airspace Study

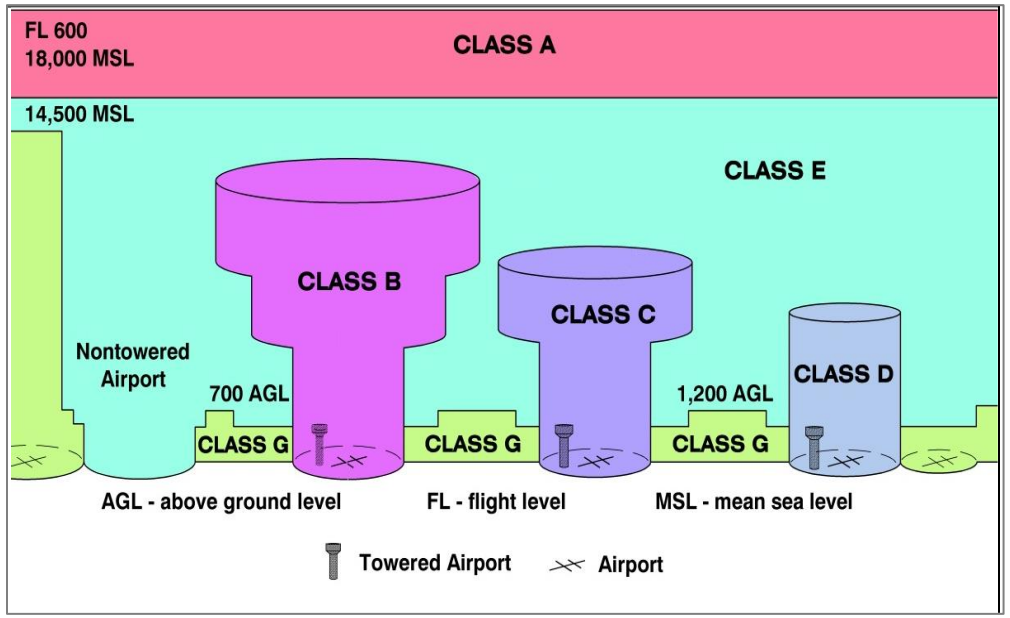
AWO	Arlington Municipal Airport
BFI	King County International/Boeing Field
BLI	Bellingham International Airport
BVS	Skagit Regional Airport
GRF	Gray Army Airfield (Joint Base Lewis-McChord)
NUW	Whidbey Island Naval Airfield (Ault Field)
OKH	AJ Eisenberg Airport
OLM	Olympia Regional Airport
PAE	Paine Field/Snohomish County International
PLU	Pierce County Airport
PWT	Bremerton National Airport
RNT	Renton Municipal Airport
S43	Harvey Field Airport
S50	Auburn Municipal Airport
SEA	Seattle-Tacoma International
TCM	McChord Field Airport (Joint Base Lewis-McChord)
TIW	Tacoma Narrows Airport
0S9	Jefferson County Airport

