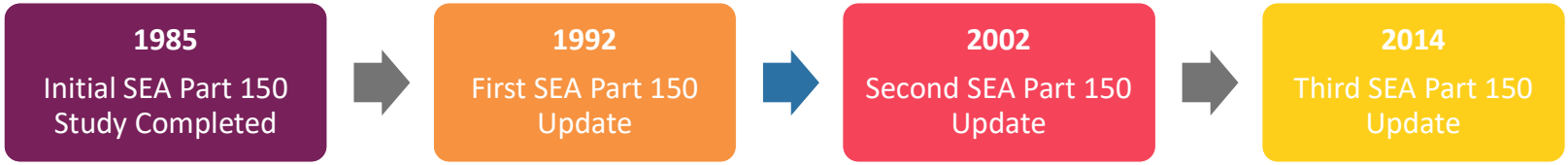
Welcome to the Public Workshop for the Seattle-Tacoma International Airport Part 150 Study

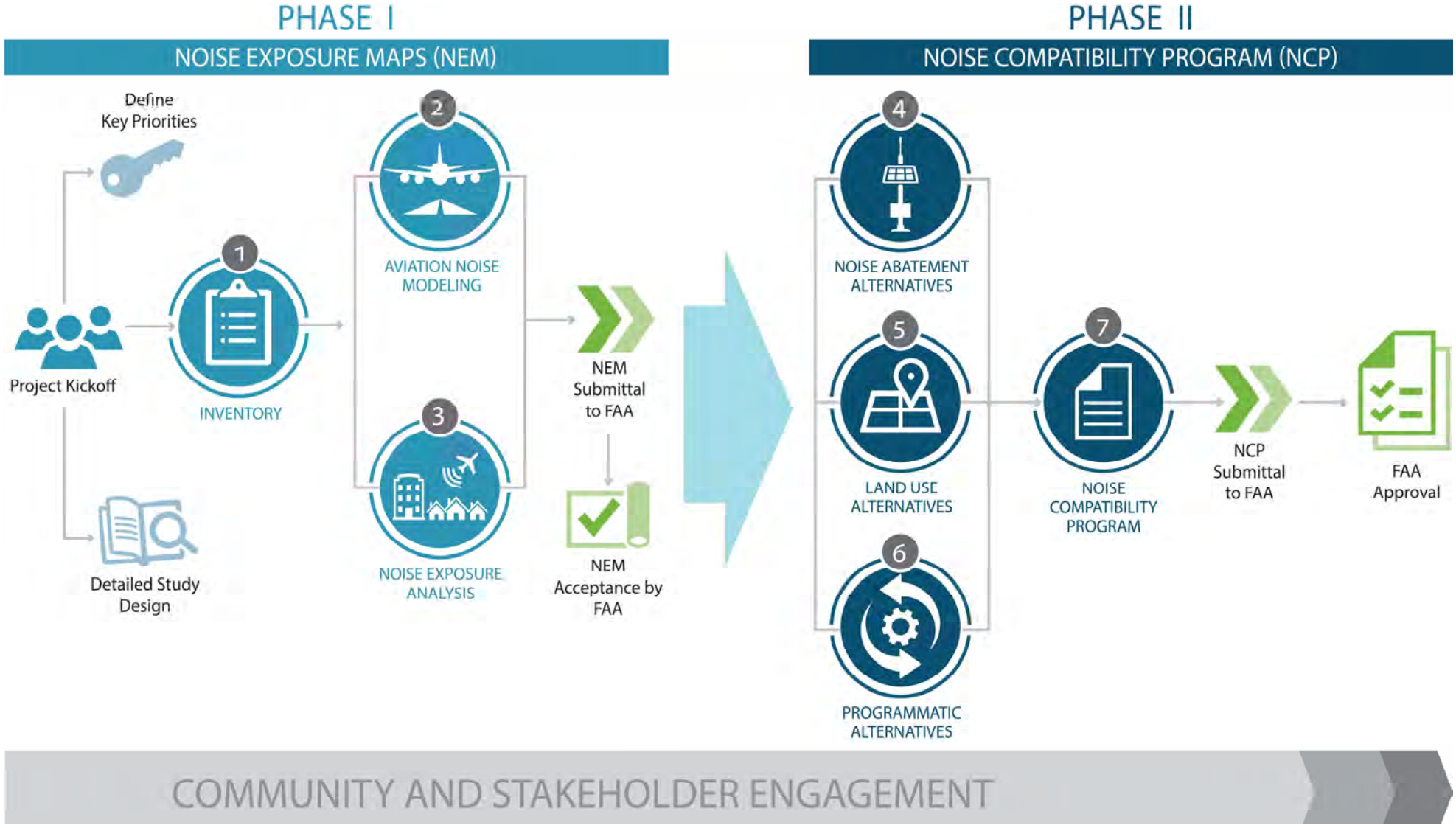
14 CFR Part 150 Overview

- Title 14 Code of Federal Regulations (CFR) Part 150 establishes the process for preparing Noise Exposure Maps (NEMs) and Noise Compatibility Programs (NCPs), together they are referred to as a "Part 150 Study"
- Why conduct a Part 150 Study?
  - Determine existing and future noise conditions in the vicinity of an airport
  - Evaluate the feasibility of possible flight procedure/land use changes
  - Educate communities on the Federal process and what can and cannot be done to address aircraft noise concerns
  - Submit locally-endorsed recommendations to the FAA regarding noise reduction measures
- Part 150 studies are voluntary
- Part 150 studies must adhere to 14 CFR Part 150 requirements

SEA's Part 150 Efforts Span Four Decades



Phases of a Part 150 Study



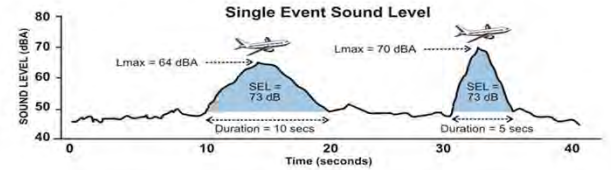
Regulation of Airport Noise

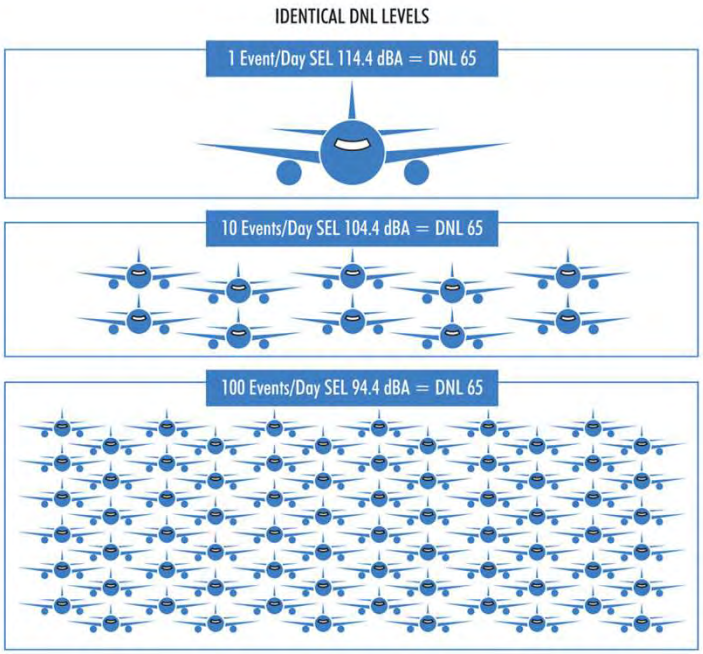
- Federal Aviation Administration:
  - Controls aircraft while in flight
  - Responsible for controlling noise at its source (i.e., aircraft engines)
  - Certifies aircraft and pilots
- State and Local Governments:
  - Promote compatible land use through zoning
  - Can require real estate disclosure
  - Can mandate sound-insulating building materials
- Airport Proprietors, the Port of Seattle:
  - Responsible for capital improvement projects and infrastructure
  - Can establish a "noise office", which serves as a bridge between the Airport, FAA, and the community to minimize the impact of aircraft noise while ensuring the Airport operates safely and efficiently
  - Very limited authority to adopt local restrictions

FEDERAL LAW TAKES PRECEDENCE OVER STATE AND LOCAL REGULATIONS

Day-Night Average Sound Level (DNL)

- 24-hour time weighted energy average noise level based on A-weighted decibels (dBA)
- Noise occurring between 10 p.m. and 7 a.m. is penalized by 10 dB to account for the higher sensitivity to noise during nighttime hours and the expected decrease in background levels that typically occur at night
- FAA requires the use of DNL for airport noise analyses
- Average Annual Day aircraft noise exposure is calculated over a broad area and then depicted using contour lines of equal noise levels





Noise and Land Use Compatibility

- 14 CFR Part 150 Appendix A, Table 1 provides noise and land use compatibility guidelines
- Considers levels below DNL 65 dB compatible with all land uses
- Allows for the adoption of local land use standards for land use compatibility planning purposes

The Part 150 process is the Airport Sponsor's way to improve the compatibility between the Airport and surrounding communities

LAND USE	Yearly Day-Night Average Sound Level (Ldn) in decibels					
	Below 65	65-70	70-75	75-80	80-85	Over 85
RESIDENTIAL						
Residential, other than mobile homes and transient lodgings	Y	N(1)	N(1)	N	N	N
Mobile home parks	Y	N	N	N	N	N
Transient lodgings	Y	N(1)	N(1)	N(1)	N	N
PUBLIC USE						
Schools	Y	N(1)	N(1)	N	N	N
Hospitals and nursing homes	Y	25	30	N	N	N
Churches, auditoriums, and concert halls	Y	25	30	N	N	N
Governmental services	Y	Y	25	30	N	N
Transportation	Y	Y	Y(2)	Y(3)	Y(4)	Y(4)
Parking	Y	Y	Y(2)	Y(3)	Y(4)	N
COMMERCIAL USE						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale and retail—building materials, hardware and farm equipment	Y	Y	Y(2)	Y(3)	Y(4)	N
Retail trade—general	Y	Y	25	30	N	N
Utilities	Y	Y	Y(2)	Y(3)	Y(4)	N
Communication	Y	Y	25	30	N	N
MANUFACTURING AND PRODUCTION						
Manufacturing, general	Y	Y	Y(2)	Y(3)	Y(4)	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y(6)	Y(7)	Y(8)	Y(8)	Y(8)
Livestock farming and breeding	Y	Y(6)	Y(7)	N	N	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y	Y	Y
RECREATIONAL						
Outdoor sports arenas and spectator sports	Y	Y(5)	Y(5)	N	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusements, parks, resorts and camps	Y	Y	Y	N	N	N
Golf courses, riding stables and water recreation	Y	Y	25	30	N	N

Numbers in parenthesis refer to notes.

*The designations contained in this table do not constitute a Federal determination that any use of land covered by the program is acceptable or unacceptable under Federal, State, or local law. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities. FAA determinations under part 150 are not intended to substitute federally determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise compatible land uses.

NOTES

(1) Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10 or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year round. However, the use of NLR criteria will not eliminate outdoor noise problems.

(2) Measures to achieve NLR 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

(3) Measures to achieve NLR of 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

(4) Measures to achieve NLR 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal level is low.

(5) Land use compatible provided special sound reinforcement systems are installed.

(6) Residential buildings require an NLR of 25.

(7) Residential buildings require an NLR of 30.

(8) Residential buildings not permitted.

KEY TO TABLE

SLUCM	Standard Land Use Coding Manual.
Y (Yes)	Land Use and related structures compatible without restrictions.
N (No)	Land Use and related structures are not compatible and should be prohibited.
NLR	Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.
25, 30, or 35	Land use and related structures generally compatible; measures to achieve NLR of 25, 30, or 35 dB must be incorporated into design and construction of structure.

Model Inputs

- The amount of noise exposure is determined by:
  - Aircraft types
  - Stage length (distance to destination)
  - Number of average annual day operations
  - Nighttime weighting (1 nighttime operation = 10 daytime operations)
- The noise exposure distribution is determined by:
  - Runway configuration and use
  - Flight track locations
  - Flight track use
- Other factors
  - Meteorological conditions
  - Terrain

Aviation Environmental Design Tool (AEDT) Version 3f

2022 and 2032 Modeled Aircraft Operations and Time of Day

Estimated Annual Aircraft Operations

Aircraft Category	2022	2032
Passenger Jet	338,950	455,153
Passenger Turboprop	45,201	0
Cargo Jet	12,470	15,655
Cargo Turboprop	2,381	3,301
General Aviation	2,295	1,445
Military	55	100
Total	**401,351**	**475,655**

Source: Landrum & Brown analysis, 2024, adapted by ESA, 2025
Note: Totals may not match due to rounding.

Estimated Annual Aircraft Operations by Time of Day (All Aircraft)

Study Year	Arrivals		Departures	
	Day	Night	Day	Night
2022	85.1%	14.9%	83.0%	17.0%
2032	83.3%	16.7%	84.5%	15.5%

Source: Landrum & Brown analysis, 2024, adapted by ESA, 2025

Departure Stage Length

Stage Length Comparison for Boeing 737-800

Source: AEDT; ESA, 2025

AEDT Departure Stage Length Categories

Stage Length	Trip Length (nmi)
1	0 – 500
2	500 – 1,000
3	1,000 – 1,500
4	1,500 – 2,500
5	2,500 – 3,500
6	3,500 – 4,500
7	4,500 – 5,500
8	5,500 – 6,500
9	6,500 – 11,000
M	Maximum Range

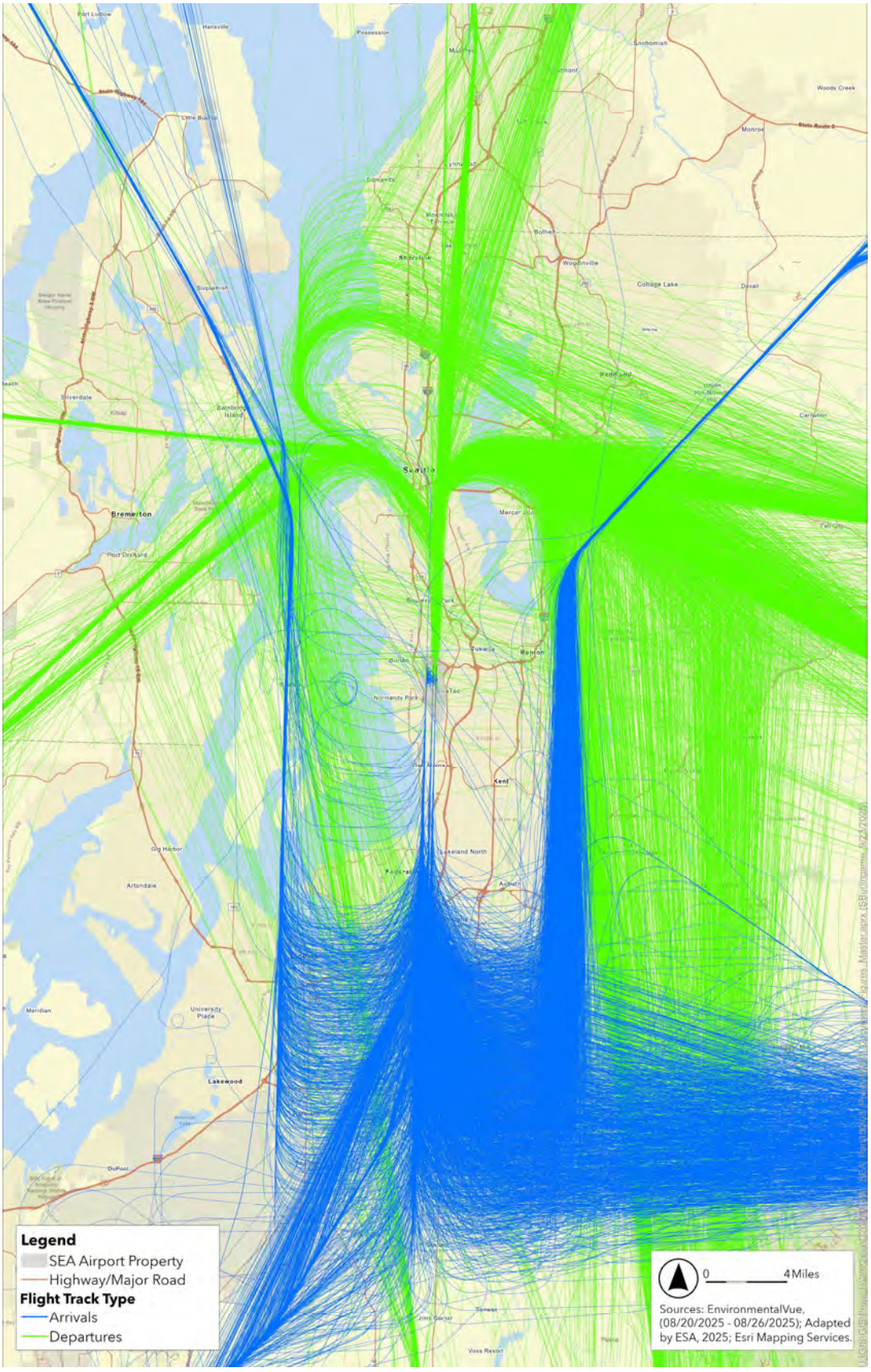
Source: AEDT

Estimated Departure Stage Length (All Aircraft)