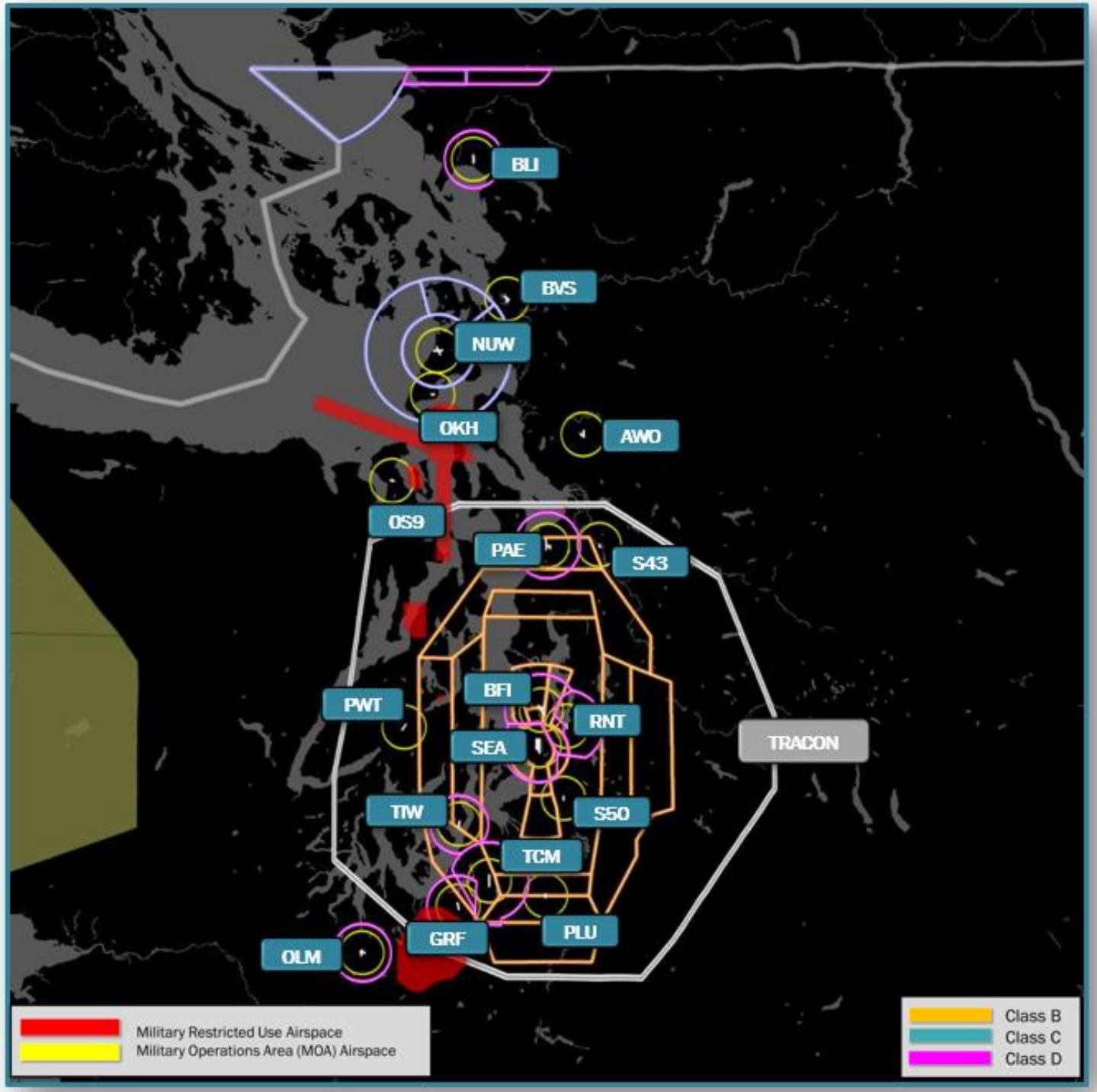
Regional Air Traffic

Sea-Tac	Arrivals	
	Departures	
Other	Arrivals	
	Departures	

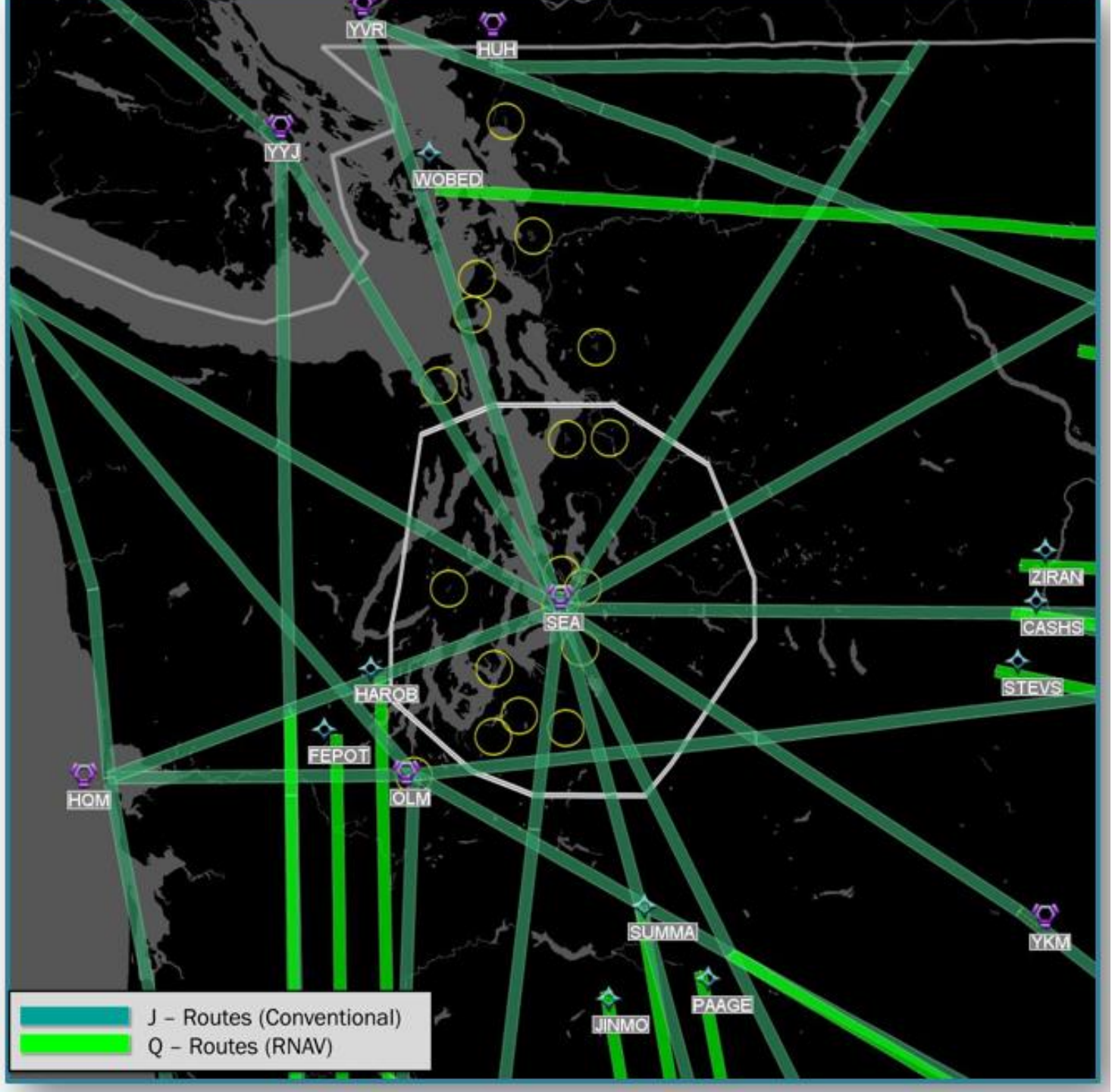


Classes of Airspace Within Project Study



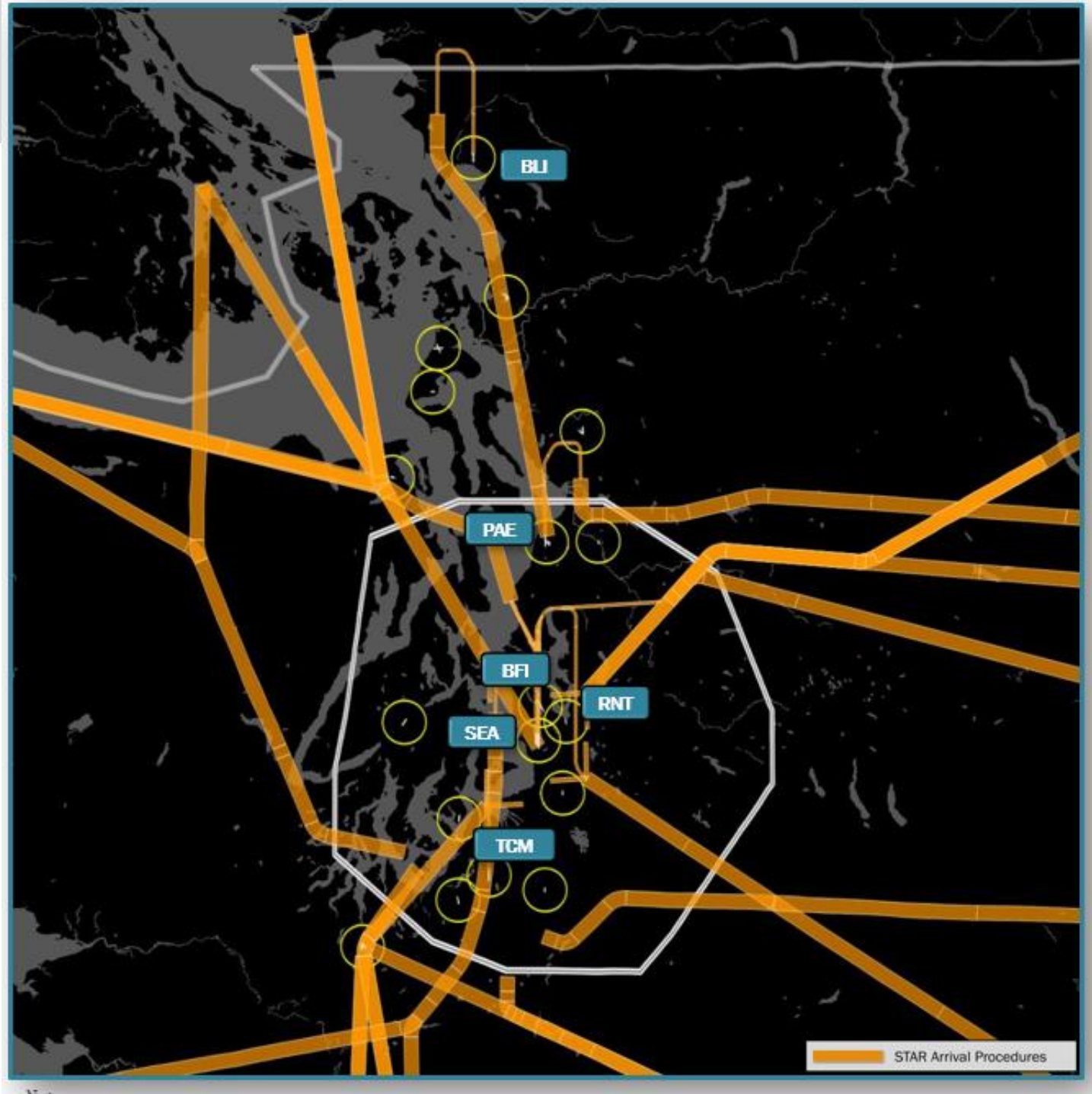


Enroute Procedures



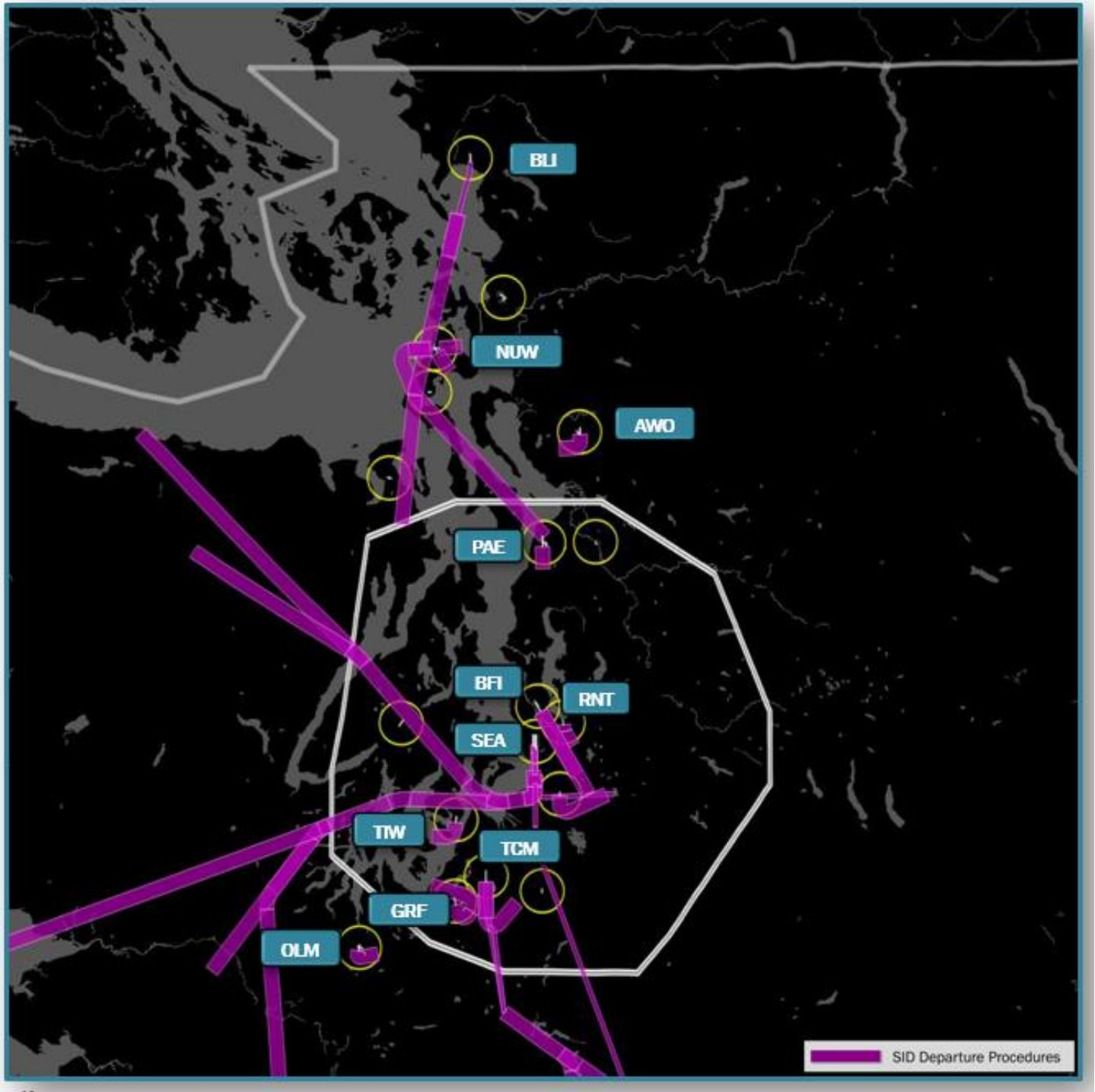
Enroute Procedures