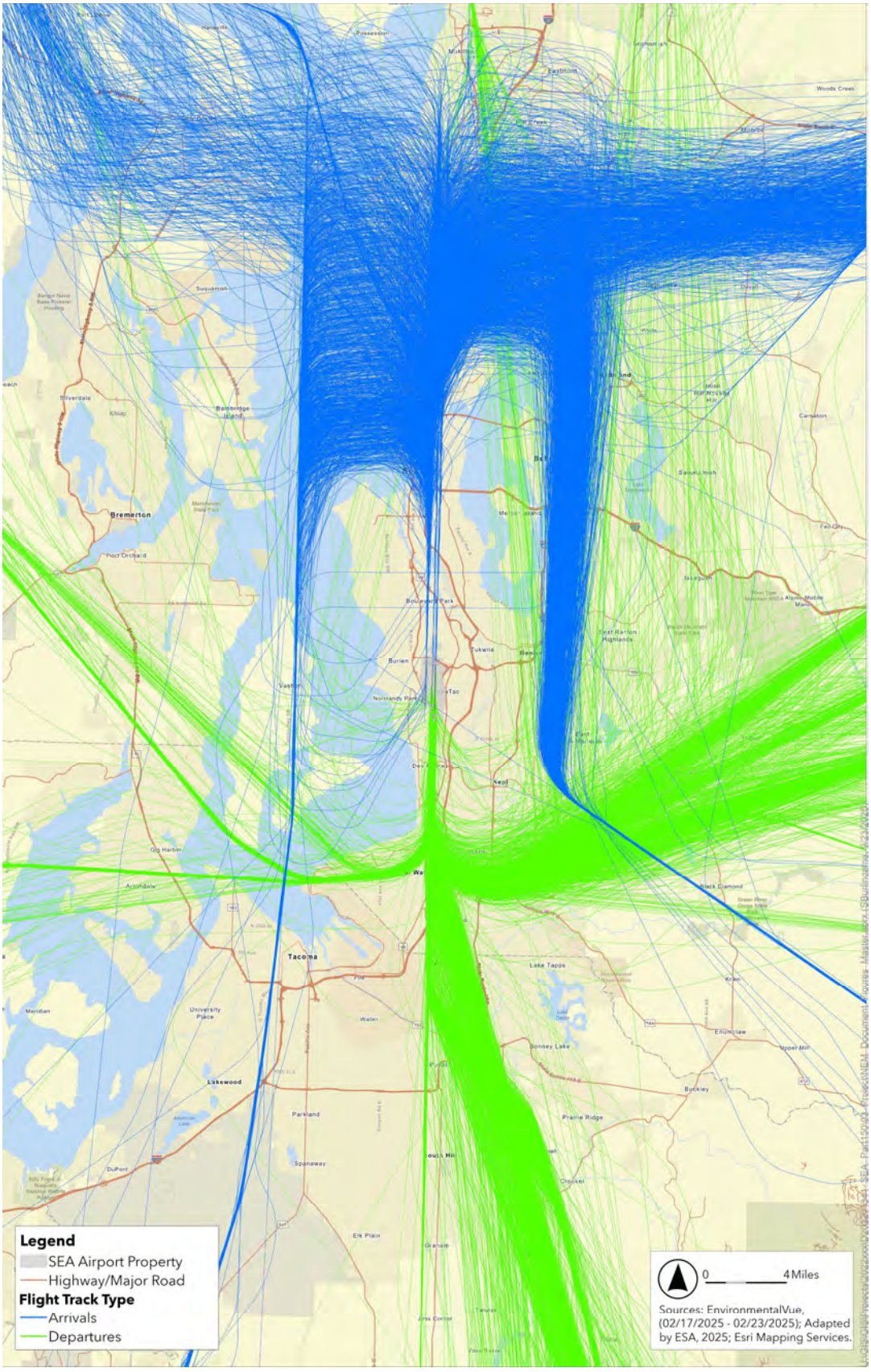
Study Year	Stage Length Category									
	1	2	3	4	5	6	7	8	9	M
2022	27.0%	34.6%	13.3%	21.6%	0.2%	2.0%	1.0%	0.0%	0.2%	0.0%
2032	21.8%	38.0%	14.2%	19.5%	0.0%	2.9%	3.6%	0.0%	0.0%	0.0%

Source: AEDT, Landrum & Brown analysis, 2024, adapted by ESA, 2025

North Flow Operations Sample (August 20-26, 2025)



South Flow Operations Sample (February 17-23, 2025)



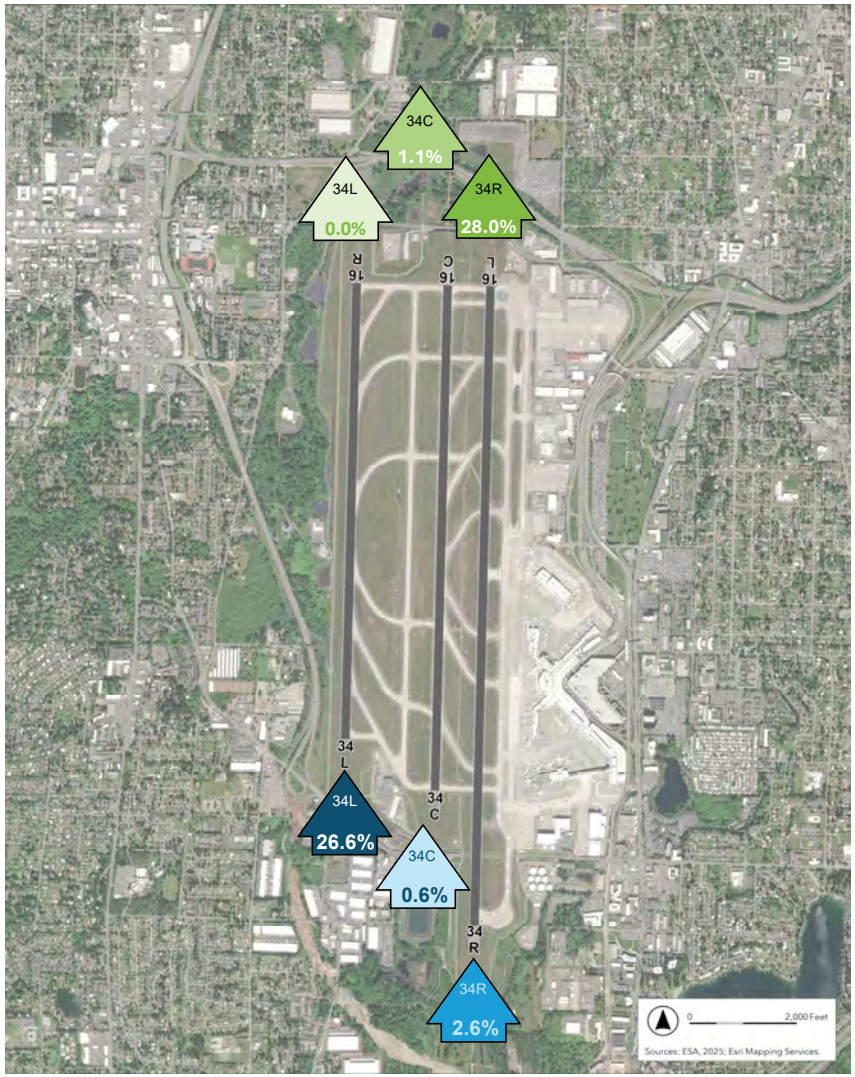
2022 Existing Conditions Runway Utilization

Arrival Use Intensity

Departure Use Intensity

Flow Direction

North Flow



South Flow

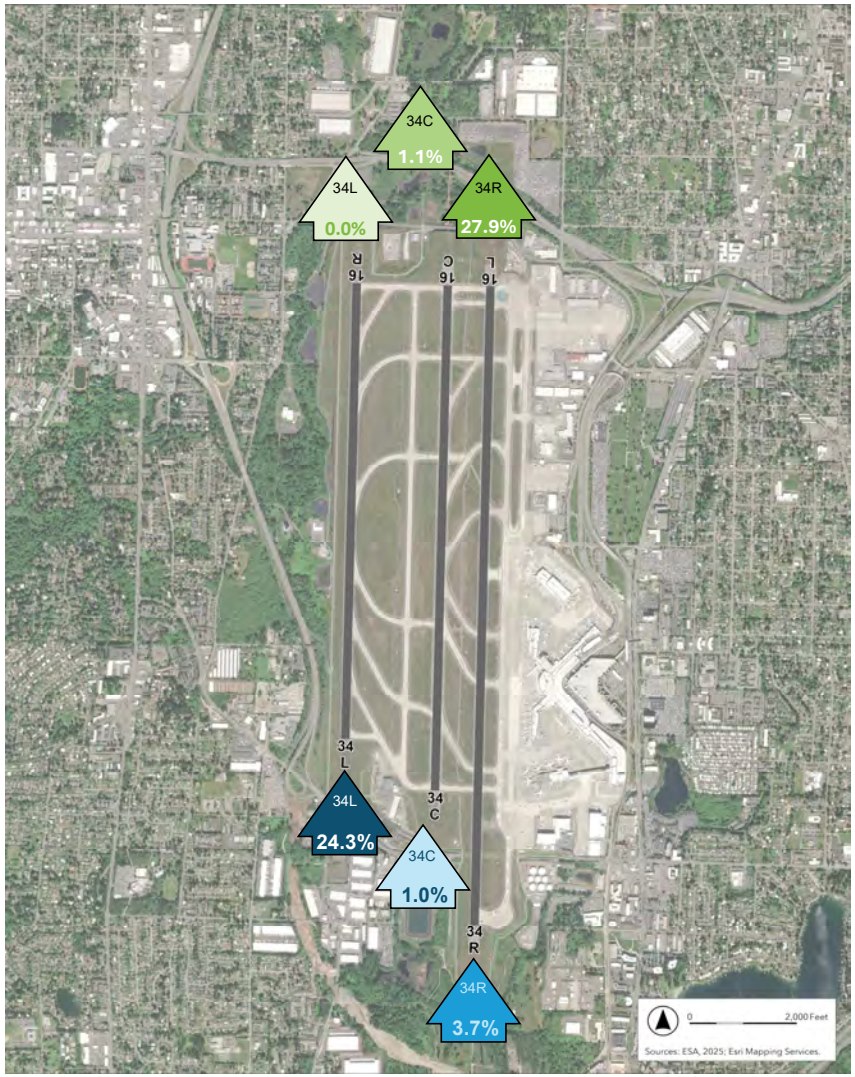
2032 Future Conditions Runway Utilization