Existing standard arrival routes for airports within airspace study



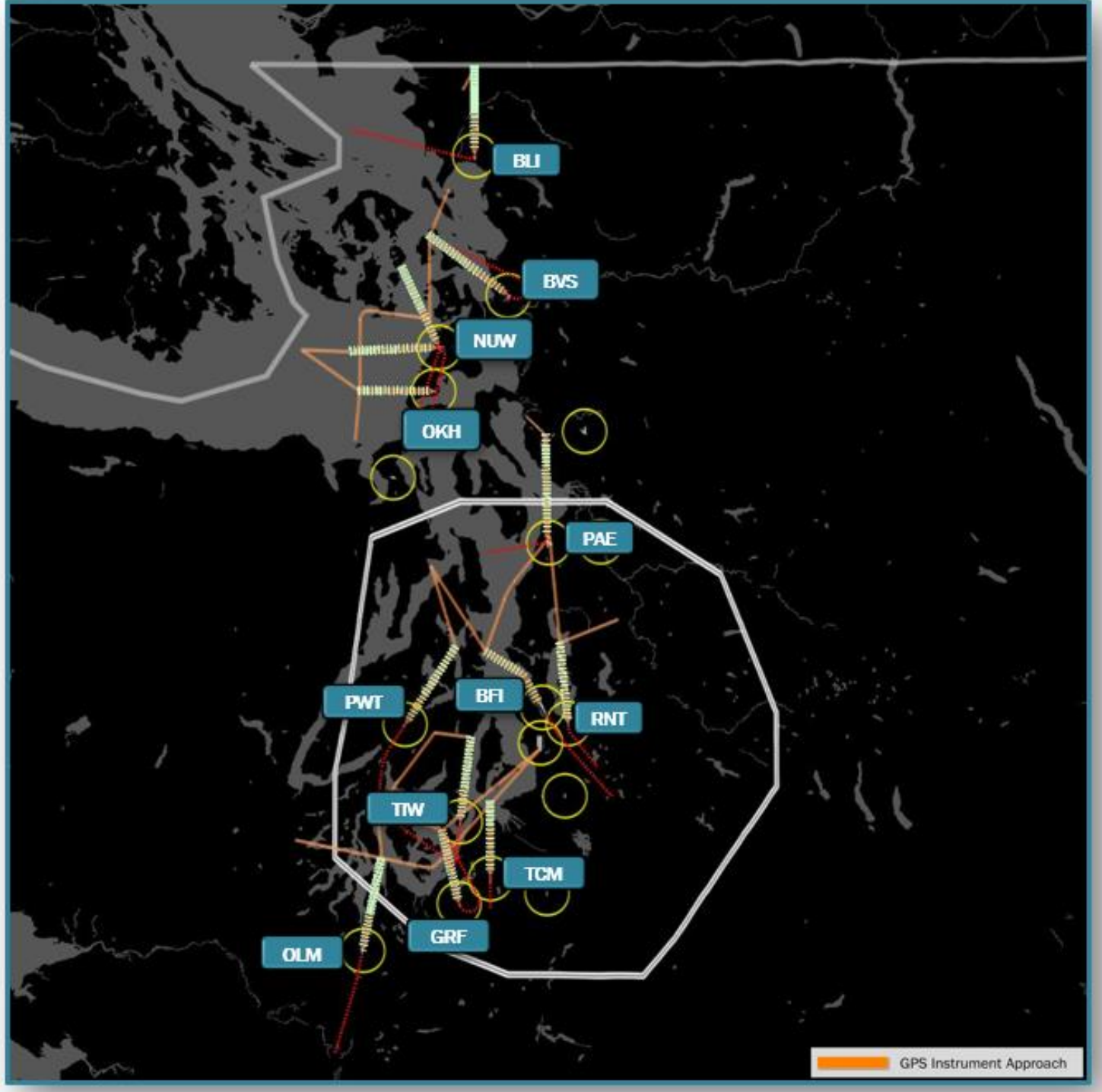
Enroute Procedures

Existing standard departure routes for airports within airspace study

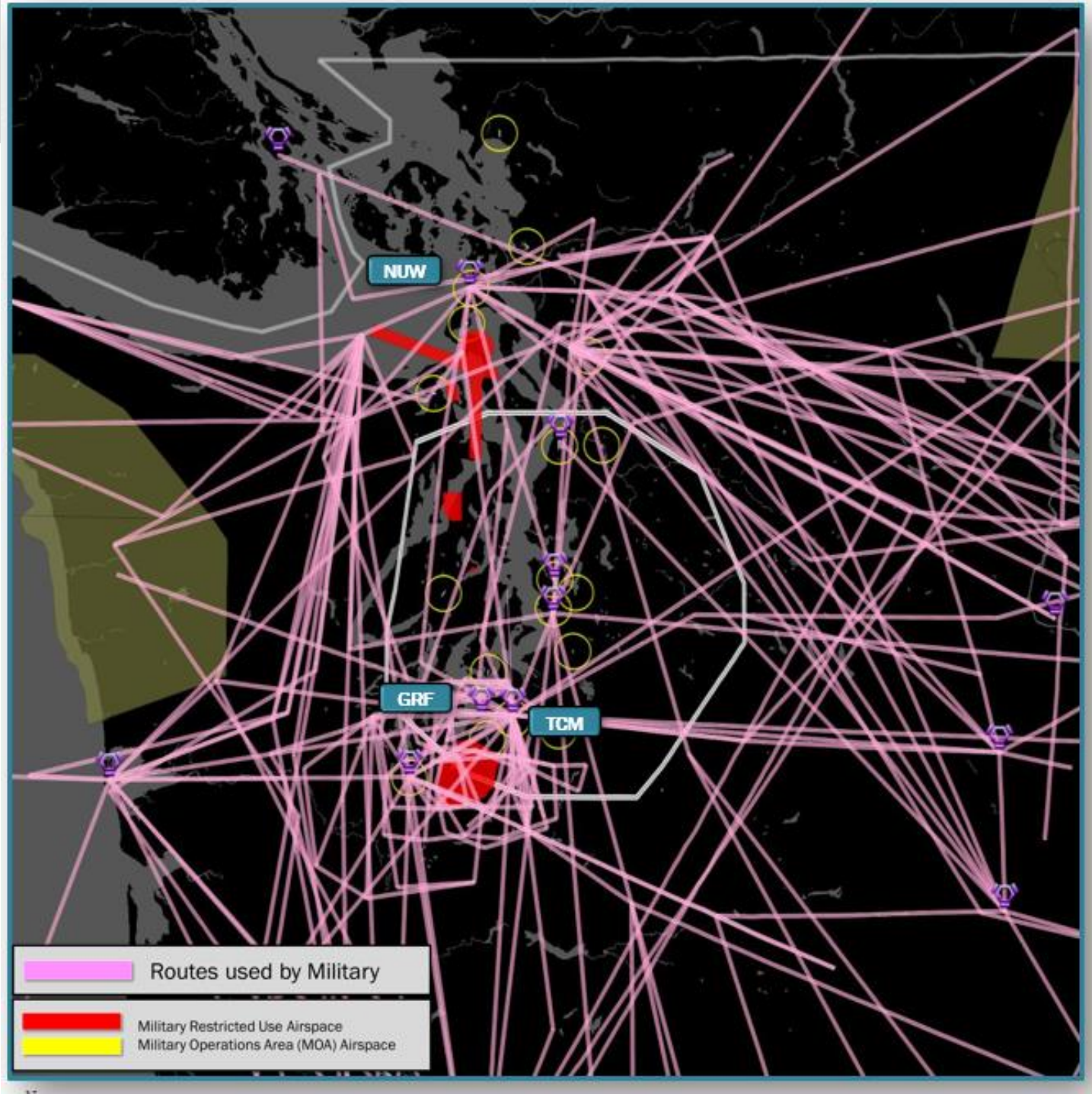


Enroute Procedures

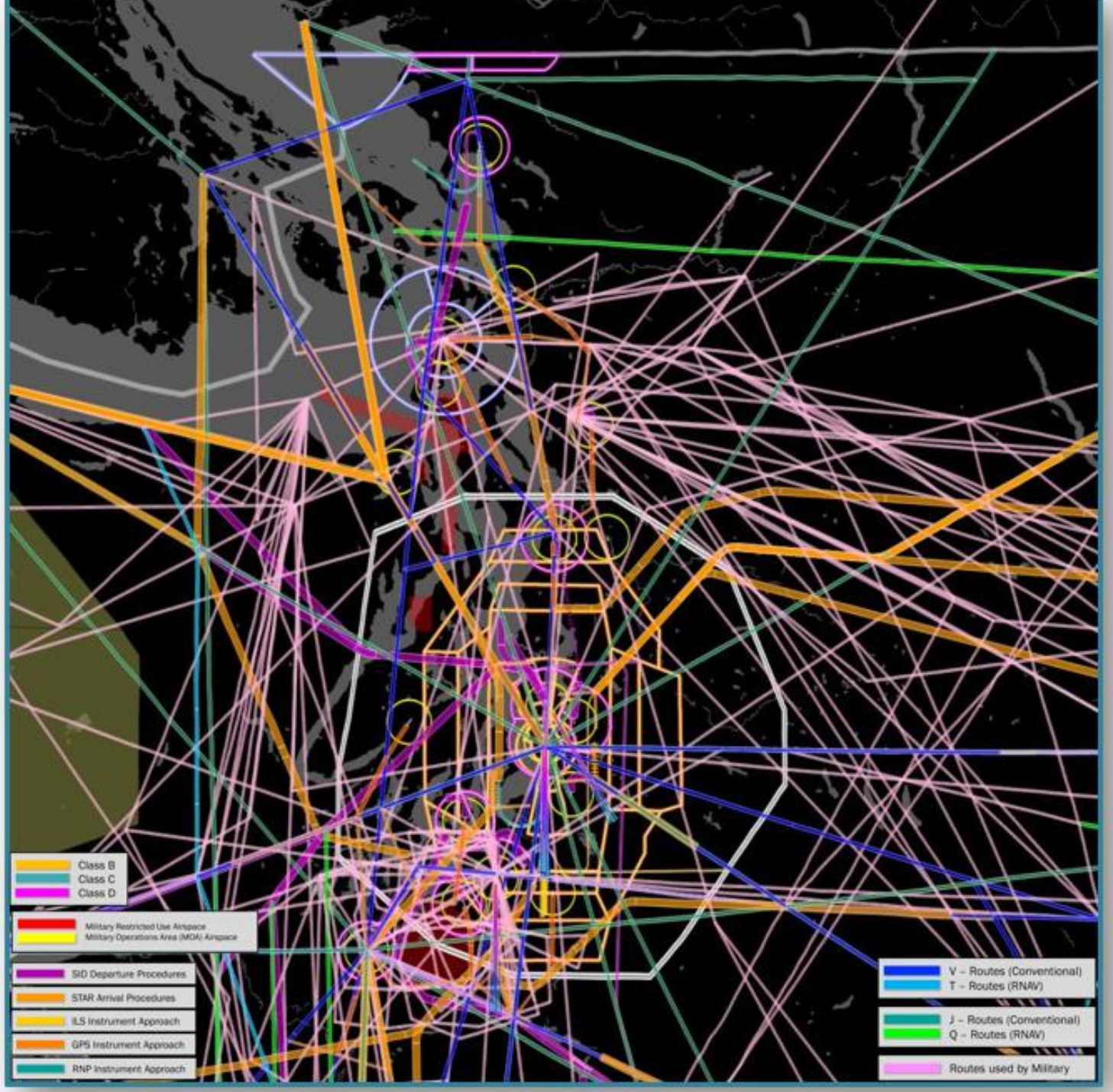
Existing instrument approaches for airports within study area