Arrival Use Intensity

Departure Use Intensity

Flow Direction

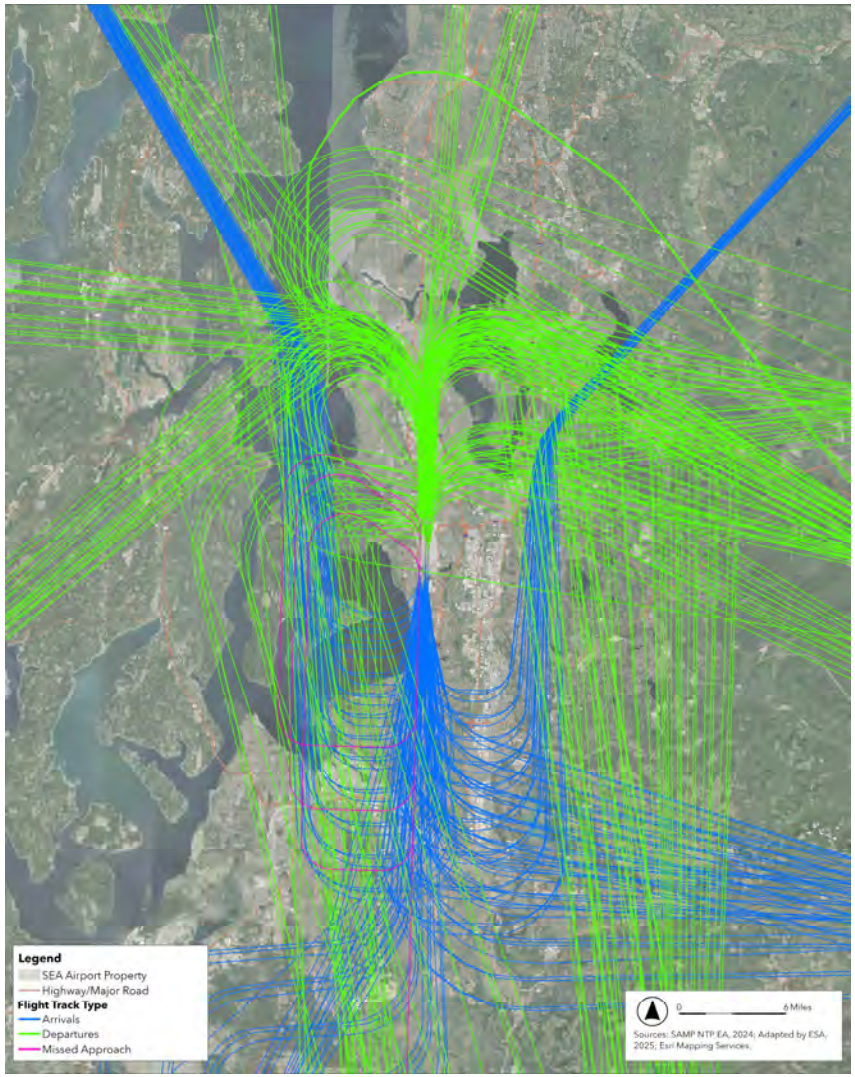
North Flow



South Flow

AEDT Flight Tracks

North Flow



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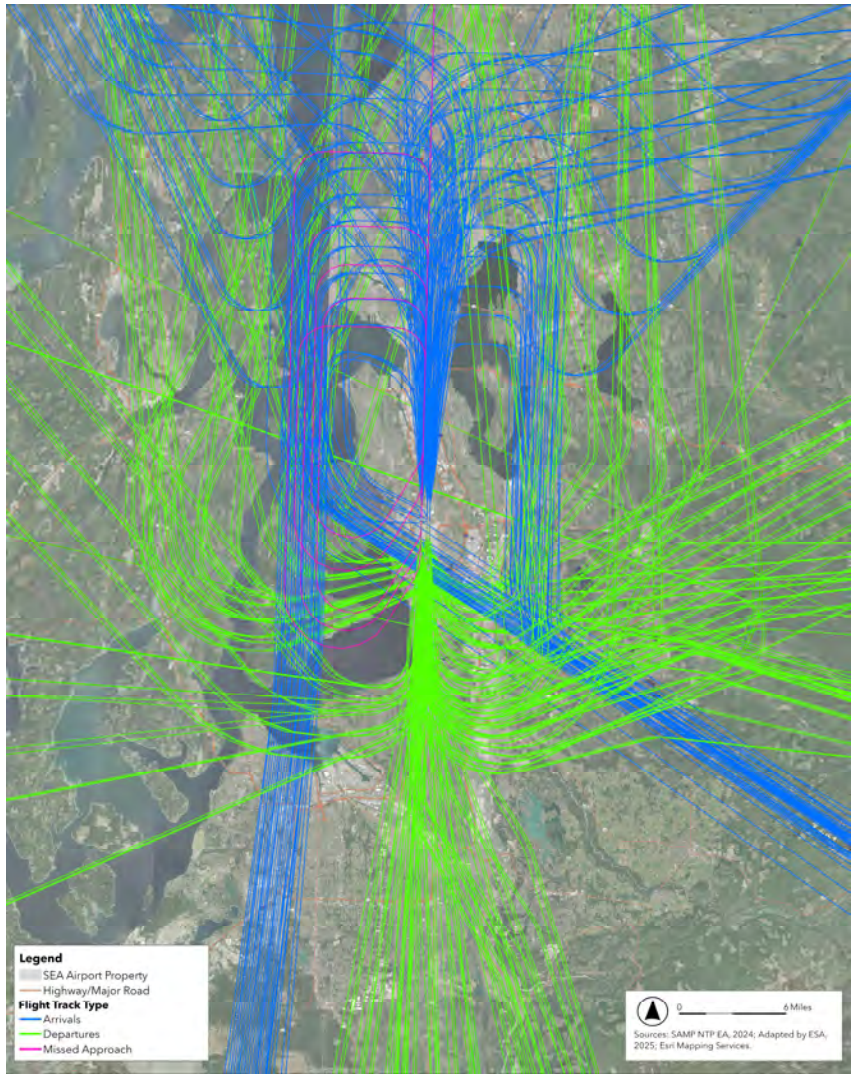
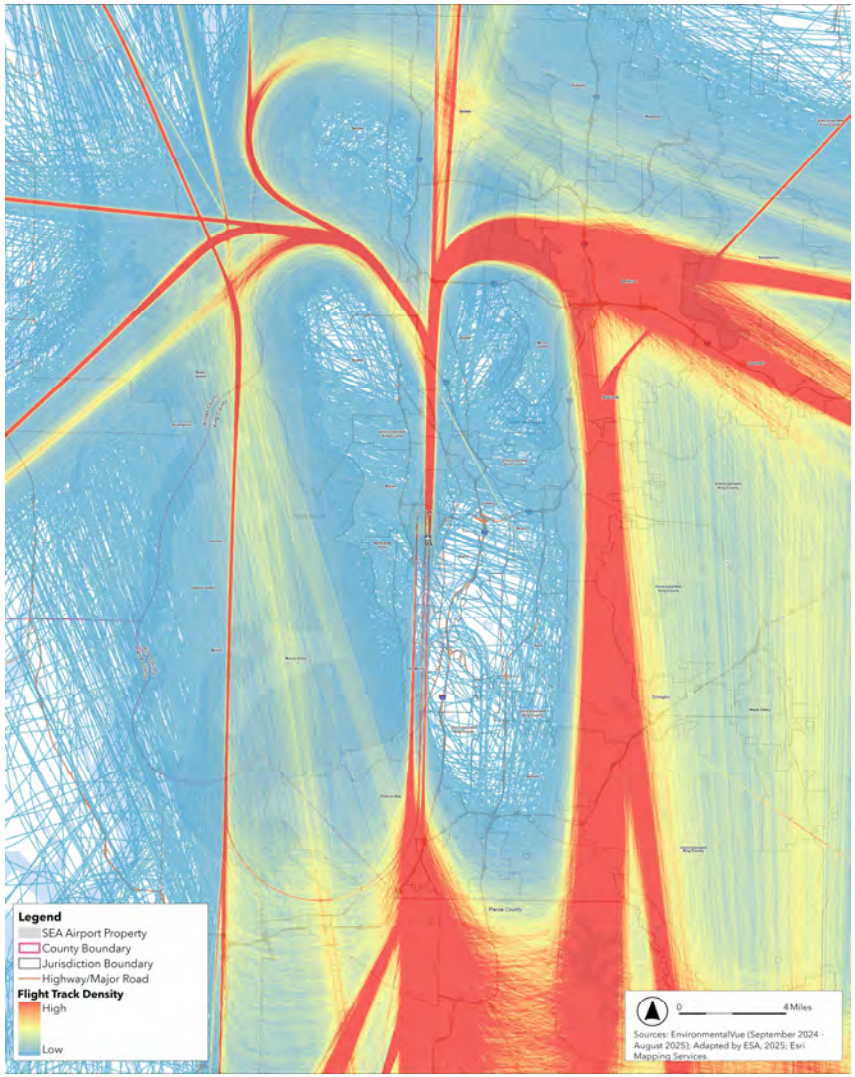