Military Airspace

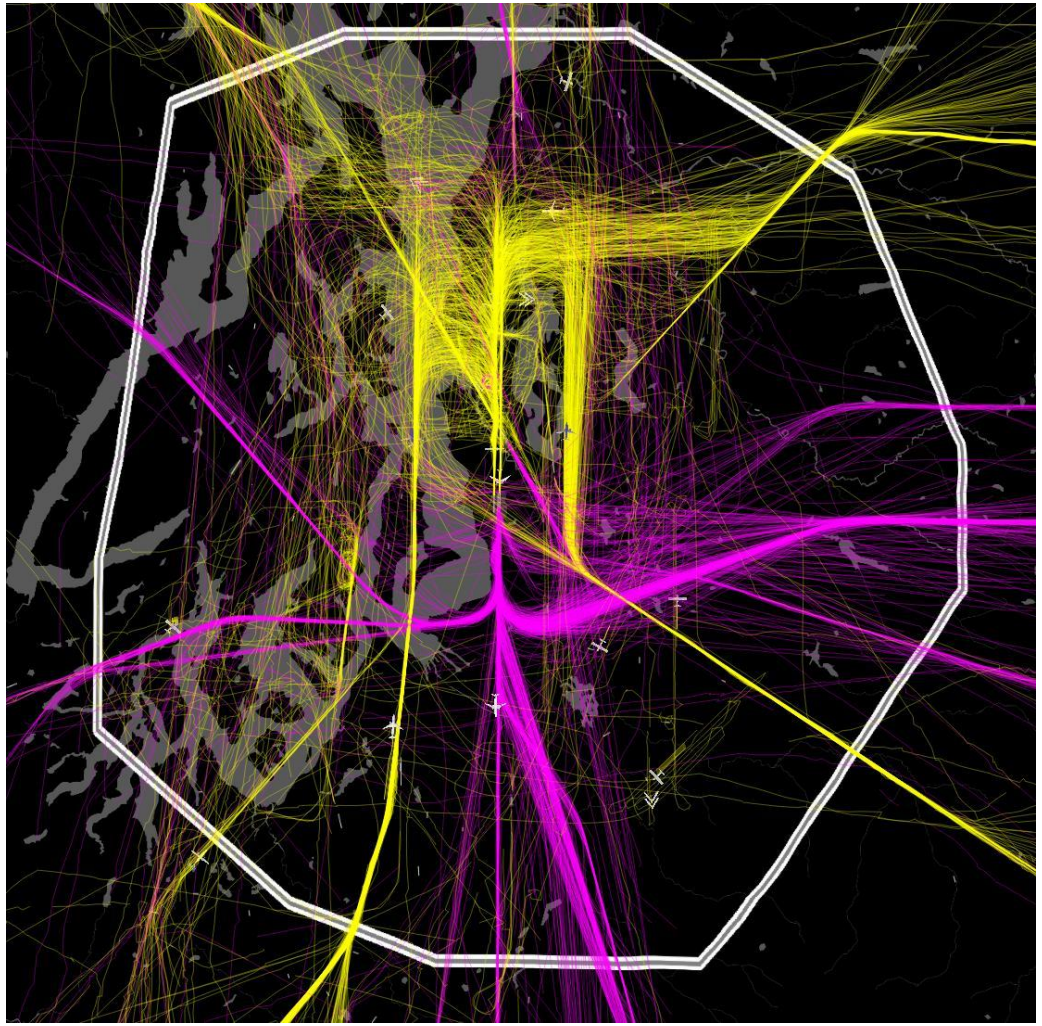


Combined Airspace and Flight Procedures

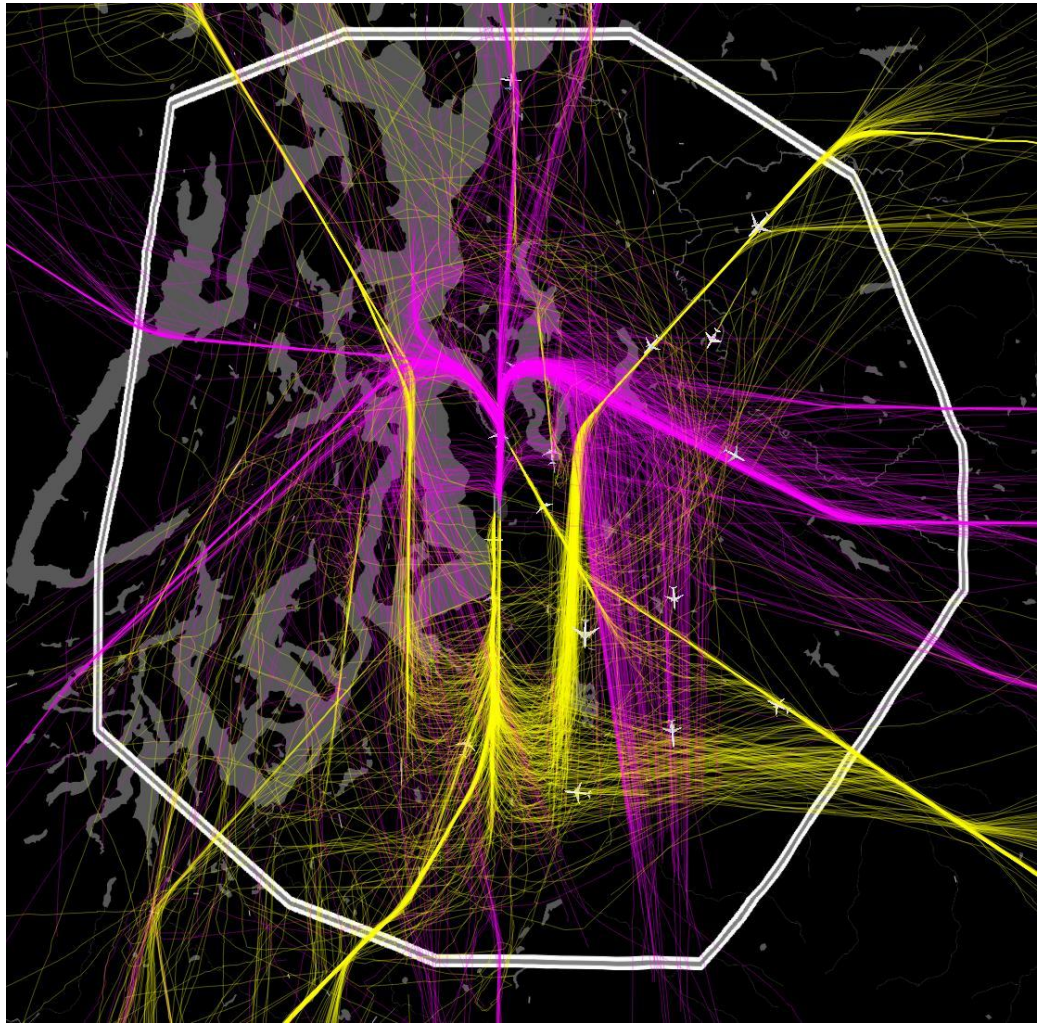


Regional Airspace Analysis

South flow



North flow

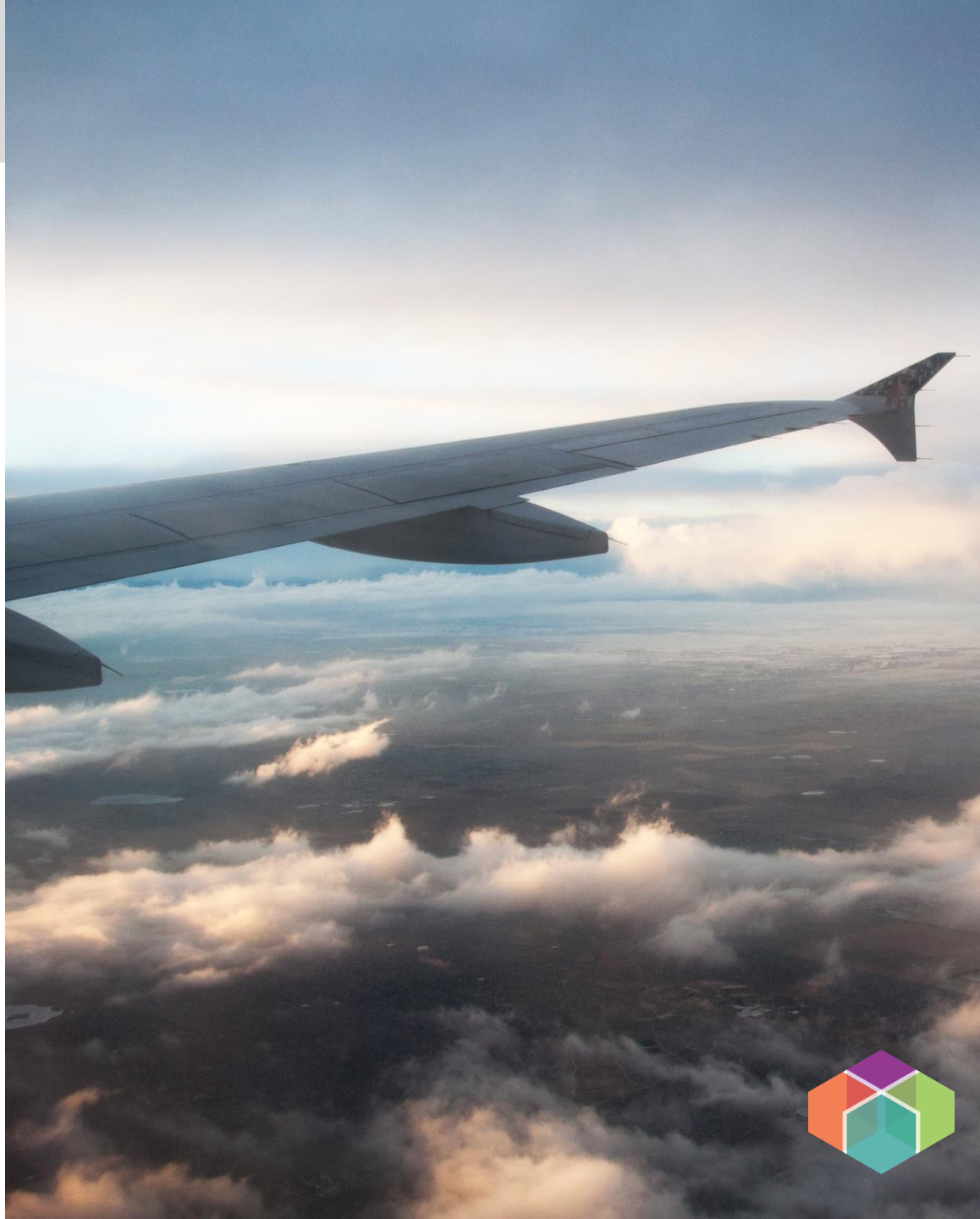


Arrivals

Departures

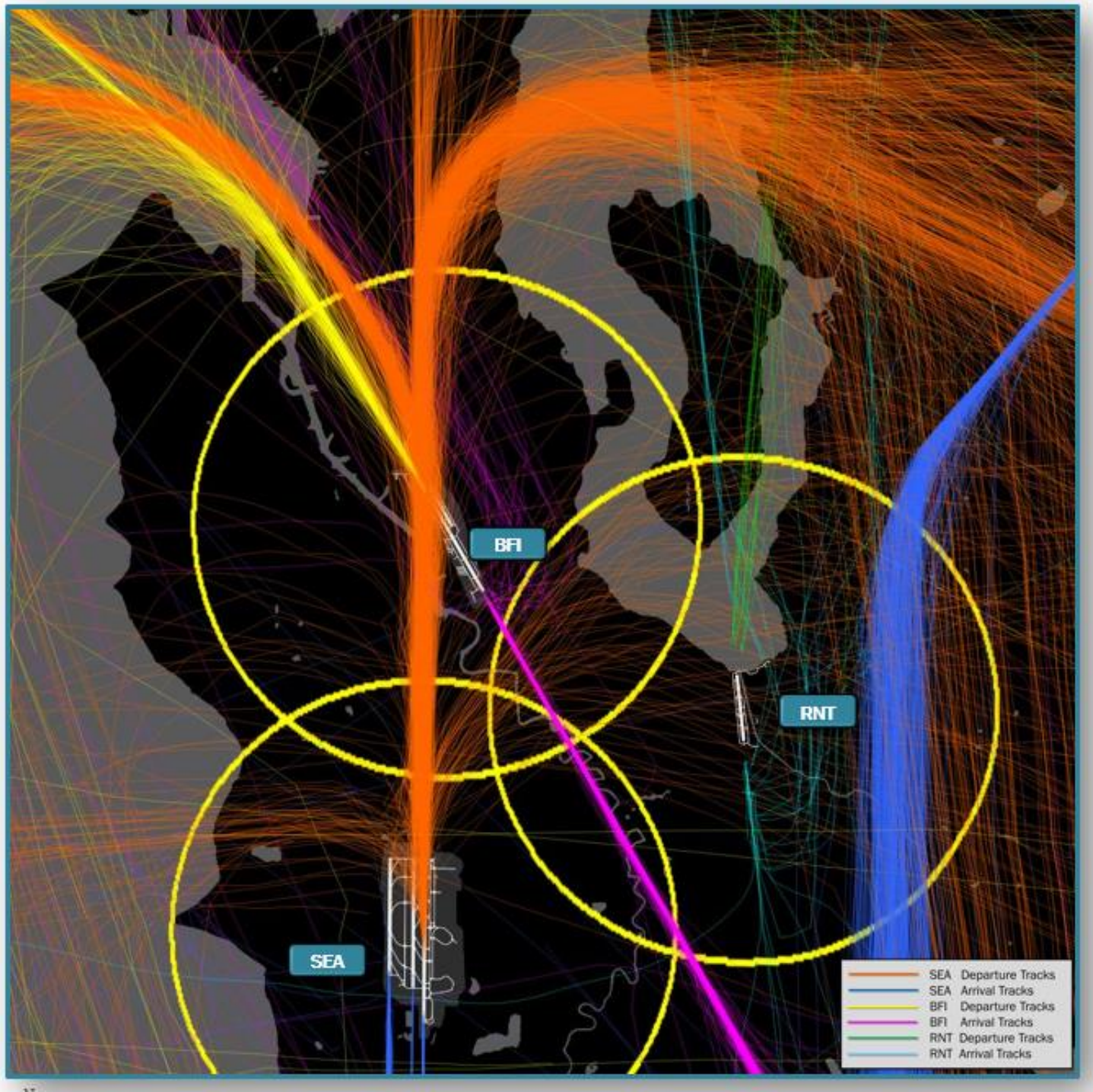
Airspace Constraints

- 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

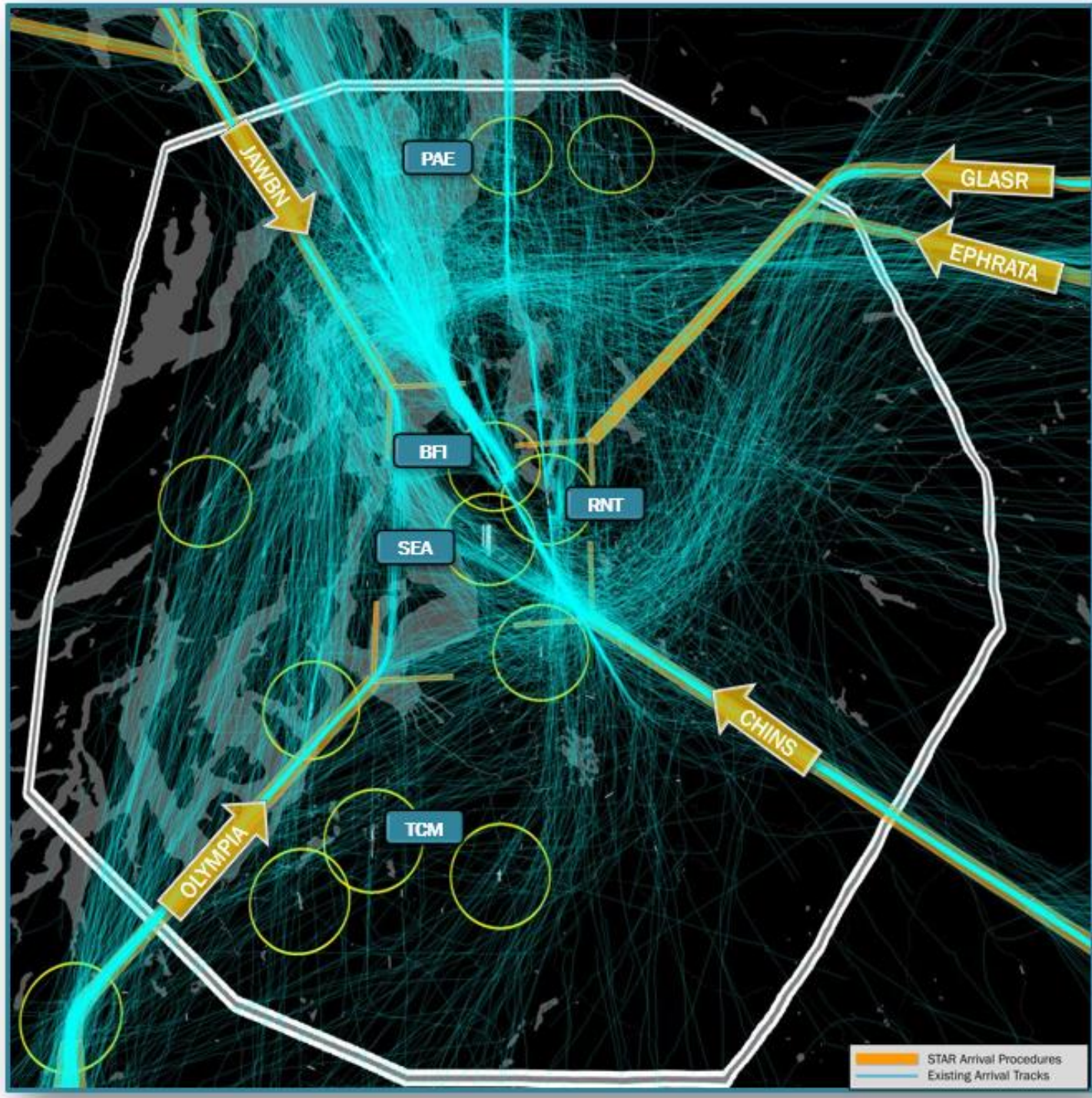


Airports in Close Proximity

Sea-Tac, Renton and Boeing Field are home to the region's most challenging airspace