Radar Flight Tracks – Aircraft Density

North Flow



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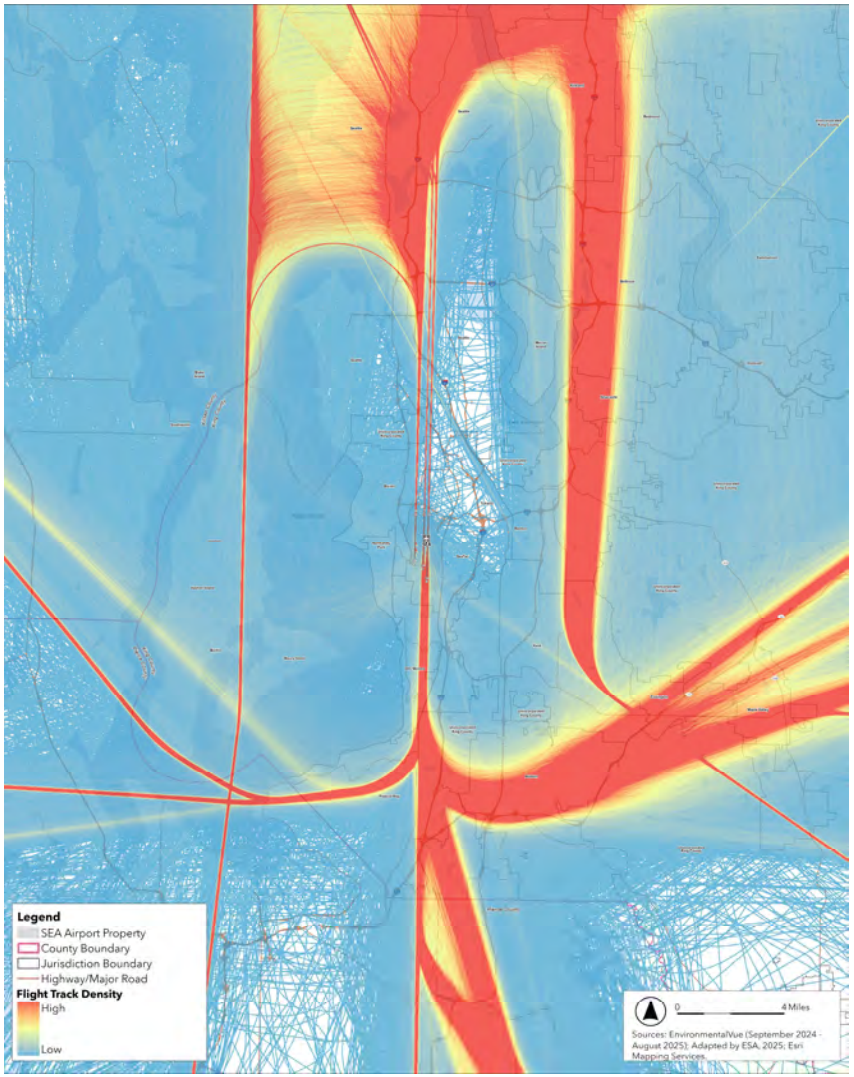
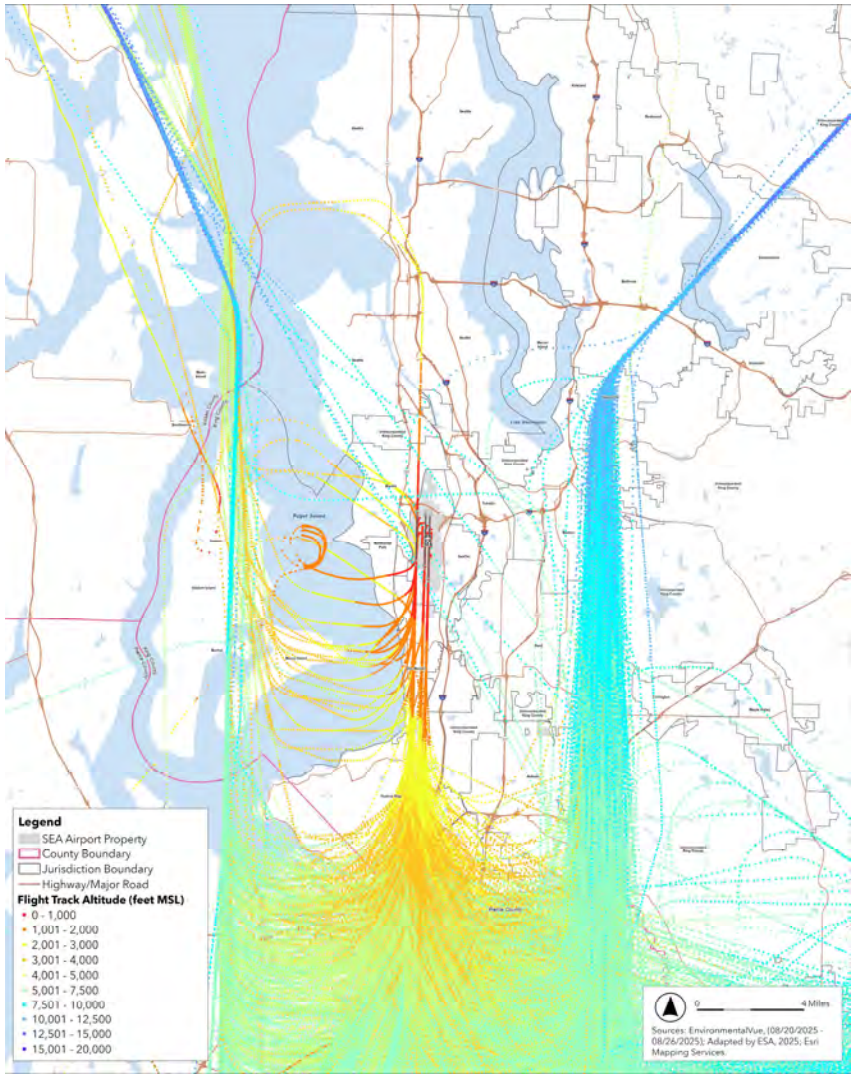
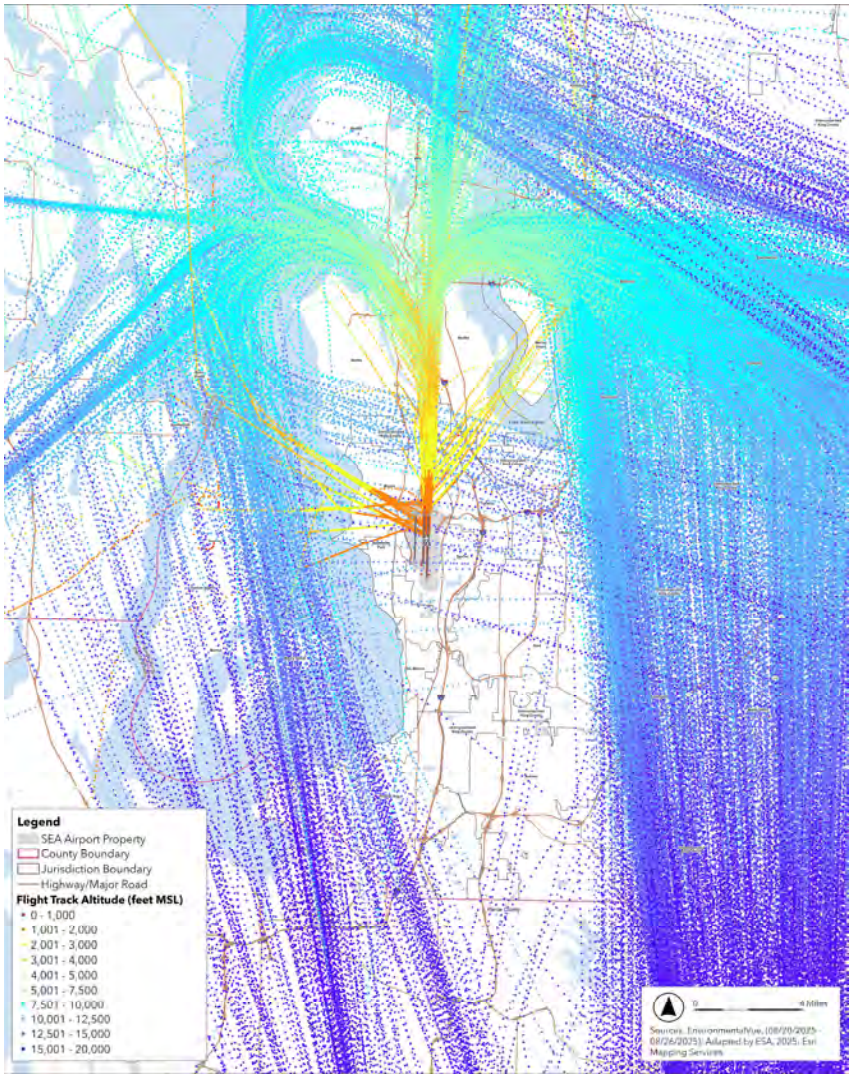


North Flow Sample Altitudes (August 20-26, 2025)