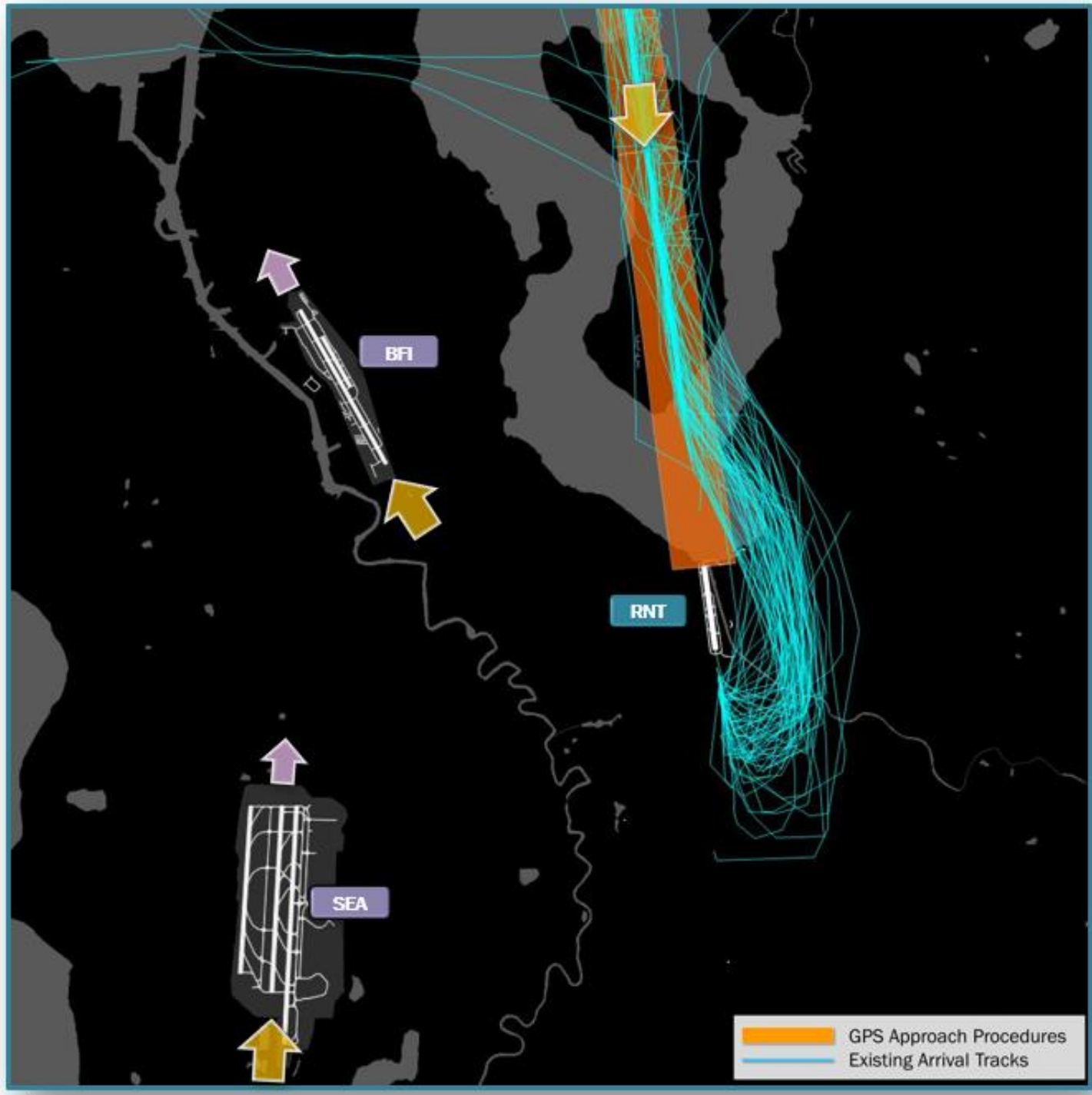


Shared use of standard arrival route procedures



Paine Field north flow, Sea-Tac south flow

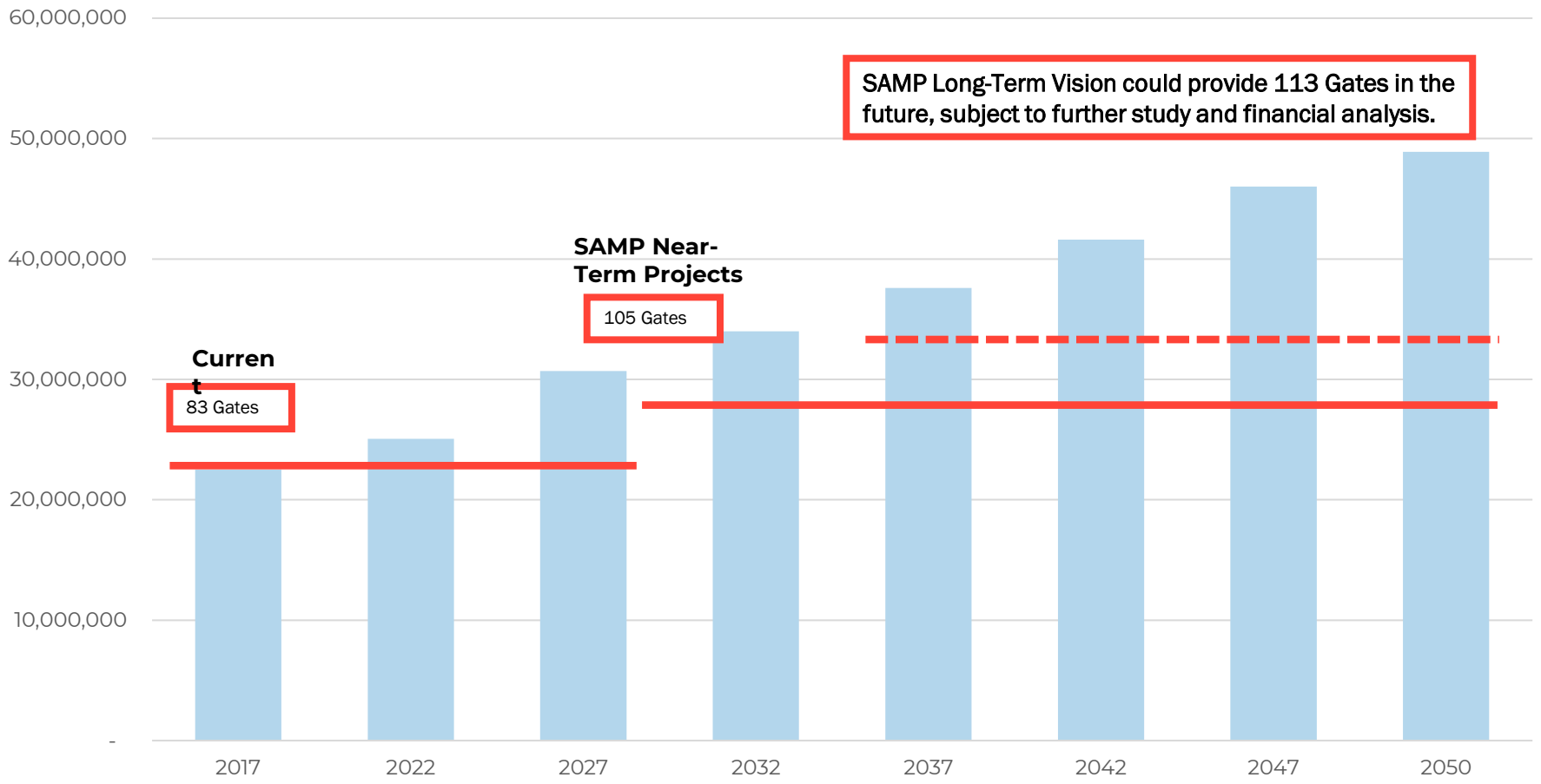
North flow access in poor weather conditions



Key Benchmark Metrics

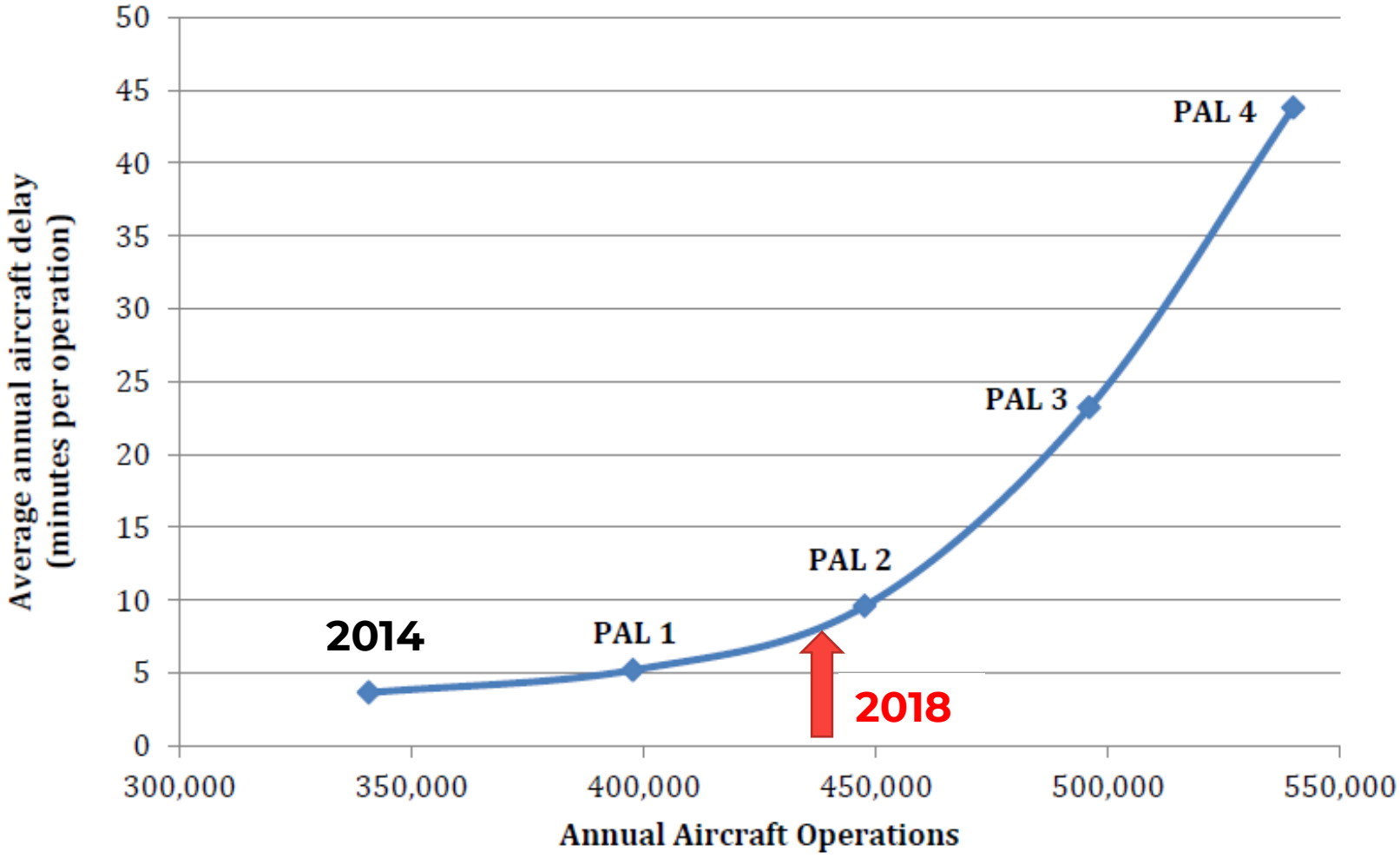
Capacity vs Demand: Commercial Service

Sea-Tac Enplanement Demand and Sea-Tac Planned Terminal Gate Capacity



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

Commercial Service Gap Analysis Summary

Assessment of commercial service passenger needs through 2050

Puget Sound Central Region	Forecast of passenger enplanements			
	2017	2022	2027	2050
Passenger enplanements (high forecast)	22,450,500	25,400,000	31,100,000	55,600,000

Source: WP #1, WSP
Note: Low forecast for 2050 is 49,300,000 enplanements based on unconstrained forecast

PAE + Sea-Tac	Potential passengers accommodated			
	2017	2022	2027	2050
1-Constrained 2027 SAMP Near Term Projects Scenario[1,2]	23,050,000	25,655,000	28,600,000	28,600,000
2-Constrained SAMP Long Term Vision Scenario[1,3]	23,050,000	25,655,000	28,600,000	33,600,000

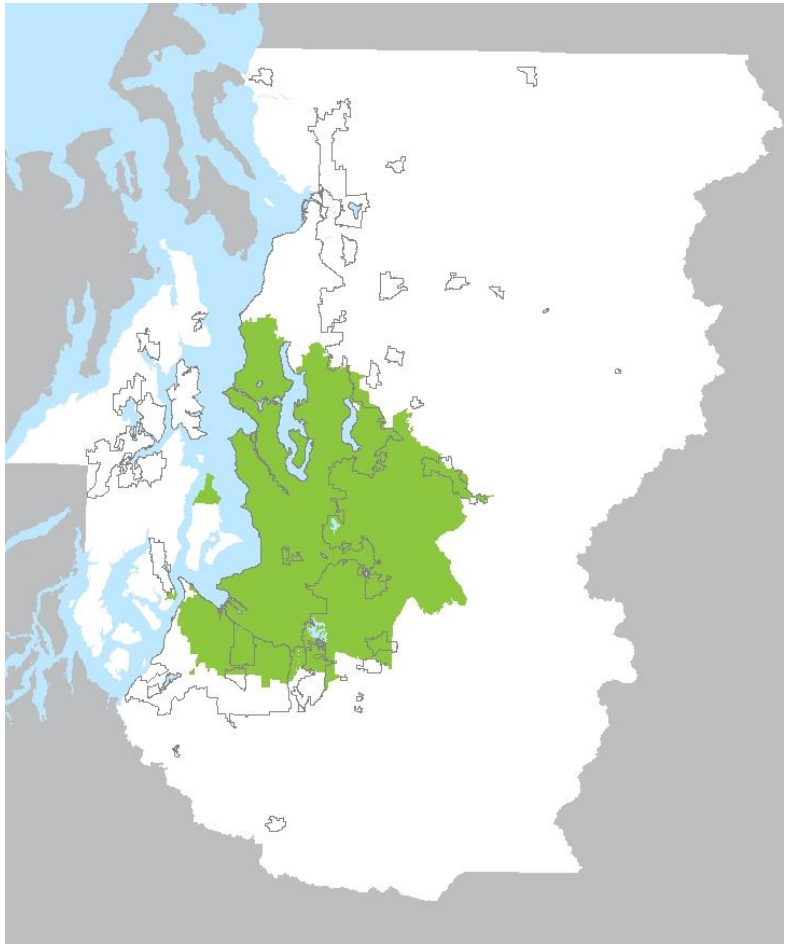
Source: SAMP 2016, PAE Supplemental EA, 2018

Puget Sound Central Region	Gap (demand-supply)			
	2017	2022	2027	2050
1-Constrained 2027 SAMP Near Term Projects Scenario[1,2]	559,500	255,000	-2,500,000	-27,000,000
2-Constrained SAMP Long Term Vision Scenario[1,3]	599,500	255,000	-2,500,000	-22,000,000

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

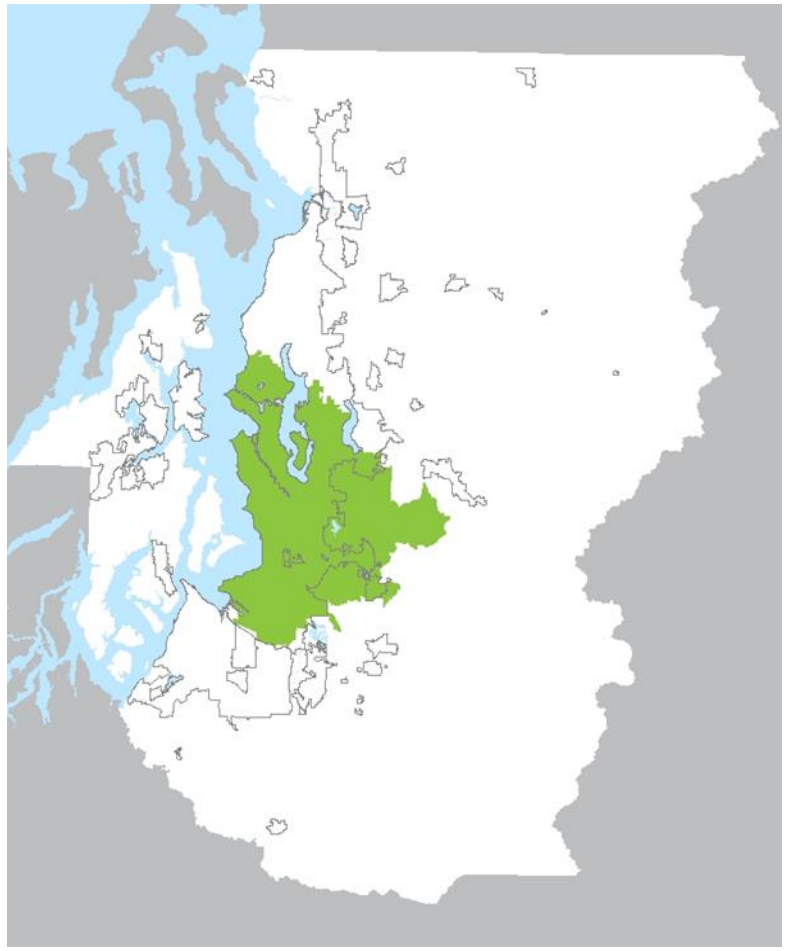
60 Minute Drive Time to Commercial Airports

Sea-Tac in 2017



People within an hour	People outside an hour
2,500,835	1,565,165
62%	38%

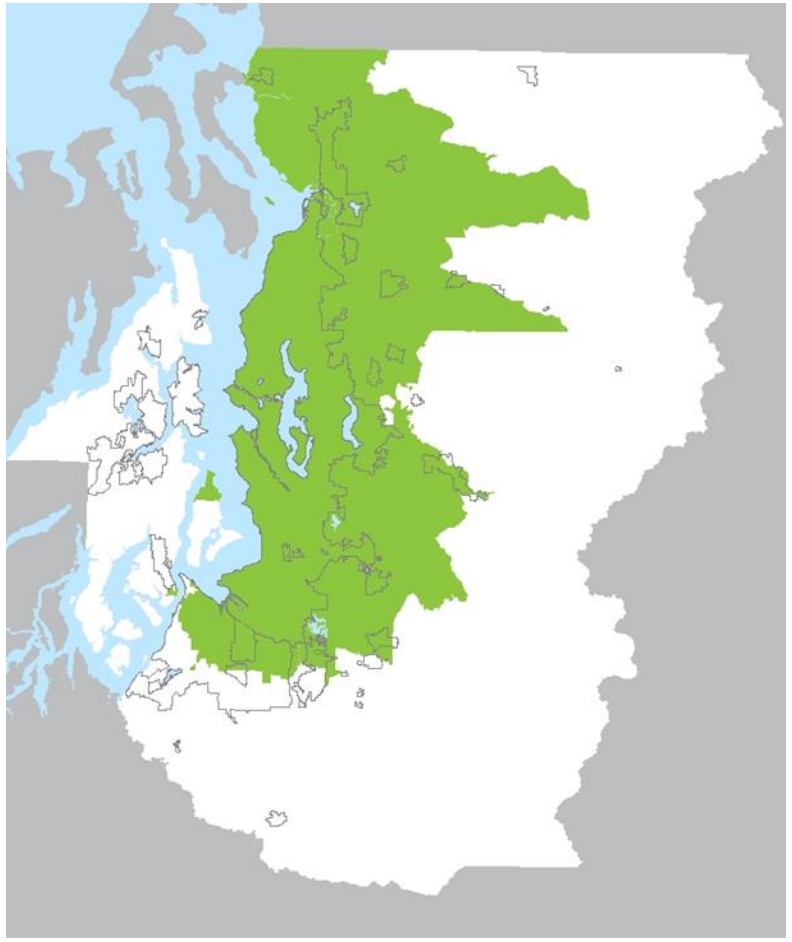
Sea-Tac in 2050



People within an hour	People outside an hour
2,472,531	3,351,469
42%	58%

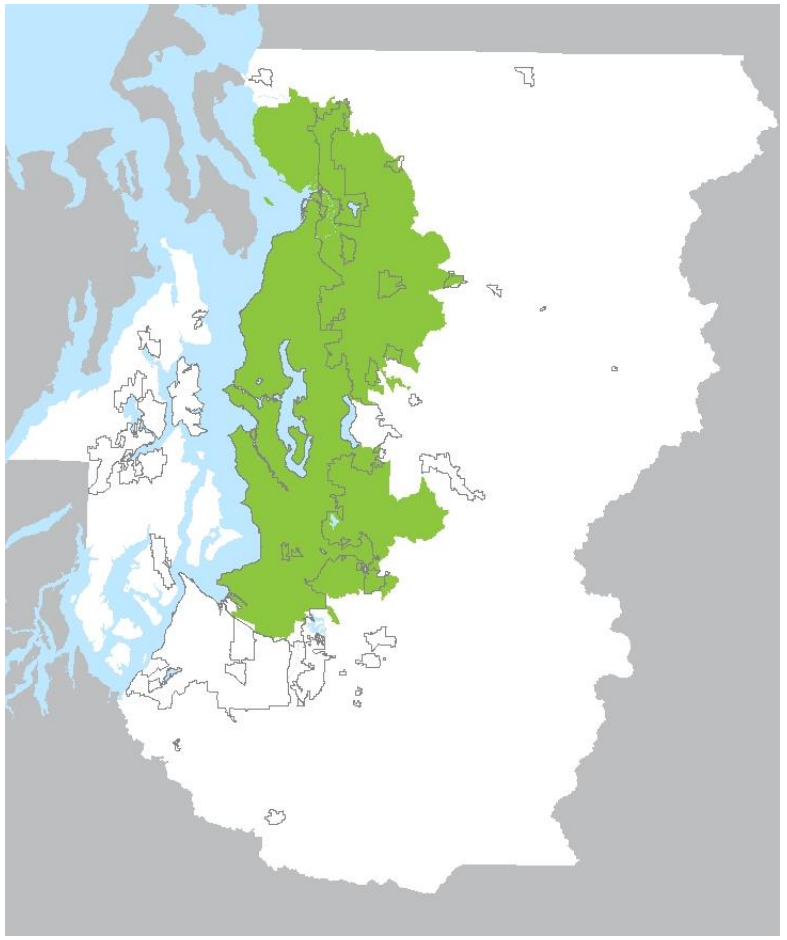
60 Minute Drive Time to Commercial Airports

Sea-Tac & Paine Field in 2017



People within an hour	People outside an hour
3,355,813	710,187
83%	17%

Sea-Tac & Paine Field in 2050



People within an hour	People outside an hour
4,090,318	1,733,682
70%	30%

Air Cargo Gap Analysis Summary

Assessment of air cargo needs through 2050

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

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

Sea-Tac	Air Cargo Accommodated				
	2017	2022	2027	2037	2050
1-Constrained SAMP Near Term Projects Scenario[1]	354,660	354,660	809,700	809,700	809,700
2-Constrained SAMP Long Term Vision Scenario[2]	354,660	354,660	809,700	1,083,000	1,083,000

Source: SAMP 2016

PS Central Region	Gap (demand-supply)				
	2017	2022	2027	2037	2050
1-Constrained SAMP Near Term Projects Scenario[1]	-285,807	-492,640	-173,800	-454,000	-921,500
2-Constrained SAMP Long Term Vision Scenario[2]	-285,807	-492,640	-173,800	-181,700	-648,200

Note:
[1]Based 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
[2]Based 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.