Arrivals

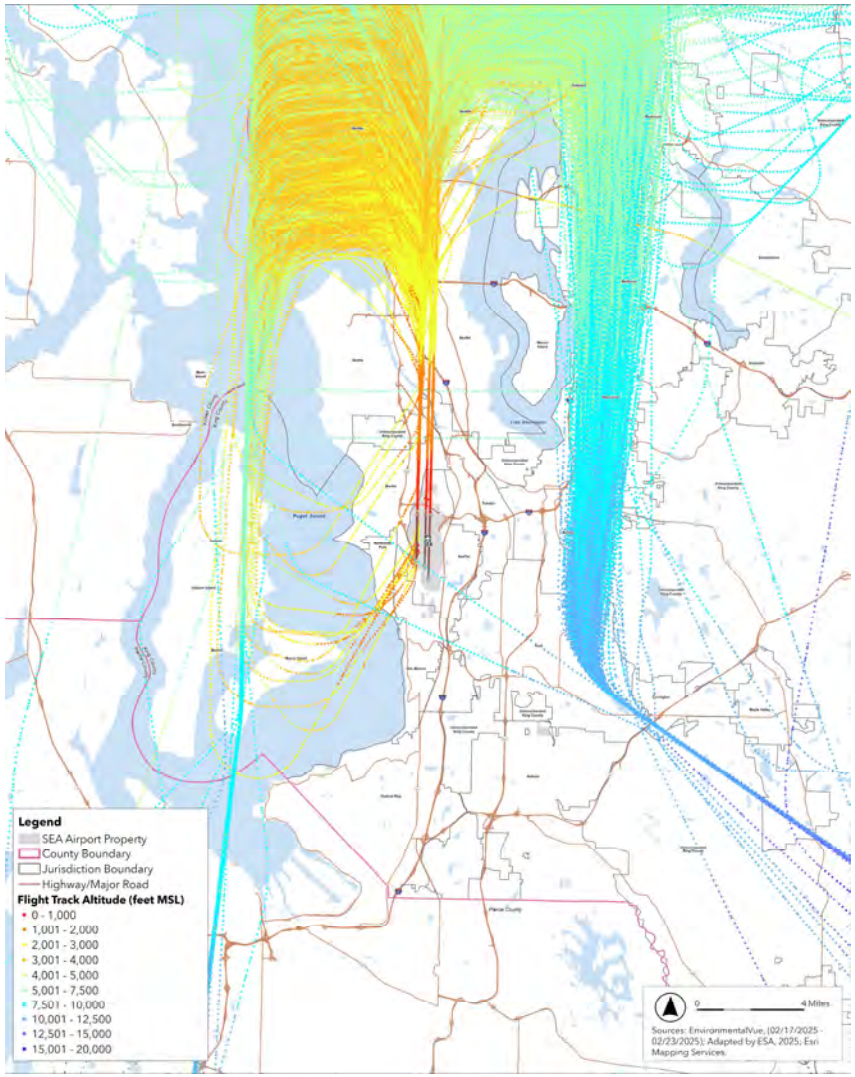


Departures

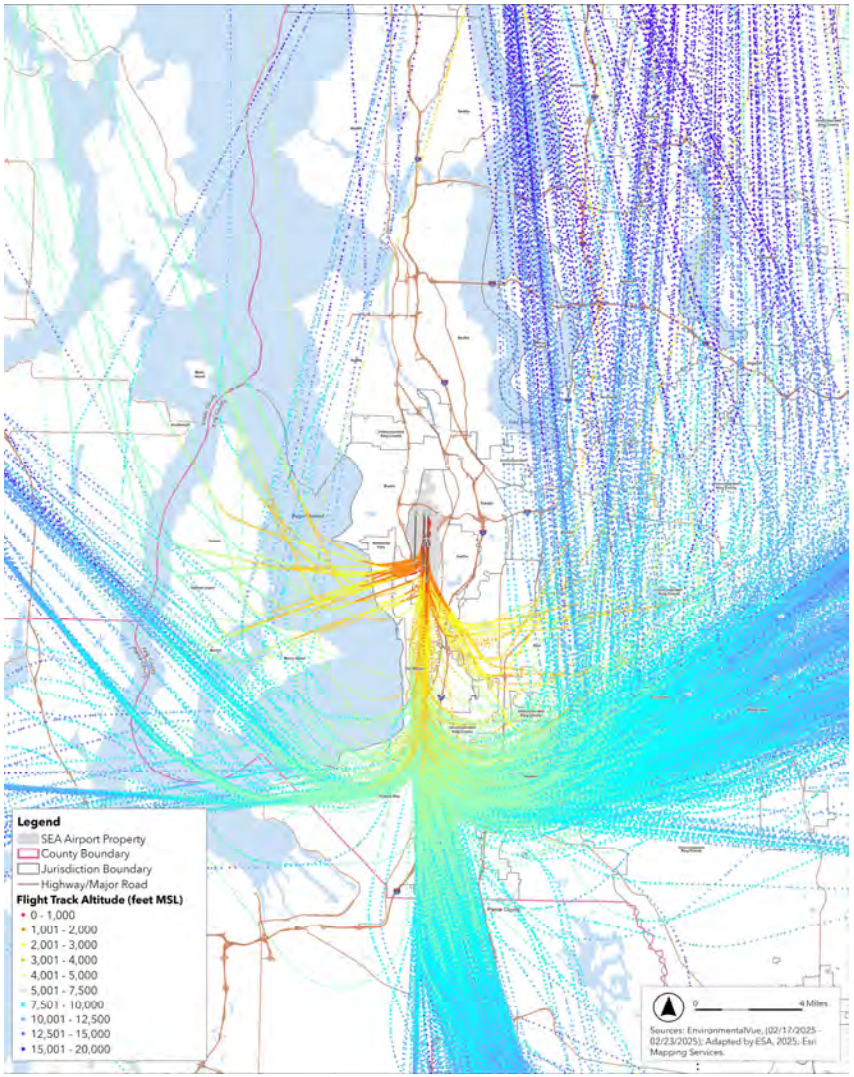


South Flow Sample Altitudes (February 17-23, 2025)

Arrivals

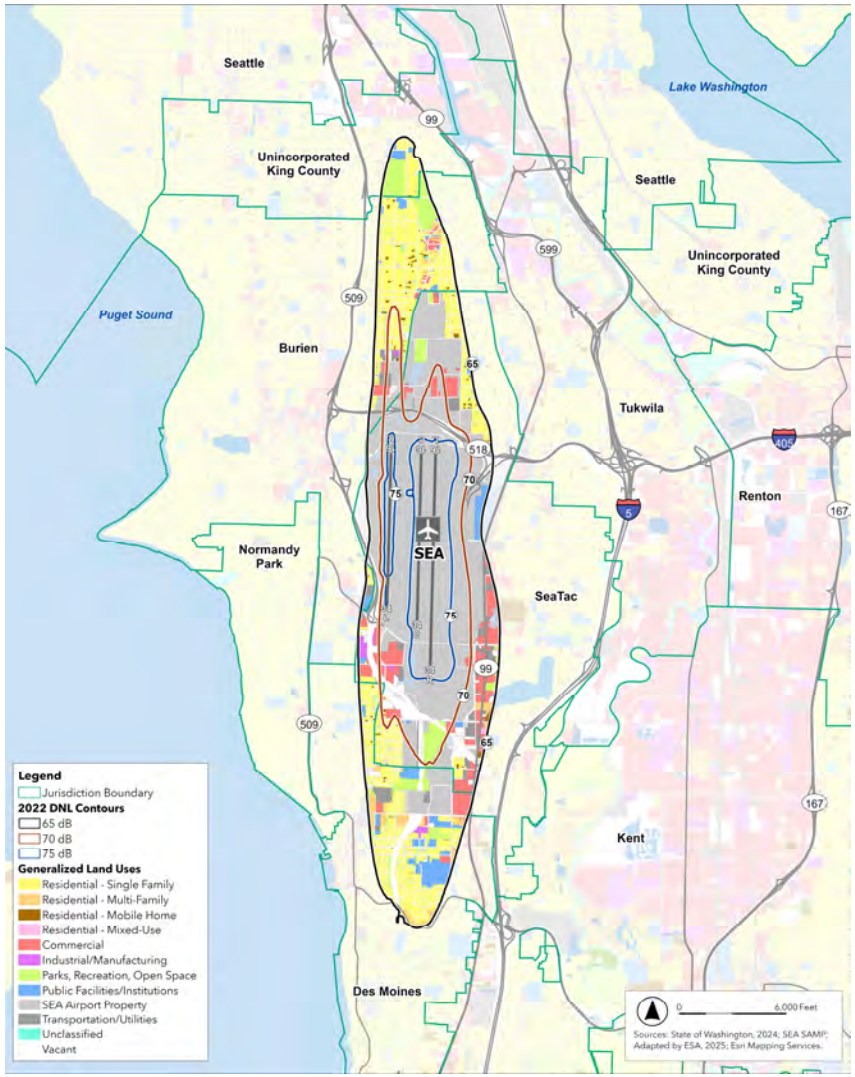


Departures

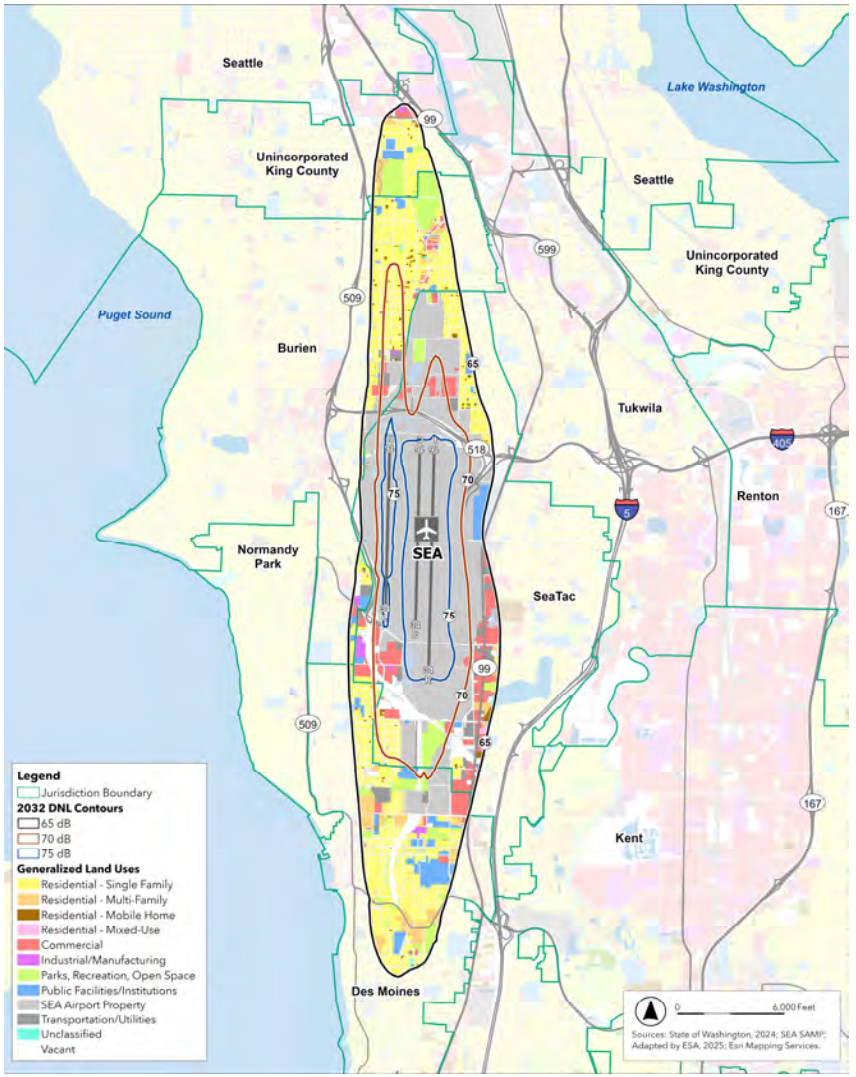


DNL 65, 70, and 75 Noise Contours

2022 Existing Conditions



2032 Future Conditions



Noise Exposure Within 2022 DNL Contours

Land Uses Exposed to DNL 65 and Higher

Land Use Category [a]	Land Uses Exposed to DNL 65 and Higher (acres)				Housing Units [b, c]	Population [b, c]
	DNL 65-70	DNL 70-75	DNL 75+	Total		
Commercial	273.4	79.4	0.0	**352.8**	0	0
Industrial / Manufacturing	23.1	1.7	0.0	**24.8**	0	0
Parks, Recreation, and/or Open Space	211.7	44.8	0.0	**217.8**	0	0
Public Facilities and/or Institutions	187.4	0.9	0.0	**188.3**	0	0
Residential - Mixed-Use	2.9	0.0	0.0	**2.9**	1	2
Residential - Mobile Home	32.8	2.4	0.0	**35.2**	159	451
Residential - Multi-Family	106.2	0.7	0.0	**106.8**	2,829	7,027
Residential - Single Family	993.8	34.1	0.0	**1,027.9**	3,926	10,930
SEA Airport Property	815.2	991.9	788.2	**2,595.3**	0	0
Transportation and/or Utilities	124.5	24.1	0.4	**149.1**	0	0
Unclassified	6.3	2.3	0.0	**47.4**	0	0
Vacant	85.6	39.5	0.1	**125.2**	0	0
Other[d]	599.0	148.6	4.1	**751.7**	0	0
Total	**3,461.9**	**1,370.3**	**792.9**	**5,625.0**	**6,915**	**18,410**

Sources: SAMP NTP EA, Washington State Geospatial Portal, King County GIS Center, U.S. Census Bureau.