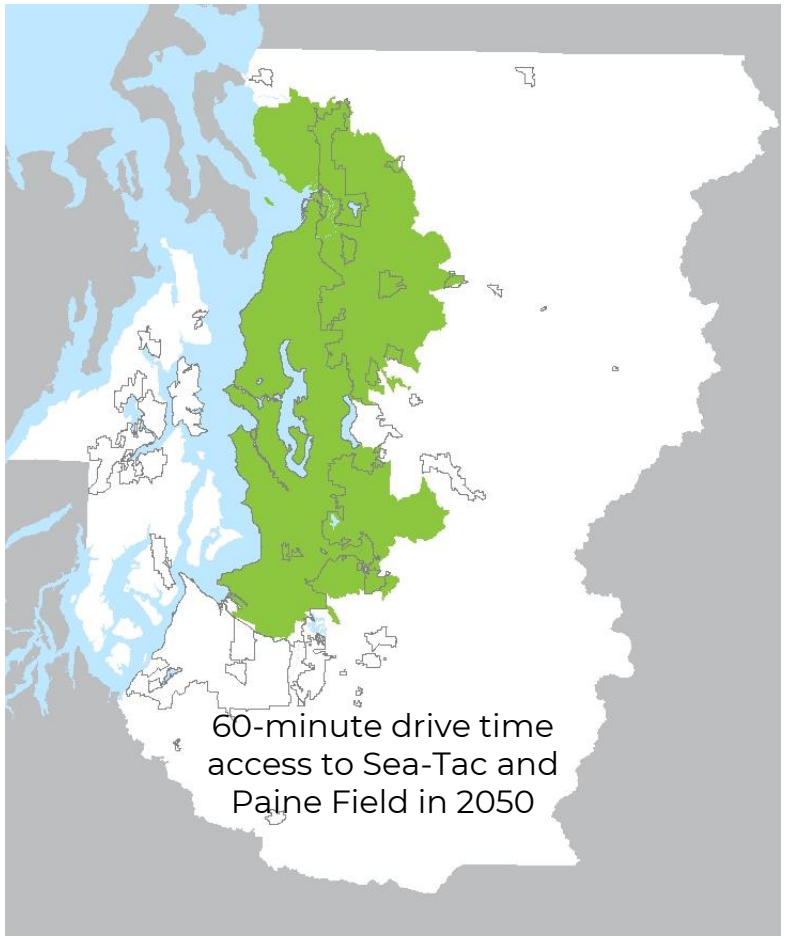
Challenges

Source: Gulfstream

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 (KCIA) has limited ability to accommodate more passengers or expand
- Paine Field is currently limited to 600,000 annual enplanements (2018 Sup. EA)

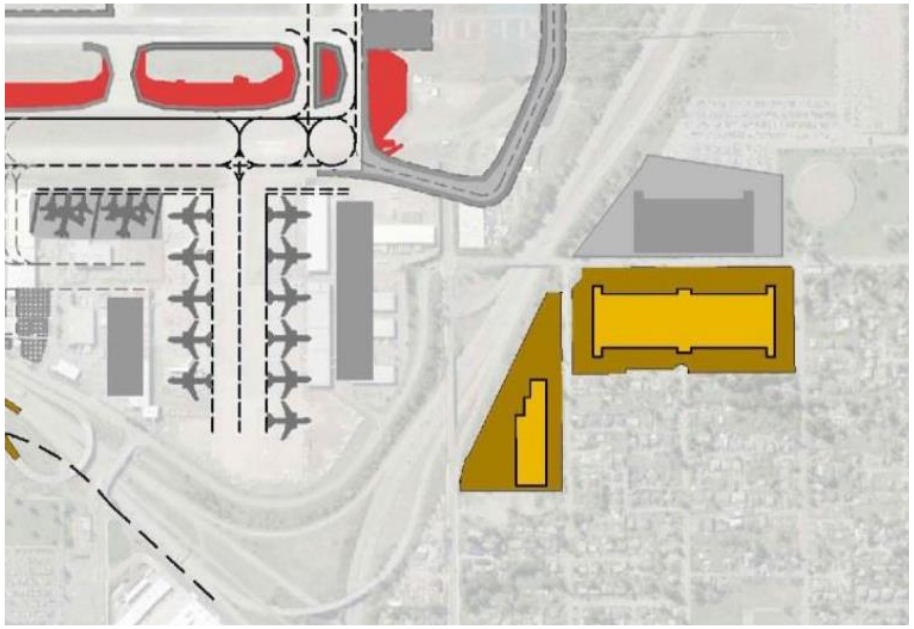


60-minute drive time access to Sea-Tac and Paine Field in 2050

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 (KCIA), with limited ramp and landside space



Sea-Tac Near-Term Cargo Projects

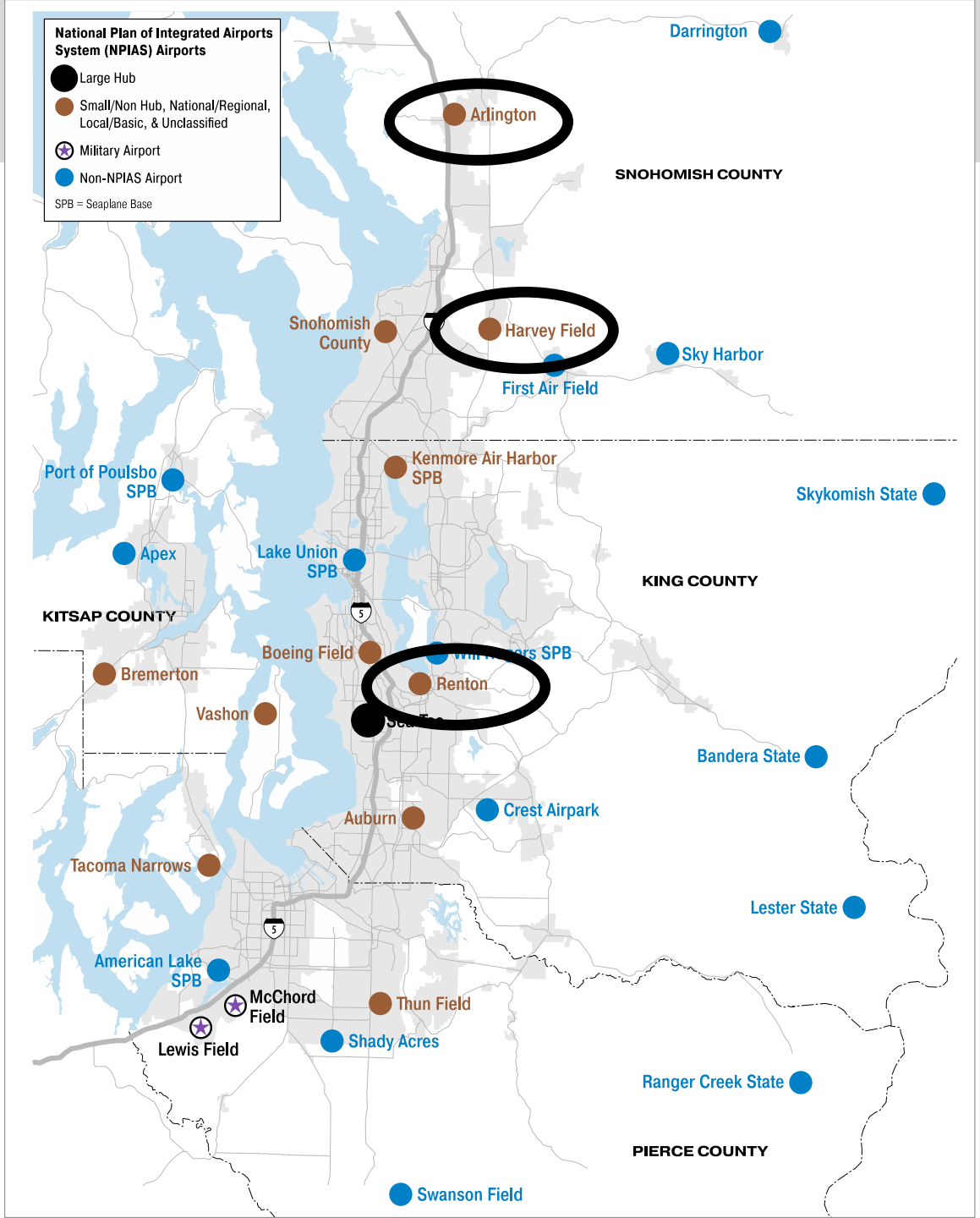
KCIA Air Cargo Facilities and Pass. Terminal

Challenges

General Aviation

Airports approaching 80% airfield capacity by 2050:

- Arlington Municipal
- Harvey Field
- Renton Municipal



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Upcoming

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

Thank you

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