NOTES:

a Land Use Categories derived from King County parcel data with landuse information.

b Housing units and population estimates derived from 2020 Census block level data and American Community Survey 5-year Estimates Detailed Tables 2020.

c Does development of the contours for the SAMP NTP EA, some single- and multi-family residential parcels have transitioned to current status of some mainly commercial uses. There has also been new construction in this area, including both single-family and multi-family residential developments.

d "Other" category includes surface area associated with road rights-of-way, water bodies, and any otherwise undevelopable land not reflected in King County Assessor parcel data.

Noise Exposure Within 2022 DNL Contours

Noise Sensitive Sites Exposed to DNL 65 and Higher

DNL Range	Total Area (Acres)	Housing Units [a]	Population [a]	Religious [b]	Schools [b]	Hospitals [b]	Historic Resources [c]	Libraries [b]	Nursing Homes [b]
65-70	3,461.9	6,786	18,061	20	9	2	0	2	29
70-75	1,370.3	129	349	0	0	0	0	0	1
75+	792.9	0	0	0	0	0	0	0	0
Total	**5,625.0**	**6,915**	**18,410**	**20**	**9**	**2**	**0**	**2**	**30**

Sources: SAMP NTP EA; Washington State Geospatial Portal; King County GIS Center, U.S. Census Bureau.
NOTES:
a. Housing units and population estimates derived from 2020 Census block level data and ACS 5-year Estimates Detailed Tables 2023.
b. Noise sensitive site data obtained from King County GIS Center.
c. Information published by the National Park Service regarding the National Register of Historic Places (NRHP) was referenced.

Housing Units and Population Not Previously Insulated

DNL Range	Housing Units	Population
65-70	3,251	8,411
70-75	27	72
75+	0	0
Total	**3,278**	**8,483**

2020 US Census Bureau and ACS 5-year Estimates Detailed Tables 2023; SEA Sound Insulation Program housing unit data from the Port of Seattle.
Note: There have been additional homes insulated since the SAMP EA analysis; this table reflects the most current data.

Noise Exposure Within 2032 DNL Contours

Land Uses Exposed to DNL 65 and Higher

Land Use Category [a]	Land Uses Exposed to DNL 65 and Higher (acres)				Housing Units [b, c]	Population [b, c]
	DNL 65-70	DNL 70-75	DNL 75+	Total		
Commercial	286.1	105.1	0.0	**391.3**	0	0
Industrial / Manufacturing	31.4	1.7	0.0	**33.2**	0	0
Parks, Recreation, and/or Open Space	291.8	53.4	0.0	**306.4**	0	0
Public Facilities and/or Institutions	255.1	3.5	0.0	**258.7**	0	0
Residential - Mixed-Use	2.9	0.0	0.0	**2.9**	1	2
Residential - Mobile Home	40.1	6.1	0.0	**46.2**	186	530
Residential - Multi-Family	204.7	1.0	0.0	**205.6**	4,427	10,983
Residential - Single Family	1,286.4	131.8	0.0	**1,418.1**	5,327	14,786
SEA Airport Property	722.8	970.0	932.1	**2,624.9**	0	0
Transportation and/or Utilities	131.5	32.6	0.6	**164.7**	0	0
Unclassified	12.8	3.1	0.0	**54.7**	0	0
Vacant	105.3	47.4	0.1	**152.8**	0	0
Other[d]	682.9	212.4	5.4	**900.6**	0	0
Total	**4,053.8**	**1,568.1**	**938.2**	**6,560.2**	**9,941**	**26,302**

Sources: SAMP NTP EA, Washington State Geospatial Portal, King County GIS Center, U.S. Census Bureau.

NOTES:

a Land Use Categories derived from King County parcel data with landuse information.

b Housing units and population estimates derived from 2020 Census block level data and American Community Survey 5-year Estimates Detailed Tables 2020.

c Does development of the contours for the SAMP NTP EA, some single- and multi-family residential parcels have transitioned to current status of some mainly commercial uses. There has also been new construction in this area, including both single-family and multi-family residential developments.

d "Other" category includes surface area associated with road rights-of-way, water bodies, and any otherwise undevelopable land not reflected in King County Assessor parcel data.

Noise Exposure Within 2032 DNL Contours

Noise Sensitive Sites Exposed to DNL 65 and Higher

DNL Range	Total Area (Acres)	Housing Units [a]	Population [a]	Religious [b]	Schools [b]	Hospitals [b]	Historic Resources [c]	Libraries [b]	Nursing Homes [b]
65-70	4,053.8	9,315	24,624	23	12	2	0	2	42
70-75	1,568.1	626	1,678	0	0	0	0	0	3
75+	938.2	0	0	0	0	0	0	0	0
Total	**6,560.2**	**9,941**	**26,302**	**23**	**12**	**2**	**0**	**2**	**45**

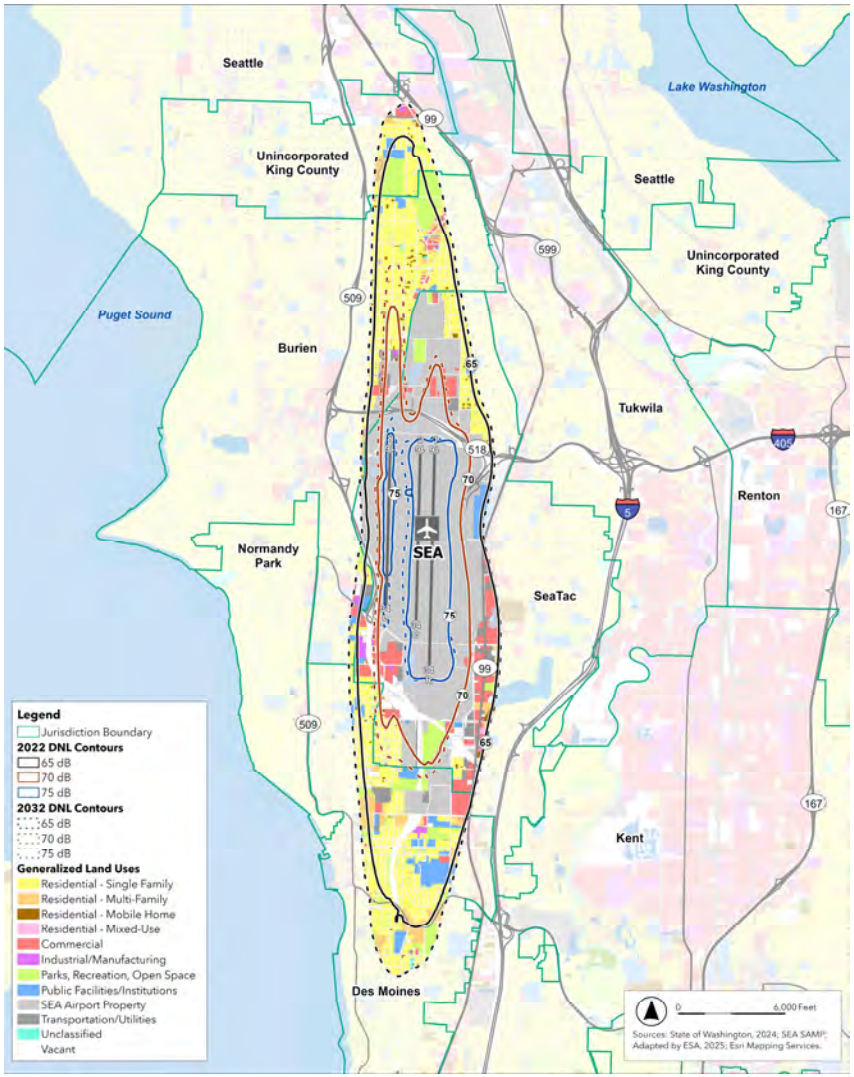
Sources: SAMP NTP EA; Washington State Geospatial Portal; King County GIS Center, U.S. Census Bureau.
NOTES:
a. Housing units and population estimates derived from 2020 Census block level data and ACS 5-year Estimates Detailed Tables 2023.
b. Noise sensitive site data obtained from King County GIS Center.
c. Information published by the National Park Service regarding the National Register of Historic Places (NRHP) was referenced.

Housing Units and Population Not Previously Insulated

DNL Range	Housing Units	Population
65-70	5,092	12,933
70-75	138	411
75+	0	0
Total	**5,230**	**13,344**

Sources: 2020 US Census Bureau and ACS 5-year Estimates Detailed Tables 2023; SEA Sound Insulation Program housing unit data from the Port of Seattle.
Note: There have been additional homes insulated since the SAMP EA analysis; this table reflects the most current data.

2022 and 2032 Noise Contours



Comparison of 2022 and 2032 Noise Exposure

Change in Land Use Exposure – 2022 to 2032

Land Use Category [a]	Net Change in Acreage by Land Use			
	DNL 65-70	DNL 70-75	DNL 75+	Total
Commercial	12.8	25.7	0.0	**38.5**
Industrial / Manufacturing	8.3	0.1	0.0	**8.4**
Parks, Recreation, and/or Open Space	80.1	8.6	0.0	**88.7**
Public Facilities and/or Institutions	67.8	2.6	0.0	**70.4**
Residential - Mixed-Use	0.0	0.0	0.0	**0.0**
Residential - Mobile Home	7.3	3.7	0.0	**11.0**
Residential - Multi-Family	98.5	0.3	0.0	**98.8**
Residential - Single Family	292.5	97.6	0.0	**390.2**
SEA Airport Property	-92.4	-21.9	143.9	**29.6**
Transportation and/or Utilities	7.0	8.4	0.2	**15.6**
Unclassified	6.5	0.9	0.0	**7.3**
Vacant Land	19.7	7.9	0.0	**27.7**
Other[C]	83.9	63.8	1.3	**148.9**

Sources: SAMP NTP EA, Washington State Geospatial Portal, King County GIS Center, U.S. Census Bureau.
NOTES:
a. Land Use Categories derived from King County parcel data with land use information.
b. Housing units and population estimates derived from 2020 Census block level data and ACS 5-year Estimates Detailed Tables 2023.
c. "Other" category includes surface area associated with road rights-of-way, water bodies, and any otherwise undevelopable land not reflected in King County Assessor parcel data.

Change in Noise Sensitive Sites Exposed to DNL 65 and Higher – 2022 to 2032

DNL Range	Total Area (Acres)	Housing Units [a]	Population [a]	Religious [b]	Schools [b]	Hospitals [b]	Historic Resources [c]	Libraries [b]	Nursing Homes [b]
65-70	592.0	2,529	6,563	3	3	0	0	0	13
70-75	197.8	497	1,329	0	0	0	0	0	2
75+	145.3	0	0	0	0	0	0	0	0
Total	**935.1**	**3,026**	**7,892**	**3**	**3**	**0**	**0**	**0**	**15**

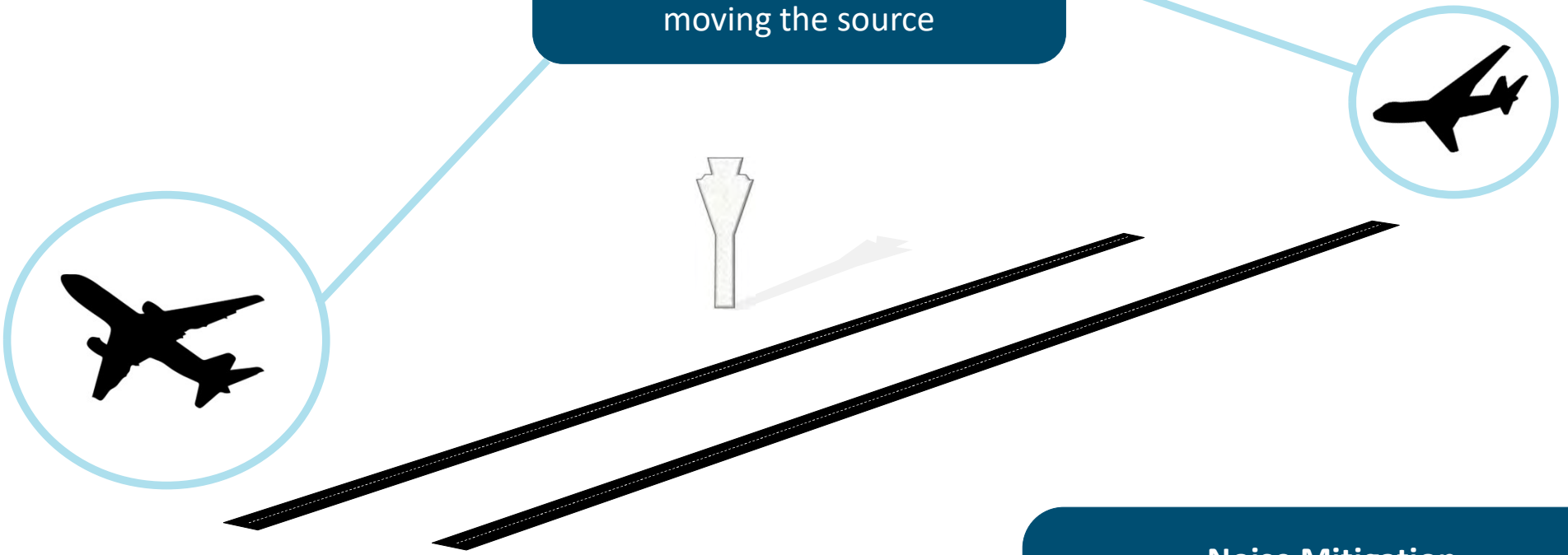
Sources: SAMP NTP EA, Washington State Geospatial Portal, King County GIS Center, U.S. Census Bureau.
NOTES:
a. Housing units and population estimates derived from 2020 Census block level data and ACS 5-year Estimates Detailed Tables 2023.
b.

Required Elements of a Noise Compatibility Program (NCP)

- Noise Compatibility Programs:
  - Identify noise abatement, land use, and programmatic strategies to reduce aircraft noise impacts on surrounding communities
  - Proposes measures to improve compatibility between airport operations and noncompatible land uses based on the NEMs
- The FAA reviews the entire NCP for technical accuracy, policy alignment, and effectiveness of proposed measures
- The NCP must include a provision for future revisions, including NEM updates
- The FAA issues a determination for each proposed measure: approved, disapproved, approved or disapproved in part, or no action (for NCP measures involving flight procedures)
- All NCP Measures Must Consider:
  - Reduction of existing incompatible land use and prevention / reduction of future incompatible land use
  - The FAA will not approve NCP measures that do not reduce exposure to noise of DNL 65 and higher
  - Safety and efficiency
  - Consistency with the powers and duties of the FAA
  - Avoidance of unjust discrimination against certain aircraft types
  - Interstate commerce
  - Measures cannot impose an undue burden on interstate commerce (requires balancing of interests)
  - The ability to meet both local needs and national air transportation system needs
- Per FAA policy, aircraft noise cannot be redirected from one community to another

Noise Abatement vs. Noise Mitigation

Noise Abatement
Reduces noise exposure by moving the source



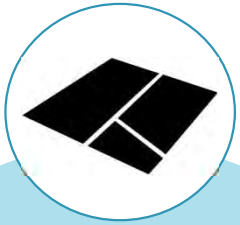
Noise Mitigation
Addresses non-compatible land uses
- Preventative: addresses future uses
- Remedial: addresses existing uses

Example NCP Measures

Noise Abatement

- Noise abatement flight tracks
- Preferential runway use
- Arrival/departure procedures
- Airport layout modifications
- Use restrictions*
- Voluntary noise abatement agreements
- Other actions proposed by stakeholders

***Subject to further notice, review, and approval requirements in 14 CFR Part 161**



Land Use

- Remedial Mitigation
  - Land acquisition
  - Sound insulation
  - Avigation easements
- Preventative Mitigation
  - Zoning and overlay zoning
  - Building codes
  - Comprehensive plans
  - Real estate disclosures
- Other actions proposed by stakeholders

Program Management

- Implementation tools
- Promotion, education, signage, etc.
- Monitoring
- Reporting
- Upgrading permanent noise monitoring terminals
- NCP revision
- Other actions proposed by stakeholders

Project Schedule

- Noise Exposure Maps (NEMs)
  - Data Collection — Completed
  - Noise Modeling — Completed
  - NEM Public Workshops — Fall 2025
  - NEM Report — Fall 2025/Winter 2026
- Noise Compatibility Program (NCP)
  - NCP Recommendations Screening — Spring 2026
  - NCP Analysis — Spring/Summer 2026
  - NCP Report & Public Workshop/Hearing — Fall 2026/Winter 2027
  - FAA 180 Day Review/Record of Approval (ROA) — 2027

How to Provide Comments:

You may provide written comments during this public workshop. Comment forms are available at this meeting to submit here, email P150@portseattle.org, or by mail to:

Port of Seattle
Aviation Noise Programs
C/O SEA Part 150 Study
17801 International Blvd, #6012M
Seattle, WA 98158-12025

Thank You for Your Participation!

SEA Sound Insulation Programs

Current Sound Insulation Programs

- The current sound insulation programs are funded by SEA Airport revenues (20%) and FAA grant funds (80%)
- Since the start of the program in 1985, the Port has insulated:
  - Over 9,400 single-family homes
  - 7 condominium complexes (321 individual units)
  - 11 of 15 identified Highline schools
  - 14 buildings on Highline College campus
  - Apartment and Places of Worship construction starting in 2025
- Within the current Noise Remedy Boundary and meet additional eligibility requirements
- SoundInsulation@portseattle.org

Repair and Replacement Pilot Program

- Completed an Assessment in early 2025 that included:
  - Outreach to, and collection of, information from residents via a comprehensive survey
  - Acoustic testing and a field assessment of a sampling of homes
  - Summary of the results in a Technical Report to help inform decision-making for the Pilot Program
- Pilot Program Eligibility:
  - Home must be located within current Noise Remedy Boundary and insulated prior to January 1, 1993
  - Acoustically test at, or greater than, FAA's 45 dBA DNL interior noise threshold
  - Currently waiting on full acoustic testing results of approximately 120 homes prior to next steps
- SEARepairReplacePilot@portseattle.org